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ESHRE HIGHLIGHTS 2019

European Society of
Human Reproduction and Embryology

Beirut-Lebanon
13 July 2019

Lebanese Fertility Society
الجمعيّة اللبنانيّة للخصوبة

ESHRE HIGHLIGHTS 2019
13 July 2019 - Faculty of Medical Sciences - Saint Joseph University

9:30-10:00	Registration	
10:00-10:15	Welcome	*Georges ABI TAYEH, MD*
10:15-10:35	IVF Children: Are They Different?	*Antoine ABU-MUSA, MD*
10:35-10:55	Time-Lapse	*Joseph AZOURY, MD*
10:55 -11:15	Luteal Phase Support	*Elie SNAIFER, MD*
11:15-11:45	*Coffee-Break*	
11:45-12:05	Fertility Preservation	*Naji AFIF, MD*
12:05-12:25	Endometriosis and Endometrial Disorder	*Johnny AWWAD, MD*
12:25-12:45	Stem Cells	*Toufic NAKAD, MD*
12:45-13:00	Closing Remarks	*All*
13:00	Lunch	

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ARTICLES ORIGINAUX / ORIGINAL ARTICLES

MISES AU POINT / IN-DEPTH REVIEWS

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ARTICLE ORIGINAL / ORIGINAL ARTICLE

OSTIUM SECUNDUM ATRIAL SEPTAL DEFECT IN ADULTS

http://www.lebanesemedicaljournal.org/articles/67-2/original1.pdf

Mohamad Jihad MANSOUR[1,2], Elias EL HAGE[1], Mohammad ISMAIL[3], Wael AlJAROUDI[2]
Georges GHANEM[4], Eliane EL-HOUWAYEK[5], Elie CHAMMAS[1,2*]

Mansour M.J, El Hage E, Ismail M, AlJaroudi W, Ghanem G, El-Houwayek E, Chammas E. Ostium secundum atrial septal defect in adults. J Med Liban 2019 ; 67 (2) : 63-69.

ABSTRACT • Background: Atrial septal defect (ASD) is a common congenital heart disease in newborns and infants. However, it has not been studied widely in the adult population. The present study is set to analyze the incidence, symptoms and echocardiographic findings in adults with ostium secundum atrial septal defect (OSASD), and to compare all variables between patients who underwent surgical closure and patients who did not undergo surgery but kept on optimal medical treatment. **Methods:** A total of 6461consecutive adult patients who underwent diagnostic transthoracic echocardiography were evaluated. For a better image quality and in case of nondiagnostic study, 22 patients underwent a transesophageal echocardiography. **Results:** There were thirty (0.46%) patients with OSASD. Of them, 80% were symptomatic. Patients who did not undergo surgical correction were older, had more comorbidities, and were more symptomatic as compared to those who underwent surgical correction (p-value < 0.05). Patients who underwent surgical correction had lower systolic pulmonary artery pressure (SPAP) (41 ± 9 mmHg *vs.* 58 ± 12 mmHg, p-value < 0.0001), maximum width of color flow signal (MWCFS) (1.6 ± 0.6 cm *vs.* 2.8 ± 0.7 cm, p-value < 0.0001) and right ventricular/left ventricular (RV/LV ratio) (0.76 ± 0.22 *vs.* 1.33 ± 0.27, p-value < 0.0001) when compared to patients without surgery. An increase in MWCFS and SPAP demonstrated a linear increase in RV/LV ratio. Similarly, an increase in MWCFS proportionally correlated with an increase in SPAP (p-value < 0.0001). Surgery was performed on 16 patients who belonged to all age groups. There were no reported complications or mortality. All patients who underwent surgery reported a significant improvement in their functional status during a 2-year follow-up. **Conclusion:** OSASD is a rare finding during adult serial diagnostic echocardiographies. Symptoms, atrial fibrillation and pulmonary hypertension increase with age. Surgical closure can be performed at any age as long as it is safe and is superior to medical therapy in symptoms improvement.

Keywords : atrial septal defect; adult congenital heart disease; echocardiography

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Mansour M.J, El Hage E, Ismail M, AlJaroudi W, Ghanem G, El-Houwayek E, Chammas E. Communication interauriculaire type ostium secundum chez l'adulte. J Med Liban 2019 ; 67 (2) : 63-69.

RÉSUMÉ • Contexte: La communication interauriculaire (CIA) est une cardiopathie congénitale courante chez les nouveaunés et les nourrissons mais peu étudiée chez les adultes. Cette étude vise à analyser l'incidence, les symptômes et les résultats échocardiographiques chez les adultes présentant une CIA type ostium secundum (CIAOS) et à comparer toutes les variables entre les patients ayant subi une fermeture chirurgicale et les patients non opérés, sous traitement médical. **Méthodes** : Une échocardiographie transthoracique a été faite sur 6461 patients adultes consécutifs. Pour une meilleure qualité d'image et en cas de test non diagnostique, 22 patients ont subi une échocardiographie transœsophagienne. **Résultats** : Trente (0,46%) patients étaient identifiés, dont 80% étaient symptomatiques. Les patients non opérés étaient plus âgés, avaient plus de comorbidités et étaient plus symptomatiques que ceux ayant subi une correction chirurgicale (p < 0,05). Les patients ayant subi une correction chirurgicale avaient également une pression arérielle pulmonaire systolique (PAPS) plus faible (41 ± 9 mmHg *vs.* 58 ± 12 mmHg, p < 0,0001), une largeur maximale du flux signal couleur (LMFSC) moindre (1,6 ± 0,6 cm *vs.* 2,8 ± 0,7 cm, p < 0,0001) et un rapport ventricule droit/ventricule gauche (VD/VG) inférieur (0,76 ± 0,22 *vs.* 1,33 ± 0,27; p < 0,0001) par rapport aux patients sans chirurgie. Une augmentation de la LMFSC et de la PAPS a démontré une augmentation linéaire du rapport VD/VG. De même, une augmentation de la LMFSC était proportionnellement corrélée à une augmentation de la PAPS (p < 0,0001). La chirurgie a été réalisée sur 16 patients appartenant à tous les groupes d'âge. Aucune complication ou mortalité n'a été signalée. Tous les patients opérés ont déclaré une nette amélioration de leur état fonctionnel au cours d'un suivi de 2 ans. **Conclusion** : La CIAOS est une découverte rare chez les adultes. Les symptômes, la fibrillation auriculaire et l'hypertension pulmonaire augmentent avec l'âge. La fermeture chirurgicale peut être pratiquée à n'importe quel âge tant qu'elle est sans risques. Elle est supérieure au traitement médical pour l'amélioration des symptômes.

Mots-clés : communication interauriculaire; cardiopathie congénitale de l'adulte; échocardiographie

INTRODUCTION

Atrial septal defect (ASD) accounts for 7 to 10% of all congenital cardiac malformations in the pediatric population and for almost one third of congenital heart disease among adults [1]. The most common type of ASD is the ostium secundum defect (OS), which accounts for more than 70% of all ASD [1]. OSASD is three times more common among females than males. Myxomatous

degeneration of the mitral valve is seen in nearly 25% of all cases [2,3]. Previous studies confirmed considerable improvement in long-term functional status and reduction in overall mortality of the surgically corrected OSASD compared to medical treatment alone [4-6]. However, it remains controversial in patients aged above 40 years [5]. Our retrospective study aims at delineating the relationship between the incidence, age, symptoms, echocardiographic features and the surgical management of OSASD.

METHODS

Study population

A total of 6461 consecutive adult patients presenting to our institution between January 2007 and January 2012 were identified. Patients younger than 18 years, with previous cardiac surgeries, or with OSASD associated with other congenital heart diseases (ASD ostium primum and sinus venosus types), were excluded from the analysis (N = 17), leaving 6444 patients for a second review. There were no patients with partial anomalous pulmonary venous connection. All patients underwent a resting transthoracic echocardiography (TTE) and 22 patients underwent a transesophageal echocardiography (TEE). A total number of 30 patients with OSASD were identified and were divided into four groups according to their age. Group I included patients < 24 years, patients in Group II were between 25 and 39 years old, Group III included patients between 40-59 years, and Group IV patients older than 60 years.

Resting transthoracic echocardiography

The resting TTE was performed with the patient in the left lateral decubitus position using the commercially available machine (GE, Vivid E7 Vingmed Ultrasound, Horten, Norway) with the M5Sc-D probe. The images were recorded and saved on the machine, and off-line analyses were performed using EchoPAC software (GE Medical Systems, Model BT10, Horten, Norway). Image quality was labeled as good, fair, or poor. Color gain was adjusted to each patient.

The mean value of three beats was determined for each measure in patients with sinus rhythm and five beats in patients with atrial fibrillation (AF).

An ASD was diagnosed if a consistent discontinuity of the atrial septum was observed in multiple views. Five views were obtained during image acquisition: parasternal long axis, parasternal short axis, apical four chamber, apical two chamber, and apical three chamber. The whole echocardiographic study was performed by the same physician and in the same echocardiography laboratory.

The ASD size was determined by noting the maximum diameter on two-dimensional echocardiographic imaging. Peak systolic pulmonary artery pressure (SPAP) was determined by continuous wave Doppler examination of the tricuspid regurgitation. Right ventricular (RV) diameter was measured in the apical 4-chamber view. Right atrial size was determined qualitatively and classified as mild, moderate and severe dilation.

Transesophageal echocardiography

TEE was performed when a poor image quality was detected and when the study was nondiagnostic. Twenty-two patients underwent TEE, with the patient in left lateral decubitus position using the commercially available machine (GE Vingmed Ultrasound AS, Horten, Norway) with the 6VT-D probe. There were five patients who had OSASD.

Surgical intervention and follow-up

There were 14 patients who did not undergo surgical correction. Of them, 3 young patients refused operation, 8 patients were referred back to their primary physicians who denied surgical correction, and 3 were above 70 years of age and were classified as high risk for intervention. On the other hand, surgery was performed on 16 patients.

All patients signed agreed consent before the operation. There were no intraoperative or postoperative complications. On a 2-year follow-up (from 2012 to 2014), all patients reported better improvement in their symptoms as compared to patients on medical treatment alone.

Statistical analysis

Continuous variables were expressed as means (sd) and compared by use of the unpaired Student t-test or Wilcoxon rank test as appropriate. Categorical variables were expressed as frequency (percentages) and compared by use of the Fisher exact test or Pearson Chi-square test as appropriate. Receiver operating characteristic curves were also plotted. All statistical tests were 2-sided. A p-value < 0.05 was set a priori and considered statistically significant. All statistical analyses were performed with the SPSS Statistics version 22 (IBM, Inc., Armonk, NY).

RESULTS

Baseline characteristics

The cohort consisted of 30 consecutive patients, with a mean age of 43 ± 17 years, ranging between 18 and 84 years; 64% were females. Indications for TTE were as follows: a general study was done on 5 patients, 6 patients had a pre-closure echocardiogram prior to intervention, and 24 patients complained of dyspnea, palpitations, recurrent respiratory tract infections, chest pain, cere-

brovascular disease and lower extremities edema. Patients who did not undergo surgical correction were older, had more comorbidities, and were more symptomatic as compared to those who underwent surgical correction (Table I).

Echocardiography parameters

Measurements of SPAP were classified into three groups: Group A (patients with SPAP less than 40 mmHg, Group B (SPAP between 40 and 59 mmHg) and Group C (SPAP more than 60 mmHg). Patients who underwent surgical correction had lower SPAP as compared to those without surgical correction (41 ± 9 mmHg *vs*. 58 ± 12 mmHg, *p*-value < 0.0001). When comparing between groups, an increase in SPAP was inversely correlated with surgical correction (*p*-value 0.008).

Similarly, patients were reclassified into two groups according to the maximum width of the color flow signal (MWCFS) measurements. Group I included patients with MWCFS < 2.5 cm and Group II included patients with MWCFS ≥ 2.5 cm. Patients who underwent surgical correction had lower MWCFS when compared to patients without surgery (1.6 ± 0.6 *vs*. 2.8 ± 0.7, *p*-value < 0.0001).

Patients were also classified according to right ventricular/left ventricular (RV/LV) ratio. Group I included patients in whom ratio was less than 0.75, Group II included patients with ratio between 0.75 and 1 and Group III included patients with ratio above 1 (>1). Patients who underwent surgical correction had a lower RV/LV ratio (0.76 ± 0.22 *vs*. 1.33 ± 0.27, *p*-value < 0.0001). An increase in RV/LV ratio was associated with a lower surgical correction rate (*p*-value < 0.0001).

All the echocardiography parameters stratified by surgical correction are summarized in Table II.

Correlation between age groups, symptoms, atrial fibrillation and echocardiographic data

In Group I, 3 patients had palpitations and mild to moderate dyspnea. In Group II, 7 out of 10 patients had moderate to severe dyspnea (NYHA class II and III) but 3 patients were asymptomatic. In Group III, 2 patients complained of NYHA II, and 4 patients complained of NYHA III dyspnea. In Group IV, all patients were symptomatic and had class II or III dyspnea. Nine patients out of 30 had NYHA class III dyspnea; of them, 6 were more than 60 years. NYHA class III dyspnea increased with age. AF was found in 7 patients (23%) who were all older than 60 years (Group IV).

Dyspnea, AF and echocardiographic data showed a significant correlation with age. Results are summarized in Table III.

Receiver operating characteristic analysis

Selected analysis preferably presents receiver operating characteristic (ROC) analysis for diagnostic accuracy including area under the curve (AUC) values with an opti-

TABLE I

BASELINE CHARACTERISTICS AND SYMPTOMS STRATIFIED BY SURGICAL CORRECTION

Variable	All patients (N = 30)	Surgical Correction (N = 16)	No Surgical Correction (N = 14)	*p*-value
Demographics				
Age, years (sd)	43 (17)	30 (8)	57 (13)	***< 0.0001***
Female gender	19 (63.3%)	10 (62.5%)	9 (64.2%)	*0.919*
Comorbidities				
Coronary artery disease	4 (13.3%)	1 (6.2%)	3 (21.4%)	*0.222*
Diabetes mellitus	4 (13.3%)	0 (0%)	4 (28.5%)	***0.022***
Hypertension	6 (20%)	1 (6.2%)	5 (35.7%)	***0.044***
Dyslipidemia	5 (16.6%)	0 (0%)	5 (35.7%)	***0.009***
Smoking history	9 (58.3%)	3 (18.7%)	6 (42.8%)	*0.151*
Heart failure	7 (23.3%)	1 (6.2%)	6 (42.8%)	***0.018***
Symptoms				
Dyspnea	24 (80%)	10 (62.5%)	14 (100%)	***0.010***
NYHA III	9 (30%)	2 (12.5%)	7 (50%)	***0.025***
Chest pain	3 (10%)	3 (18.7%)	0 (0%)	*0.088*
RRTI	4 (13.3%)	4 (25%)	0 (0%)	***0.044***
Stroke/TIA	2 (6.6%)	0 (0%)	2 (14.2%)	*0.118*
LLE	2 (6.6%)	0 (0%)	2 (14.2%)	*0.118*
Palpitations	16 (53.3%)	10 (62.5%)	6 (42.8%)	*0.282*
Atrial fibrillation	7 (23.3%)	0 (0%)	7 (50%)	***0.001***

NYHA: New York Heart Association **RRTI:** recurrent respiratory tract infections **TIA:** transient ischaemic attack **LLE:** lower limbs edema

TABLE II

ECHOCARDIOGRAPHIC DATA STRATIFIED BY SURGICAL TREATMENT OF OSTIUM SECUNDUM ATRIAL SEPTAL DEFECT

Variable	All patients (N = 30)	Surgical Correction (N = 16)	No Surgical Correction (N = 14)	*p*-value
SPAP mmHg (sd)	49 (13)	41 (9)	58 (12)	***< 0.0001***
Group A	7 (23.3%)	7 (43.5%)	0 (0%)	
Group B	17 (56.6%)	8 (50%)	9 (64.2%)	***0.008***
Group C	6 (20%)	1 (6.2%)	5 (35.7%)	
ASD diameter [cm (sd)]	2.2 (0.9)	1.6 (0.6)	2.8 (0.7)	***< 0.0001***
Group I	17 (56.6%)	14 (87.5%)	3 (21.4%)	***< 0.0001***
Group II	13 (43.3%)	2 (12.5%)	11 (78.5%)	
RV/LV ratio	1.02 (0.37)	0.76 (0.22)	1.33 (0.27)	***< 0.0001***
Group I	7 (23.3%)	6 (37.5%)	1 (7.1%)	
Group II	8 (26.6%)	8 (50%)	0 (0%)	***< 0.0001***
Group III	15 (50%)	2 (12.5%)	13 (86.6%)	

SPAP: systolic pulmonary artery pressure **ASD:** atrial septal defect **LV:** left ventricle **RV:** right ventricle

mal cutoff. Sensitivity and specificity of echocardiography were applied to decide on surgical correction and correlation between echocardiographic data and symptoms.

An increase in MWCFS and SPAP demonstrated a linear increase in RV/LV ratio (Figures 1A &1B). Similarly, an increase in MWCFS proportionally correlated with an increase in SPAP (Figure 1C).

In principle, SPAP, MWCFS and RV/LV ratio values were used for patients who underwent surgical intervention, with corresponding ROC curves and AUC 0.911, 0.871 and 0.937 (p-values < 0.0001, 0.001 and < 0.0001, respectively) (Figure 1D).

DISCUSSION

ASD accounts for up to 15% of all congenital heart diseases in adults. OSASD is the most common type, with a female predominance of 65 to 75% [7], as demonstrated in our study with a female/male ratio of 1.72.

Although many patients with ASD are asymptomatic, they will eventually develop symptoms at some point of their lives. The age at which symptoms appear is highly variable and is not necessarily related to the size of the shunt. The most common symptom is exertional dyspnea. Other symptoms like palpitations, recurrent respiratory tract infections, chest pain, and cerebro-vascular accidents were also reported [8]. In a study conducted by Sachweh *et al*. [9], patients with OSASD had lower functional capacity and higher prevalence of pulmonary vascular disease and pulmonary hypertension. Recent studies have recommended ASD closure irrespective of symptoms and at any age early after diagnosis, since it will be followed by regression of symptoms, SPAP and RV size [10].

However, few reasons for not closing an ASD should be considered and include [7]:

– Very small defects not causing hemodynamic instability. However, patients should be kept in periodic follow-up to assess for an increase in the shunt due to the increase of left diastolic pressure.

– Pregnant women diagnosed during pregnancy. ASD closure should be postponed to 6 months after delivery.

TABLE III

DYSPNEA, PALPITATIONS, ATRIAL FIBRILLATION AND ECHO DATA STRATIFIED BY AGE GROUP

Variable	Group I (N = 5)	Group II (N = 10)	Group III (N = 7)	Group IV (N = 8)	*p*-value
Dyspnea	3 (12.5%)	7 (23.3%)	6 (20%)	8 (26.6%)	***0.021***
Palpitations	3 (12.5%)	6 (20%)	4 (13.3%)	3 (23.3%)	*0.415*
Atrial fibrillation	0 (0%)	0 (0%)	0 (0%)	7 (23.3%)	***< 0.0001***
Mean SPAP (mmHg)	35	42	51	66	***< 0.0001***
Mean MWCFS (cm)	1.36	1.55	2.64	3.25	***< 0.0001***
Mean RV/LV ratio	0.58	0.89	1.16	1.36	***< 0.0001***

SPAP: systolic pulmonary artery pressure **MWCFS:** maximum color flow signal **LV:** left ventricle **RV:** right ventricle

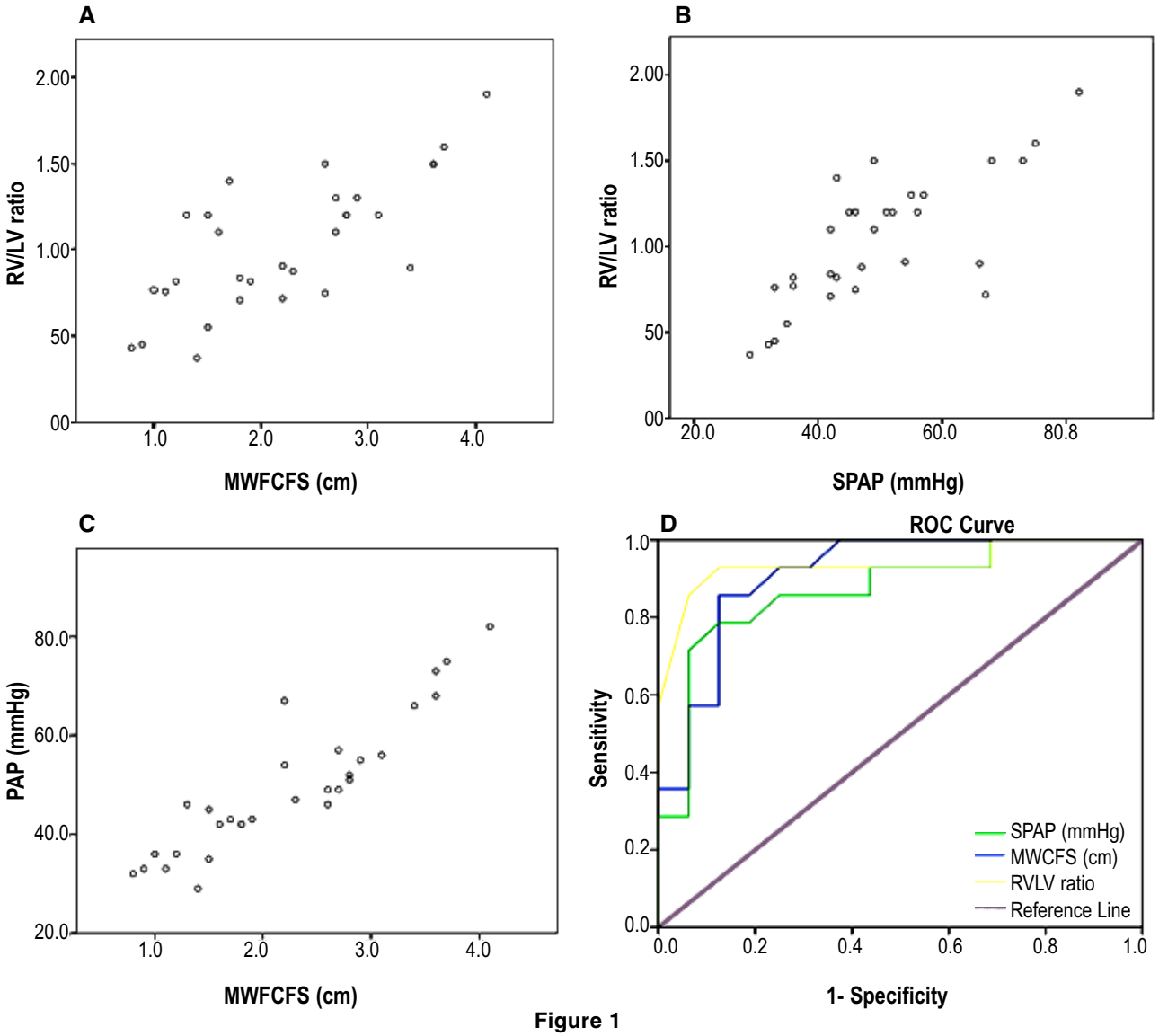

Figure 1

(**A** & **B**) Both graphs show linear increase in RV/LV ratio with correspondent increase in MWCFS and SPAP.
(**C**) An increase in MWCFS proportionally correlated with an increase in SPAP.
(**D**) ROC curve showing the diagnostic ability of TTE by using SPAP, MWCFS and RV/LV ratio values for surgical decision, with correspondent AUC 0.911, 0.871 and 0.937. (*p*-values < 0.0001, 0.001 & < 0.0001, respectively).

– Severe LV systolic dysfunction, where ASD represents a pop-off valve for systemic ventricle.
– Severe pulmonary hypertension (PHTN), where ASD may be needed as a pop-off valve. In fact, PHTN is noted in 9 to 35% of patients with OSASD, and 5-10% of patients with ASD can have severe PHTN that is likely irreversible or surgical closure would not help [11,12].

Surgical closure of ASD in children and young adults is highly recommended. However, it remains controversial in patients aged above 40 years, as previously demonstrated by Murphy *et al*. [13].

In our study, patients who underwent surgical correction belonged to any age group, including 2 patients above 60 years of age. There were 3 young asymptomatic patients who denied surgery. Moreover, those who did not undergo surgery were older, had more comorbidities and symptoms of heart failure, LV systolic impairment and severe PHTN documented by right heart catheterization.

In a study conducted by Konstantinides *et al*. [14], surgical treatment of ASD was superior to medical therapy. The authors found a significant reduction in overall mortality, and an increase in long-term survival of patients

who were candidate for surgery, with marked reduction of symptoms and improvement in functional capacity. Another study by Hsu *et al*. [15] found that closure of the defect significantly reduced the pulmonary pressure and B-type natriuretic peptide levels. The cardiothoracic ratio and daily performance status also improved.

Closure of an OSASD can be done either surgically (direct suturing or via a pericardial or synthetic patch), by using endovascular closure devices, or more recently, by robotic-assisted fluoroscopic surgery. In fact, the latter has been performed safely and effectively on patients who seek minimally invasive repair and those who would not qualify for the transcatheter device closure [16]. In clinical practice, the decision to do surgical versus transcatheter intervention in patients with OSASD depends on the size of the defect, the presence of partial anomalous pulmonary venous connection, the presence and severity of tricuspid regurgitation, the presence of AF, and the presence of adequate rim around the defect to close it percutaneously, especially the inferior rim. However, published data remain conflictual. In a study published by Du *et al*. [17], there was no statistical difference in the early, primary and secondary efficacy success rates for surgical versus device closure of ASD. In addition, based on our personal experience, the increased surgical expertise makes decision-making easier, in light of a high success rate for surgery, especially that 50% (7/14) of patients who underwent repair had AF.

In our observation, patients who had AF were older than 60 years (Group IV). A study published by Webb *et al*. [7] demonstrated that AF and flutter are an age-related reflection of atrial dilation and stretch. Therefore, they rarely appear below the age of 40 years [7]. Moreover, the correction of an ASD late in life did not significantly reduce the development of AF or the morbidity associated with thrombo-embolic complications [9]. Therefore, patients should regularly follow up for potential arrhythmias in order to prevent or reduce the rate of cerebrovascular complications.

Finally, TTE with color Doppler remains the mainstay of diagnosis. However, TEE may be useful to confirm the type of ASD and to delineate the pulmonary venous return. It is also commonly used in support of device closure of ASDs [7]. TEE provides a better appreciation of cardiac anatomy and hemodynamic evaluation than TTE in patients with ASD [18,19].

Limitations

Despite the accurate analysis and description, our study should be viewed in light of two major limitations.

First, the analysis did not include other modalities for closure such as endovascular devices and percutaneous transcatheter interventions.

Second, despite the excellent outcome of surgery and the reported improvement in symptoms as compared to patients on medical therapy alone, patients were followed up for two years. In addition, there have been no available objective data presented on the follow-up. Hence, there is no actual supporting data describing their NYHA functional class, the presence or absence of AF, the presence or absence of recurrent cerebrovascular events, or follow-up echocardiographic findings.

CONCLUSIONS

OSASD is one of the most frequent congenital heart diseases in adults. Patients become symptomatic with age. Diagnosis is essential as closure of ASD increases the survival rate. Surgical or transcatheter closure can be performed without the need for invasive diagnostic evaluation if satisfactory results are obtained with TTE or TEE. Our study proved that surgical closure can be performed at any age, as long as it is safe for the patient, and provides better outcome than medical treatment.

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ARTICLE ORIGINAL / ORIGINAL ARTICLE

PUBLIC PERCEPTION OF ANESTHESIA AND ANESTHESIOLOGISTS' ROLE IN LEBANON

http://www.lebanesemedicaljournal.org/articles/67-2/original2.pdf

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Tohme J, Jabbour K, Gergess A, Haddad F, Hayek G, Yazbeck P, Sleilaty G, Madi-Jebara S. Public perception of anesthesia and anesthesiologists' role in Lebanon. J Med Liban 2019 ; 67 (2) : 70-75.

ABSTRACT • Background : Public awareness of anesthesiologists' different roles in hospital departments remains problematic despite professionals' efforts worldwide. **Objective :** To assess public's understanding of anesthesia, in a large teaching hospital and among premed students in Lebanon. **Design:** Prospective survey. **Setting :** Preoperative anesthesia clinic in a large Lebanese University Hospital / A large Lebanese School of Medicine. **Measurements:** Patients and premedical students completed a standardized questionnaire which was later evaluated statistically. **Population:** 782 patients seen in the preanesthetic clinic and 144 premed students (1st to 3rd year) completed the questionnaire in a 7-week period between May and June 2017. **Results:** Overall 15.9% of patients and 36.1% of students were never exposed to anesthesia. The anesthetist wasn't perceived to be a physician by 11.9% of the respondents. Patients and medical students tended to underestimate the number of years necessary to become a certified anesthesiologist, with only 15% of patients and 58% of premed students answering correctly. Response to this question among patients was statistically associated with a higher income, higher educational level and having a physician as a family member. While most of subjects (> 80%) asserted the anesthesiologists' responsibility during surgery to administer drugs, they were relatively fewer (60%) to acknowledge anesthesiologists' responsibility of monitoring vital signs perioperatively. Moreover, awareness of postoperative tasks is decreased and is differential between patients and students. Around 88% of subjects were interested in getting more information about anesthesia techniques and side effects; but fewer were interested in postoperative analgesia. More than half of the subjects preferred general to loco-regional anesthesia and what they feared most was not waking up after surgery. **Conclusion:** While the majority of subjects correctly identified the anesthesiologist as a medical doctor, his roles are drastically underestimated, even by future medical doctors. Anesthesiologists' responsibilities need to be communicated to promote the importance of their work.

Keywords : anesthesia; survey; awareness

Tohme J, Jabbour K, Gergess A, Haddad F, Hayek G, Yazbeck P, Sleilaty G, Madi-Jebara S. La perception de l'anesthésie et du rôle de l'anesthésiste par le public libanais. J Med Liban 2019 ; 67 (2) : 70-75.

RÉSUMÉ • Contexte : Une importante confusion existe dans le monde entier quant au rôle du médecin anesthésiste et à la perception de l'acte anesthésique dans les services intrahospitaliers, malgré les efforts déployés mondialement par les experts. **Objectif :** Évaluer la perception de l'anesthésie par le public libanais dans un grand hôpital universitaire et par les étudiants en médecine. **Design:** Enquête prospective. **Setting :** Clinique d'anesthésie préopératoire dans un grand hôpital universitaire/Une grande faculté de médecine. **Outils de mesure :** Patients et étudiants ont complété un questionnaire standardisé qui a été par la suite évalué statistiquement. **Population :** 782 patients vus en clinique de consultation d'anesthésie préopératoire et 144 étudiants (1re-3e année de médecine) ont complété le questionnaire au cours de 7 semaines de mai à juin 2017. **Résultats :** 15,9% des patients et 36,1% des étudiants n'avaient jamais été exposés à l'anesthésie. L'anesthésiste n'était pas perçu comme médecin par 11,9% des répondants qui avaient tendance à sous-estimer le nombre d'années nécessaires pour devenir anesthésiste certifié : 15% de patients et 58% d'étudiants ont répondu correctement. Chez les patients, la réponse correcte était statistiquement associée à des revenus et un niveau d'éducation plus élevés et à la présence d'un médecin dans leur famille. Bien que la plupart des sujets (> 80%) aient affirmé qu.administrer les médicaments en peropératoire était la responsabilité des anesthésistes, seuls 60% leur reconnaissaient la responsabilité de surveiller les signes vitaux en peropératoire. La connaissance des tâches postopératoires de l'anesthésiste était moins importante avec une différence significative entre patients et étudiants. Environ 88% des sujets étaient intéressés à obtenir plus d'informations concernant les techniques et effets secondaires de l'anesthésie mais moins l'étaient par l'analgésie postopératoire. Plus de 50% des sujets préféraient l'anesthésie générale à l'anesthésie locorégionale et ce qu'ils redoutaient le plus était de ne pas se réveiller en postopératoire. **Conclusion :** Bien que la majorité des sujets aient correctement identifié l'anesthésiste comme étant médecin, les rôles de ce dernier demeurent considérablement sous-estimés, même par de futurs médecins. Il est fondamental de communiquer les fonctions des anesthésistes afin de promouvoir l'importance de leur travail.

Mots-clés : anesthésie; enquête; sensibilisation

INTRODUCTION

Anesthesiology was introduced to the nonmedical world as a medical discipline at the 1939 New York World's fair [1,2]. Despite its evolution which enabled the progress of surgery, public awareness of the anesthesiologists' different roles in hospital departments is still problematic [3]. Lay people seem to have very limited knowledge about anesthesia, may misunderstand the training of anesthesiologists [4], are unaware of what anesthesiologists do in the operating rooms (OR) and increasingly outside the OR [5,6].

The late exponential growth of media, may have increased public awareness of health related issues and

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healthcare professionals' roles [3], but few were the articles [5,7-9] in the last decade to address public awareness about anesthesiology and evidence from the Middle East and the developing world is scarce [4,10]. To our knowledge, there are no published reports from Lebanon regarding public perception about anesthesia and anesthesiologists' role.

The current study was designed to assess the public understanding of anesthesia and the anesthesiologists' role in a large teaching hospital and among premed students in Lebanon

MATERIAL AND METHODS

This study was approved by the Ethics Committee of Saint Joseph University (CEHDF 982, chairman Professor Georges Halaby). Between May and June 2017, a self-administered structured questionnaire was handed systematically to all adult patients in the waiting room of the preoperative anesthetic clinic (POAC) of Hôtel-Dieu de France Hospital, one of the largest university hospitals in Beirut. With more than 11,000 operations per year, including cardiac surgery, the hospital hosts a pain clinic, postoperative and cardiovascular intensive care units (ICU), imaging services, cardiac catheterization, endoscopy, and a POAC, all involving anesthesiologists performing more than 4000 acts per year outside the OR.

The first part of the questionnaire (Appendix 1) consisted of questions related to demographics such as gender, age, marital status, nationality, educational level and monthly income. Participants were then queried about previous exposure to anesthesia and about having a doctor as a family member. The second part consisted of questions aiming to determine participants' knowledge about anesthesia and anesthesiologists, and their willingness for more preoperative information about anesthesia (its techniques and side effects) and postoperative analgesia, and finally, their concerns about anesthesia.

To test whether the low awareness level was so widespread as to affect premed students, the same questionnaire was distributed during the same period to undergraduate medical students (First to third year) enrolled at Saint Joseph University school of medicine for the 2016-2017 academic year, which in the American system corresponds to students of the premedical program. Selection of this group of medical students ensured their being naïve about anesthetic discipline since the latter is taught from the fourth medical year onward. Students were queried about their year of education instead of monthly income. The collected information was anonymized to maintain confidentiality of the respondents.

Categorical data were presented as percentages. Separate analyses were conducted for medical students and for patients scheduled for anesthesia consulting for they were deemed structurally heterogeneous.

Association between categorical data were assessed using the chi-square (χ^2) statistic, with post hoc analyses adjustments using the Bonferroni method. When applicable, odds ratios with 95% confidence intervals were used. All tests were 2-sided.

RESULTS

Of the total 950 adult patients who presented to the POAC during the study period, 782 (82.3%) completed the survey and were eligible for analysis. Male to female ratio (M/F) was 1.33. Patients' demographic characteristics are presented in Table I. Overall, 15.9% of the patients were naïve to anesthesia, 21.7% were exposed to anesthesia once, and 62.4% more than once. Half the patients

TABLE I

PATIENTS' DEMOGRAPHIC CHARACTERISTICS

Demographics	Percentage
Age (years)	
18 - 24	7.1
25 - 44	32.6
45 - 64	39.5
≥ 65	20.8
Marital Status	
Single	22.8
Married	68.4
Divorced	2.3
Widow	6.5
Area of Residence	
Bekaa	6.4
Mount Lebanon	40.3
Beirut	28.6
North Lebanon	12.6
South Lebanon	10.4
Abroad	1.6
Educational Level	
None	2.6
Elementary School	12
Secondary School	25.3
University	52.6
Technical Qualifications	7.5
Monthly Income	
None	4.7
< 500$	11
500 - 1000$	29.2
1000 - 3000$	41.4
3000 - 10 000$	10.3
≥ 10 000$	3.4

(50.4%) reported having a physician in their family.

Out of the 268 eligible medical students, 144 completed the survey (53.7%) with an M/F ratio of 1.29. Medical students were never exposed to anesthesia in 36.1% of the cases, 37.5% were exposed once, and 26.4% more than once. Pre-anesthesia consultation was considered to be mandatory by 96.2% of the patients, and their preference to have in the OR the same anesthesiologist they met in the POAC was expressed by 98.2% of them. The anesthetist was not perceived to be a physician by 11.9% of the respondents, considered to be a nurse by 1.3%, the remaining 10.6% being undecided, and 17.6% of the patients are not aware of the anesthetist's leading role in the POAC. The patients tended to underestimate the number of years following high school to become a certified anesthesiologist. The figures for medical students are also depicted in Table II.

Table III depicts the preeminent role of the anesthesiologist during surgery as understood by the patients and the medical students, showing roughly similar conceptions. However, the awareness of postoperative tasks decreases differently between patients and medical students, as shown in Table IV.

TABLE II

ESTIMATION OF THE TIME REQUIRED TO BECOME A CERTIFIED ANESTHESIOLOGIST FOLLOWING HIGH SCHOOL ACCORDING TO PATIENTS & MEDICAL STUDENTS

	Patients	Medical Students
Number of years following high school to become a certified anesthesiologist (%)		
3 years	13.7	7.6
9 years	31.8	25.7
12 years	15.3	58.3
I don't know	39.2	8.4

TABLE III

UNDERSTANDING THE ROLE OF THE ANESTHESIOLOGIST CONCERNING DRUG ADMINISTRATION & VITAL SIGNS MONITORING

	Patients	Medical Students
During surgery, drugs are administered by (%)		
The anesthesiologist	87.5	88.2
The nurse	3.4	4.9
The surgeon	0.8	2.8
I don't know	8.3	4.2
Vital signs are monitored by (%)		
The anesthesiologist	59.5	62.9
The nurse	12.7	23.8
The surgeon	10.1	9.8
I don't know	16.8	3.5

Willingness to get more information on anesthesia techniques and their side effects was expressed by the majority of patients (90%) and medical students (85%). Less subjects put emphasis on getting information on postoperative analgesia (79.7% and 68.3% respectively, Table V). Of notice, more than half of the subjects prefer general anesthesia to loco-regional anesthesia (56.7% and 57.7% respectively).

Figure 1 summarizes the top fears of patients and medical students, showing a similar pattern. The patients who correctly identified the curriculum length of anesthesiology had significantly a higher income, a higher educational level and a physician as a family member ($p < 0.0001$ for all 3 fact comparisons). The latter two factors were also significantly associated with the identification of anesthesiologists as medical doctors ($p < 0.0001$ and $p = 0.012$ respectively).

Recognizing the anesthesiologist's postoperative role was significantly associated with having a physician in the family ($p = 0.001$). Of notice, patients living in rural area tended to be less aware of the anesthesiologist's role

TABLE IV

UNDERSTANDING THE ROLE OF THE ANESTHESIOLOGIST AFTER SURGERY & OUTSIDE THE OPERATING ROOM

	Patients	Medical Students
Does the anesthesiologist have a role at the end of surgery? (%)		
Yes	82.6	72.7
No	8.2	16.1
I don't know	9.2	11.2
Does the anesthesiologist have a role outside the operative room? (%)		
Yes	49.7	61.5
No	27	18.9
I don't know	23.3	19.6
Is the anesthesiologist responsible at the intensive care unit? (%)		
Yes	24.9	42
No	75.1	58
Is the anesthesiologist responsible of pain clinics? (%)		
Yes	23.3	43.2
No	76.7	56.8
Is the anesthesiologist responsible of resuscitating cardiac arrest? (%)		
Yes	29.7	34.1
No	70.3	65.9
Is the anesthesiologist responsible of the preoperative anesthetic clinic? (%)		
Yes	82.4	83
No	17.6	17

in pain clinics (p = 0.078). Concerns about waking up during surgery were significantly higher among young patients aged 18 to 24 years (p = 0.019).

Advanced educational year of medical students was significantly associated with their perception of the anesthesiologist's role in monitoring vital signs during surgery (p = 0.015), the anesthesiologist's role in the ICU (p = 0.01), and in managing cardiac arrest (p = 0.005).

DISCUSSION

Most of the patients in the current survey recognized that preanesthesia consultation is mandatory (96.2%) and identified the anesthesiologist as a medical doctor (88.1%), which is consistent with the latest literature [4-5,9]. However, the length of studies following high school to become a certified anesthesiologist was greatly underestimated by respondents with only 15.3% of correct answers, a finding consistent with that of Gottschalk *et al*. [5]. Surprisingly, this information was known to only half of the medical students, and a quarter of them considered that two years of residency are sufficient to become anesthesiologist.

While most of the patients and medical students asserted the anesthesiologists' responsibility during surgery to administer drugs, they were relatively fewer to acknowledge the anesthesiologists responsibility of monitoring vital signs perioperatively, wrongly attributing this role to nurse anesthetists according to 25% of medical students, a figure corroborating previous studies [9,11].

The perception of the anesthesiologist's role outside the OR is vaguely defined for half of the patients, and is even worse when accounting for pain clinics, ICU, or when resuscitating a cardiac arrest. There appears to be no improvement compared to earlier surveys [5-6,9,12).

TABLE V

THE IMPORTANCE OF BEING INFORMED OF ANESTHESIA TECHNIQUE, ITS SIDE EFFECTS AND POSTOPERATIVE ANALGESIC TECHNIQUES ACCORDING TO PATIENTS & MEDICAL STUDENTS

	Patients	Medical Students
Is it important to be informed of the anesthesia technique? (%)		
Yes	90.7	85.3
No	9.3	14.7
Is it important to be informed of all side effects related to anesthesia? (%)		
Yes	94.7	89.5
No	5.3	10.5
Is it important to be informed of postoperative analgesic techniques? (%)		
Yes	79.7	68.3
No	2.3	31.7

Despite relatively higher percentages of correct answers among medical students, the figures are far from being satisfactory and translate widespread misinformation even among the young and the educated.

Both patients and medical students exhibited unanimous curiosity about anesthesia techniques and their side effects, yet they were fewer to inquire about postoperative analgesia. One possible interpretation resides in the residual cultural image of postoperative pain as an inherent component of the reality of the surgical act, a part of the healing process that needs to be endured, as described by Hume *et al*. [13].

Miscellaneous concerns of patients and medical students were revealed in the survey, among them fear of not waking up after surgery, fear of waking up during

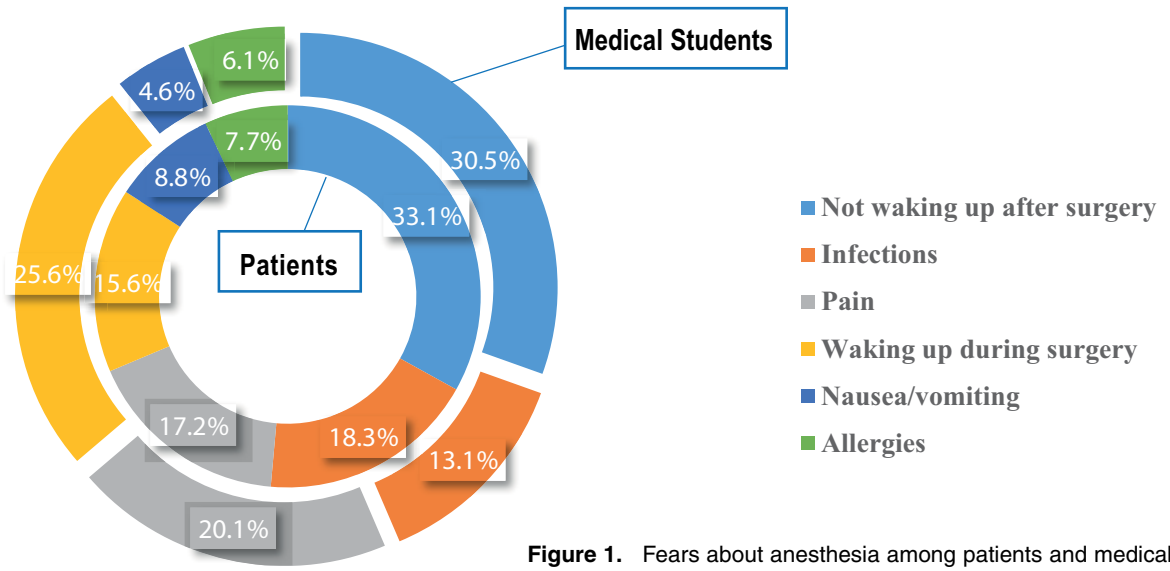

Figure 1. Fears about anesthesia among patients and medical students

surgery, mainly in those aged between 18 and 24 years and among medical students which are consistent with other studies [2,7,14].

Finally, better knowledge among patients was correlated with having a physician in the higher income, geographical residence, higher educational level, corroborating other studies [3,8]. Unlike the study by Braun *et al*. [9], the number of previous surgeries is not correlated with better knowledge [in the current study].

One limitation of the current study is its monocentric character. However, given the high volume of patients, their wide geographical origin, the tertiary character of the hospital, the diversity of the performed surgical procedures, the relative impact of this factor is mitigated. Another limitation is its exclusive reliance on patients addressed for POAC, who presumably have had contact with and had been referred by health care professionals. Their knowledge, although partial, may be relatively more informed than the wide public, thus true perception of the anesthesiologist's role could be even worse. In favor of this interpretation is the relatively similar level of knowledge among medical students. Third, no statistical comparison was sought between the patients and the medical students. This approach is justified since the groups are structurally heterogeneous, which renders any statistical comparison flawed.

CONCLUSION

While the majority of subjects correctly identify anesthesiologists as medical doctors, their roles in and outside the OR are drastically underestimated and are vaguely perceived, even by future medical doctors. Roles and responsibilities of anesthesiologists need to be efficiently and widely communicated to promote the importance of the anesthesiologist's work.

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APPENDIX 1

1. Gender

☐ Female ☐ Male

2. Age

☐ 18 – 24 years old ☐ 45 – 64 years old ☐ 25 – 44 years old ☐ ≥ 65 years old

3. Marital Status

☐ Single ☐ Divorced ☐ Married ☐ Widow

4. Nationality

☐ Lebanese ☐ Other, precise

5. Last level of schooling attained

☐ None ☐ Primary School ☐ Secondary school ☐ University ☐ Technical qualification

6. Monthly income

☐ < 500 $ ☐ 500 – 1000$ ☐ 1000 – 3000 $ ☐ 3000 – 10 000 $ ☐ > 10 000 $

7. Have you ever had anesthesia before? (one answer only)

☐ No, never ☐ Yes, one time ☐ Yes, more than once

8. Is one of your family members a doctor?

☐ Yes ☐ No

9. According to you, the anesthesiologist is a (one answer only)

☐ Doctor ☐ Nurse ☐ I don't know

10. According to you, how long after high school does it take to be an anesthesiologist? (one answer only)

☐ 3 years ☐ 9 years ☐ 12 years ☐ I don't know

11. According to you, who will administer the anesthetic drugs? (one answer only)

☐ The anesthesiologist ☐ The nurse ☐ The surgeon ☐ I don't know

12. According to you, who will monitor your well-being (keep vital signs) during surgery? (one answer only)

☐ The anesthesiologist ☐ The nurse ☐ The surgeon ☐ I don't know

13. According to you, does the anesthesiologist have a role at the end of the surgery?

☐ Yes ☐ No ☐ I don't know

14. According to you, does the anesthesiologist have a role outside the operating rooms?

☐ Yes ☐ No ☐ I don't know

15. If yes, what are the anesthesiologist's functions outside the operating rooms? (one or multiple answers)

☐ He is responsible of the intensive care units
☐ He manages pain clinics
☐ He's in charge of resuscitating patients in cardiac arrest
☐ He is responsible of pre-operative anesthesia consultation

16. According to you, is preoperative anesthesia consultation mandatory?

☐ Yes ☐ No ☐ I don't know

17. According to you, is it important to meet, before your surgery, the anesthesiologist who will take care of you during surgery?

☐ Yes ☐ No

18. According to you, is it important to be informed of the anesthesia technique that will be performed?

☐ Yes ☐ No

19. According to you, is it important to be informed of all the side effects of the anesthesia?

☐ Yes ☐ No

20. According to you, is it important to be informed of the postoperative analgesic techniques?

☐ Yes ☐ No ☐ I don't know

21. If both are possible, you would rather be

☐ Awake under regional/local anesthesia
☐ Asleep under general anesthesia

22. Which of the following worries you the most? (one answer only)

☐ Waking up during surgery
☐ Developing allergies to anesthetic drugs or antibiotics
☐ Pain immediately after surgery
☐ Failure to wake up after surgery
☐ Nausea and vomiting after surgery
☐ Developing infection after surgery

ARTICLE ORIGINAL / ORIGINAL ARTICLE

PERCEPTION OF FINAL YEAR MEDICAL STUDENTS OF THE VALUE OF AN INNOVATIVE AUDIOVISUAL PRODUCTION ON COMMUNICATING WITH PSYCHOLOGICALLY DISTRESSED PATIENTS

http://www.lebanesemedicaljournal.org/articles/67-2/original3.pdf

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Saab B, Makarem N. Perception of final year medical students of the value of an innovative audiovisual production on communicating with psychologically distressed patients. J Med Liban 2019 ; 67 (2) : 76-79.

ABSTRACT • Background : Psychological distress is common in primary care. Primary care physicians tend to miss around 50% of patients with mental health issues. Proper communication with psychologically distressed patients (PDP) decreases morbidity and mortality. The aim of this paper is to examine the acceptability of medical students to an audiovisual package on communicating with the PDP. **Methods :** The department of Family Medicine at the American University of Beirut Medical Center (AUBMC) developed two scenarios to train medical students and other health professionals on how to communicate properly with PDP. An anonymous feedback of fourth year medical students on this work was obtained using a Likert scale questionnaire as well as response to open and closed questions. **Results :** Of the eighty-nine students who attended the workshop, eighty-two completed the questionnaire (92% response rate). The majority of the students who watched this work rated highly this educational tool. Eighty-four percent of the students reported that they gained four or more ideas that can help in communicating with PDP. **Conclusions :** Eighty-four percent of last year medical students reported to have gained four or more new ideas to deal with PDP after reviewing the innovative audiovisual package. Further research to prove its efficacy in diagnosing and managing PDP is underway.

Keywords : psychological distress; depression; anxiety; communication skills; primary care; family medicine

Saab B, Makarem N. Évaluation par des étudiants en dernière année de médecine d'une production audiovisuelle innovante traitant de la communication avec des patients psychologiquement en détresse. J Med Liban 2019 ; 67 (2) : 76-79.

RÉSUMÉ • Contexte : La détresse psychologique est fréquente dans les premiers soins. Les médecins généralistes ont tendance à ne pas la discerner chez environ 50% des patients ayant des problèmes psychiatriques. Une bonne communication avec les patients en détresse psychologique (PDP) dimi-nue la morbidité et la mortalité. Le but de cet article est de tes-ter l'acceptabilité des étudiants d'une production audiovisuelle innovante avec des patients psychologiquement en détresse. **Méthodes :** Le département de médecine familiale du Centre médical de l'Université américaine de Beyrouth (AUBMC) a mis au point deux scénarios pour former les étudiants en médecine et autres professionnels de santé à la communication avec les patients en détresse psychologique. Un retour anonyme des étudiants en médecine de 4e année sur ce travail a été obtenu à l'aide d'un questionnaire à l'échelle de Likert, ainsi que des réponses à des questions ouvertes et fermées. **Résultats** : Quatre-vingt-deux des 89 étudiants ayant assisté à l'atelier ont répondu au questionnaire (taux de réponse : 92%). La majorité de ceux ayant visionné ce travail ont attribué une note élevée à cet outil d'apprentissage; 84% d'entre eux ont déclaré avoir acquis quatre idées ou plus pouvant aider à la communication avec les patients en détresse psychologique. **Conclusions**: Quatre-vingt-quatre pour cent des étudiants en dernière année de médecine ont déclaré avoir acquis au moins quatre nouvelles idées de traitement de PDP après avoir examiné cette production audiovisuelle innovante. Des recherches supplémentaires pour prouver son efficacité dans le diagnostic et la gestion des patients en détresse psychologique sont en cours.

Mots-clés : détresse psychologique; dépression; anxiété; compétences en communication; premiers soins; médecine de famille

BACKGROUND

Around 30% of medical visits to family physicians are classified as difficult encounters [1]. Mental health problems are prominent contributors to such difficulty. The WHO 2015 Global Health Observatory estimated that one in 10 people in the world suffer from a mental disorder [2].

In the US, 8.4% of 46,417 adults screened positive for depression of which only 28.7% received treatment [3]. Data from the Middle East reveals a high prevalence of psychiatric morbidity in primary health clinic attendees [4-7].

Mental health has a substantial effect on a person's health. Psychological distress contributes to the development of chronic diseases including metabolic disorders, cardiovascular disease, pulmonary disease, and gastrointestinal disorders [8-10].

Unfortunately, mental disorders in primary care still go unrecognized. Delay in diagnosis leads to significant morbidity, mortality, and higher service utilization [11]. The challenges that primary care physicians face in identifying and dealing with psychologically distressed patients (PDP) are many. Patients with mental health

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problems presenting to primary care physicians are less likely to have severe symptoms compared to those going directly to psychiatrists. Usually these are patients with no known previous psychiatric history and what makes their diagnosis more elusive is that they usually present with physical symptoms [12]. Furthermore, during the medical encounter, the primary care physician has to focus on several issues like acute medical complaints, managing known medical problems, prevention, as well as checking patient compliance to medical care; all of which are done within a limited time frame [13,14].

The aim of this paper is to examine the acceptability of medical students regarding an audiovisual package on communicating with the PDP.

METHODS

Setting and students

The American University of Beirut (AUB) is a privately funded institution. Students spend four years in the medical school after obtaining a bachelor degree and before enrolling in a specialty program.

Six to eight 4th year medical students rotate each block (4 weeks) in the Department of Family Medicine (DFM). During this block the students attend a session on communicating with the PDP.

The information was gathered between June 2014 and May 2015. This workshop is facilitated by the same family physician.

Description of the audiovisual material

The video material (intervention tool) was ready in June 2015. The scenarios depict two different common mental health problems witnessed in primary care. The script was reviewed by a psychologist, a psychiatrist and two patients. The actors included one medical student, two family medicine residents, as well as a standardized patient at the DFM.

The scenarios were recorded in Arabic with English subtitles and are paused at several points allowing the audience to comment. Each scenario is followed by a commentary that is presented by one family physician. The commentaries highlight communication skills pertinent to interviewing a PDP (Table I). The total duration of the recorded material is 23 minutes and 34 seconds.

The first case describes an elderly patient with the chief complaint of weight loss and who had lost his wife few months ago. The patient is reluctantly brought in by his daughter to see a primary care physician. By failing to adopt the bio-psycho-social model and missing non-verbal clues, the physician misses the diagnosis of depression and ends up ordering unnecessary and costly blood tests and imaging studies.

The second scenario describes a university student who is presenting with shortcoming in his academic performance due to anxiety complicated by depression.

The physician in this case succeeded in establishing a good rapport with the patient and was able to explore the patient's perspectives and beliefs (patient-centered approach). Unlike the physician in the first scenario, the physician in this clip adopted the bio-psycho-social model, which along with a detailed history and physical exam, led to the correct diagnosis without ordering unnecessary tests. The physician properly addressed emotions by naming the feeling, showing understanding and respect, as well as supporting and empathizing with the patient. The physician explained the body-mind relation using a visual aid to demonstrate the cause of the symptoms and to improve compliance to prescribed medications. Furthermore, the physician set realistic goals for the treatment plan and was sensitive to the patient's financial capabilities when addressing medications.

The project was financed by a restricted fund for the Communication Skills Working Group at the AUB. The scenarios, which are based on real encounters, were put by the editor of this work and were coedited by another family physician. (Link for script: http://staff.aub.edu.lb/~webcomm/psychdistressedp.pdf)

Students' evaluation

By the end of each session, the students were asked to fill an anonymous questionnaire to be handed back to an honest broker.

The survey consisted of five items on a 5-point Likert scale ranging from poor (1) to excellent (5). The items elicited students' awareness of the importance of communication skills in medicine as well as their opinions on the video quality, the idea of using audiovisual material in teaching communication skills for the PDP, the facilitator's role, and the overall course evaluation. Students were asked to indicate the number of useful new ideas they have received from the workshop and the effect of the session on their performance in communicating with PDP. Students were also invited to write their

TABLE I

SPECIFIC SKILLS IN COMMUNICATING WITH THE PSYCHOLOGICALLY DISTRESSED PATIENT

Adopt a bio-psycho-social approach
Use of the BATHE technique (background, affect, trouble, handling of problem, empathize)
Address emotions
Explore coping mechanisms
Set realistic goals/expectations
Explain body-mind relation using visual aid

TABLE II

SURVEY RESPONSES TO THE LIKERT SCALE QUESTIONNAIRE (NUMBER 82)

	Mean	Median	Mode	Standard Deviation
Awareness of importance of communication skills in medicine	4.7	5	5	0.50
Video quality	4.5	5	5	0.63
Video scenarios as a teaching tool	4.7	5	5	0.57
Facilitator's role	4.7	5	5	0.51
Overall course evaluation	4.7	5	5	0.52

Poor = 1-2 **Good** = 3-4 **Excellent** = 5

comments on what they liked most and least about the workshop and whether they think the workshop needs to be developed further, and if yes, then how.

Statistics

The data was analyzed by an honest broker using simple descriptive statistics.

RESULTS

The workshop lasted 60 minutes. Of the 97 students who were supposed to attend the workshop nine were absent or excused. Eighty-two students (93%) completed the questionnaire form of which 34 were females, 45 males, and 3 unspecified.

The feedback given by students on the Likert scale questionnaire is summarized in Table II. Eighty-four percent of the students acknowledged having received 4 or more useful new ideas from the session. The students had 15 and 4 different positive and negative comments, respectively. The response of students to what they liked most and least about the workshop is shown in Table III.

The majority of the students who commented on whether the workshop can be developed further indicated that "*it is good as it is*". Suggestions for improvement included adding more diverse scenarios, to have students write scenarios, and to publish the material on AUBMC website and YouTube.

Sixty-five students (79%) thought that the session will greatly improve their performance while communicating with a psychologically distressed patient. Only one student thought that the session will not be of any help.

DISCUSSION

This audiovisual material is unique as it addresses communication with the PDP, a common and important problem encountered in primary care. To the best of the authors' knowledge, such a work is the first of its kind to be reported.

Customized video clips were chosen over short scripts from traditional movies mainly to highlight as many communication skills concepts as possible within a limited time. This study builds on previous literature that suggests that medical students can learn by watching appropriate targeted video clips [15-18]. Students in small groups reported to have acquired several useful ideas that may be implemented in their practice. Patki and Puscas reported that review of realistic videos by residents in otolaryngology allows them to improve their communication skills [19]. In another study on nurses communicating with difficult patients, use of audiovisual material was believed to improve the confidence of the nurses in dealing with breaking bad news and dealing with patients with aggressive behavior [16].

Obviously, reflection on a video clip cannot replace an actual interaction with a patient. Objective structured

TABLE III

STUDENTS' RESPONSE TO WHAT THEY LIKED MOST AND LEAST ABOUT THE WORKSHOP

Liked Most
The video and comparison between two different scenarios.
It is really good.
The video gave new ideas and information to apply.
Realistic, helps in future patient encounters.
The topic and the discussion.
Interactive, videos are more effective in learning.
The videos were light and music was nice.
Facilitator makes it interesting.
Real-life, common scenarios.
Clear comparison between a good approach and a bad approach.
The comprehensive nature & style of introducing sensitive questions.
Actors performed well.
Open discussions - Ideas contributed by group.
Concise and useful.
Clear objectives.
Liked Least
Long scenarios.
Some repeat of the lecture in Med I and Med II.
Sound quality could be better.
Many pauses to comment.

clinical exam stations, however, that come closest to mimicking a real patient-doctor encounter, are prepared at a higher cost and require time investment from multiple faculty members, factors that are bypassed in the video clips presented here. Nevertheless, medical students watching this work are expected to adopt a bio-psycho-social approach and communicate better with psychologically distressed patients resulting in better detection and management of mental problems.

There were contradictory remarks by the students. Some thought the video was concise and requested a longer session with more diverse scenarios while others thought the session was long. This is natural considering the different interest of such a group in future specialization. One expects students interested in non-clinical specialties to have lower interest in communication skills.

During the session, some basic communication skills were highlighted. These skills were taught to medical students in their first medical year. Few students thought that this should not be repeated. We thought that reiterating basic skills is important to raise and build upon while teaching new skills.

The pauses were crucial to allow for interactive discussions that were appreciated by many students and discouraged by one. The interest in the work is reflected by the fact that the time for discussion was longer than the audiovisual material displayed.

As of the next academic year, the authors will request to have an hour and a half for this activity to allow time for more hands on. Future work is needed to examine the impact of this intervention on the students' skills. Preparation of the proposal for this task is underway.

CONCLUSIONS

The workshop was well accepted by last year medical students. Eighty-four percent reported to have gained four or more new ideas to deal with PDP after reviewing the audiovisual package. Seventy-nine percent of these students stated that their interviewing skills with PDP will improve. Further research to prove its efficacy in diagnosing and managing PDP is underway.

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ARTICLE ORIGINAL / ORIGINAL ARTICLE

PRÉSENTATIONS RARES DE LA MALADIE DE BEHÇET SÉRIE DE 190 CAS

http://www.lebanesemedicaljournal.org/articles/67-2/original4.pdf

Elie E. GHAYAD[1*], Elie M. GHAYAD[2]

Ghayad EE, Ghayad EM. Présentations rares de la maladie de Behçet : série de 190 cas. J Med Liban 2019 ; 67 (2) : 80-82.

RÉSUMÉ • Objectif : Mettre en évidence les manifestations rares de la maladie de Behçet dans une série de 190 malades. **Méthode :** Étude rétrospective des dossiers des malades suivis par le département de Médecine interne de l'Université Saint-Joseph de Beyrouth ainsi que ceux des malades suivis en consultation externe, diagnostiqués entre les années 1980 et 2010. **Résultats :** Les manifestations rares de la maladie de Behçet (fréquence < 5% dans les séries internationales) ont pu être classées en plusieurs catégories de tableaux cliniques en fonction du système d'organes concerné : manifestations neurologiques, cutanées, oculaires, articulaires, vasculaires, gastro-intestinales, urogénitales, néphrologiques, cardio-pulmonaires, ainsi que les présentations systémiques et les formes familiales et pédiatriques. **Conclusion :** Les présentations rares de la maladie de Behçet constituent des diagnostics différentiels complexes.

Mots-clés : Behçet (maladie de); manifestations rares.

Ghayad EE, Ghayad EM. Rare manifestations of Behçet's disease: a 190 case series. J Med Liban 2019 ; 67 (2) : 80-82.

ABSTRACT • Objective : To highlight the rare manifestations of Behçet's disease in a series of 190 patients. **Method**: Retrospective patients record study in the Department of Internal Medicine at Saint-Joseph University and outpatients diagnosed between 1980 and 2010. **Results**: The rare manifestations of Behçet's disease (frequency < 5% in international series) were classified in different categories according to the organ system involved: neurological, cutaneous, ocular, articular, vascular, gastrointestinal, urogenital, renal, cardiopulmonary manifestations, as well as systemic presentations and familial/pediatric cases. **Conclusion**: The rare manifestations of Behçet's disease represent a group of complex differential diagnoses.

Keywords : Behçet's disease; rare manifestations

INTRODUCTION

La maladie de Behçet est une vasculite avec atteinte multisystémique.

L'aphtose bipolaire (orale et génitale), les atteintes cutanées (érythème noueux, pseudo-folliculite, lésions papulo-pustuleuses), oculaires (uvéite antérieure, postérieure ou pan-uvéite), articulaires (mono- ou oligoarthrites inflammatoires non érosives) et veineuses (surtout thromboses superficielles et profondes des membres inférieurs) en constituent les manifestations les plus fréquentes [1,2].

Dans notre série de 190 malades porteurs de la maladie de Behçet, nous avons décidé de relever les présentations cliniques rares, définies par une fréquence < 5% dans les séries internationales [1-2].

MÉTHODES

Il s'agit d'une étude rétrospective portant sur les dossiers des malades suivis par le département de Médecine interne de l'Université Saint-Joseph de Beyrouth, Liban, ainsi que les malades suivis en consultation externe entre les années 1980 et 2010. Tous les dossiers ont été examinés pour cette étude et tous les malades répondaient aux critères diagnostiques du groupe d'étude international sur la maladie de Behçet [3].

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RÉSULTATS

Chez les 190 malades considérés pour l'étude, nous avons noté une légère prédominance masculine (sexe-ratio : 1.2).

L'âge moyen lors du diagnostic était de 32 ± 8 (30 ± 7 chez les hommes et 34 ± 8 chez les femmes ; $p = 0.04$).

Les présentations cliniques rares retrouvées, sortant du tableau classique, ont été classées dans les catégories suivantes:

1. **Neuro-Behçet (manifestations neurologiques)** [4-6]
   a. Présentation psychiatrique aiguë : 1 cas.
   b. Convulsions fébriles secondaires à une méningo-encéphalite : 1 cas.
   c. Vessie neurogène secondaire à une myélite transverse : 3 cas.
   d. Pseudotumeurs cérébrales récidivantes dans la période de post-partum : 1 cas.
   e. Accidents vasculaires cérébraux à répétition : 1 cas.
   f. Tableau ressemblant à une sclérose en plaques : 1 cas.

2. Manifestations cutanées [4,7-9]
a. Purpura non thrombocytopénique : 2 cas.
b. Aphtose cutanée (non buccale ou génitale) : 4 cas.
c. Lésions vésiculaires : 2 cas.
d. Ulcérations cutanées : 1 cas.

3. Manifestations oculaires [4,7-8]
a. Vasculite rétinienne :
- Thrombose de l'artère centrale de la rétine : 2 cas.
- Thrombose de la veine centrale de la rétine : 2 cas.
- Hémorragies rétiniennes : 1 cas.
b. Atrophie du nerf optique : 5 cas (dont 2 cas avec atrophie bilatérale)
c. Kératite : 1 cas.

4. Manifestations articulaires [4,7-8]
a. Polyarthrite : 7 cas.
b. Association avec spondylarthrite ankylosante : 1 cas.

5. Angio-Behçet (manifestations vasculaires) [4,7-9,10-13]
a. Syndrome de Budd-Chiari avec thrombose de l'oreillette droite : 1 cas.
b. Thrombose de la veine cave supérieure avec varices œsophagiennes en sens inverse (« downhill varices ») : 1 cas.
c. Pseudo-Takayasu avec sténose des artères sous-clavières : 1 cas.
d. Thrombose de la veine cave supérieure avec tableau de polysérosite : 1 cas.
e. Anévrysme de l'artère radiale : 1 cas.

6. Manifestations gastro-intestinales [4,7-9,14-16]
a. Ulcérations de l'œsophage : 1 cas.
b. Tableau pseudo-appendiculaire : 1 cas.
c. Rectorragie secondaire à un ulcère du côlon gauche : 1 cas.

7. Manifestations uro-génitales [4,7-8]
a. Épididymite : 2 cas.

8. Manifestations néphrologiques [4,7-9]
a. Syndrome néphrotique secondaire à une thrombose de la veine cave inférieure : 1 cas.
b. Hématurie avec bilan uro-néphrologique négatif : 1 cas.

9. Manifestations cardio-pulmonaires [4,7-9,17]
a. Épanchement pleural : 2 cas.
b. Péricardite : 1 cas.
c. Cardiomyopathie congestive primaire : 1 cas.
d. Fibrose pulmonaire interstitielle : 1 cas.

10. Présentations systémiques [4]
a. Forme de fièvre d'origine inconnue : 2 cas.
b. Association avec Syndrome de Sjögren : 1 cas.
c. Splénomégalie isolée sans thrombose veineuse : 2 cas.

11. Formes familiales [14,18-20]
7 cas familiaux dont une famille où la maladie a été retrouvée dans trois générations successives.

12. Behçet pédiatrique [4,7-9]
3 patients âgés respectivement de 8, 13 et 14 ans.

CONCLUSION

Les manifestations rares de la maladie de Behçet constituent un groupe intéressant de présentations cliniques, et sachant qu'elles sont exclues des critères majeurs et mineurs du diagnostic de la maladie, elles font donc partie d'un diagnostic différentiel complexe et multidisciplinaire.

Déclaration d'intérêts
Les auteurs ne déclarent aucun conflit d'intérêt.

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ARTICLE ORIGINAL / ORIGINAL ARTICLE

SCREENING CHILDREN FOR ABNORMAL ECGs IN LEBANESE SCHOOLS

http://www.lebanesemedicaljournal.org/articles/67-2/original5.pdf

Samer R. NASR[1], Nazih GHARIOS[2], Antoine TARABAY[3]

Nasr SR, Gharios N, Tarabay A. Screening children for abnormal ECGs in Lebanese schools. J Med Liban 2019 ; 67 (2) : 83-88.

ABSTRACT • Objectives : This study screens children in Lebanese schools for potentially lethal inherited arrhythmias. **Materials and Methods :** A total of 1412 electrocardiograms were performed in Lebanese schools (2012-2017) for eighth grade students. The electrocardiograms were performed by volunteers, and totally supported by Mount Lebanon Hospital. The interpretation of the electrocardiograms was done by a clinical cardiac electrophysiologist. **Results :** One potentially lethal case, highly suspicious for arrhythmogenic right ventricular cardiomyopathy, was identified. **Conclusion :** The prevalence of lethal inherited arrhythmias identified by a single ECG in asymptomatic children in Lebanese schools is low. The one life potentially saved was probably worth the effort.

Keywords : electrocardiogram; sudden death; screening; asymptomatic; schools

Nasr SR, Gharios N, Tarabay A. Dépistage d'électrocardiogrammes anormaux dans les écoles libanaises. J Med Liban 2019 ; 67 (2) : 83-88.

RÉSUMÉ • Objectifs : Cette étude évalue la prévalence d'anomalies électrocardiographiques avec critères de malignité chez les élèves d'écoles libanaises. **Matériel et Méthodes :** De 2012 à 2017, 1412 électrocardiogrammes ont été réalisés auprès d'élèves de EB8 (4e) par des volontaires de l'hôpital Mont-Liban. L'interprétation des électrocardiogrammes a été faite par un rhythmologue certifié. **Résultats :** Un seul électrocardiogramme très suspect pour dysplasie arrhythmogène du ventricule droit, pouvant entraîner la mort, a été identifié. **Conclusion :** La prévalence d'anomalies electrocardiographiques potentiellement malignes chez les élèves des écoles libanaises est faible. La vie potentiellement sauvée valait probablement les efforts déployés.

Mots-clés : électrocardiogramme; mort subite; dépistage; asymptomatique; écoles

INTRODUCTION

With the advent of social media, every case of sudden death creates sorrow and fear, not only for the relatives of the deceased, but to a large part of the Lebanese population, raising many questions about how to prevent sudden death in the young population.

The 12 lead echocardiogram (ECG) is one of the tools to detect channelopathies that predispose to sudden death syndrome. Population-based studies put cardiac origin at almost half of the identified causes of sudden cardiac deaths [1].

The American College of Cardiology [2], and the European Society of Cardiology [3] both question the cost effectiveness and the feasibility of large scale population-based ECG screening. It is understandable that countries with vast populations and centered health care will face a huge economic burden to tackle a similar issue, and it is possible that small countries with available health care access to most, might have an advantage in rare diseases.

We aimed to identify the rate of abnormal ECGs in Lebanese school children looking for inherited potentially lethal arrhythmias.

METHODS

The study started in 2012, and continued into 2017 with plan to continue for 10 years to collect as much data as possible.

The schools in Mount Lebanon area which had a school physician, were chosen. Letters were sent to the school administration to explain the purpose of the study (Appendix 1,2). After obtaining an agreement to perform the study from the school administration (Appendix 1, 2), a consent form was sent to the parents including an explanation of the process and the purpose of the study (Appendix 3).

Less than half of the schools and half of the parents in the consenting schools agreed to have the children screened.

The ECGs were obtained in two ways according to the preference of the schools.

We would either go to the school, or have buses bring the children to Mount Lebanon Hospital to have the ECGs performed as well as watching conferences about sudden death, cardiopulmonary resuscitation, cellular phones, smoking and drug abuse.

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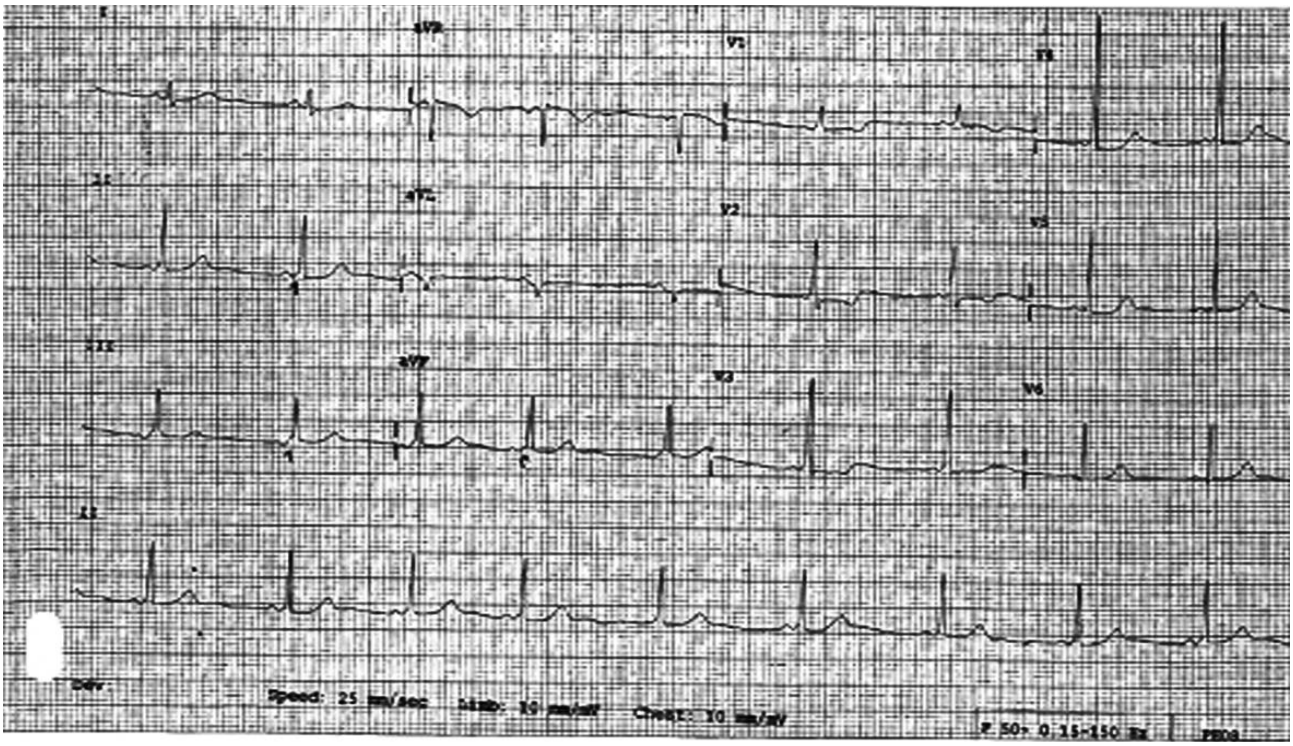

Figure 1. Asymptomatic Wolff-Parkinson-White syndrome (WPW)

The electrocardiographs were supplied by Mount Lebanon Hospital, and the personnel consisted solely of volunteers from our institution including doctors, nurses, nursing aids and medical secretaries.

No fees were required from the schools or the parents, and all expenses were handled by Mount Lebanon Hospital.

Eighth grade students were chosen randomly for practical reasons:

1. Old enough to cooperate.
2. No official examination at the end of the year.
3. Some sudden deaths might be prevented at this age rather than screening at high school age.

RESULTS

We collected a total of 1412 ECGs, and had the following findings:

1. Long QT: zero.
2. Type 1 Brugada: zero.
3. Congenital AV block: zero.
4. Short QT: zero.
5. ECG suggestive of HOCM (hypertrophic obstructive cardiomyopathy): zero.
6. WPW: 1.
7. PVC's RVOT type (premature ventricular contraction of right ventricular outflow tract): 3.
8. PVC's of non RVOT type: 1.
9. Borderline ECGs: 10.
10. T wave inversion all over the precordium: 1.

One girl with asymptomatic WPW (Figure 1), was ablated because she was a professional swimmer.

Another girl had an ECG very suspicious for ARVC (Figure 2). The school nurse contacted the parents. We had a meeting with the family and performed a clinical family tree that identified a first degree cousin with unexplained sudden death.

The cardiac magnetic resonance imaging (CMR) of this child showed one minor criteria for ARVC and was repeated in 2018.

The borderline ECGs were repeated later with referral to a pediatrician cardiologist and all came back with normal work-up.

DISCUSSION

Should young schoolchildren be screened for sudden cardiac death? What does my child's abnormal ECG mean ?

Questions we tried to understand by performing our study. It is very reassuring when the electrocardiogram is normal. When the ECG is obviously abnormal, even if you detect only one in 1400 children screened, it is certainly rewarding.

What makes ECG screening difficult in the asymptomatic child are those borderline ECGs that lead the physician down the road of multiple nonspecific costly

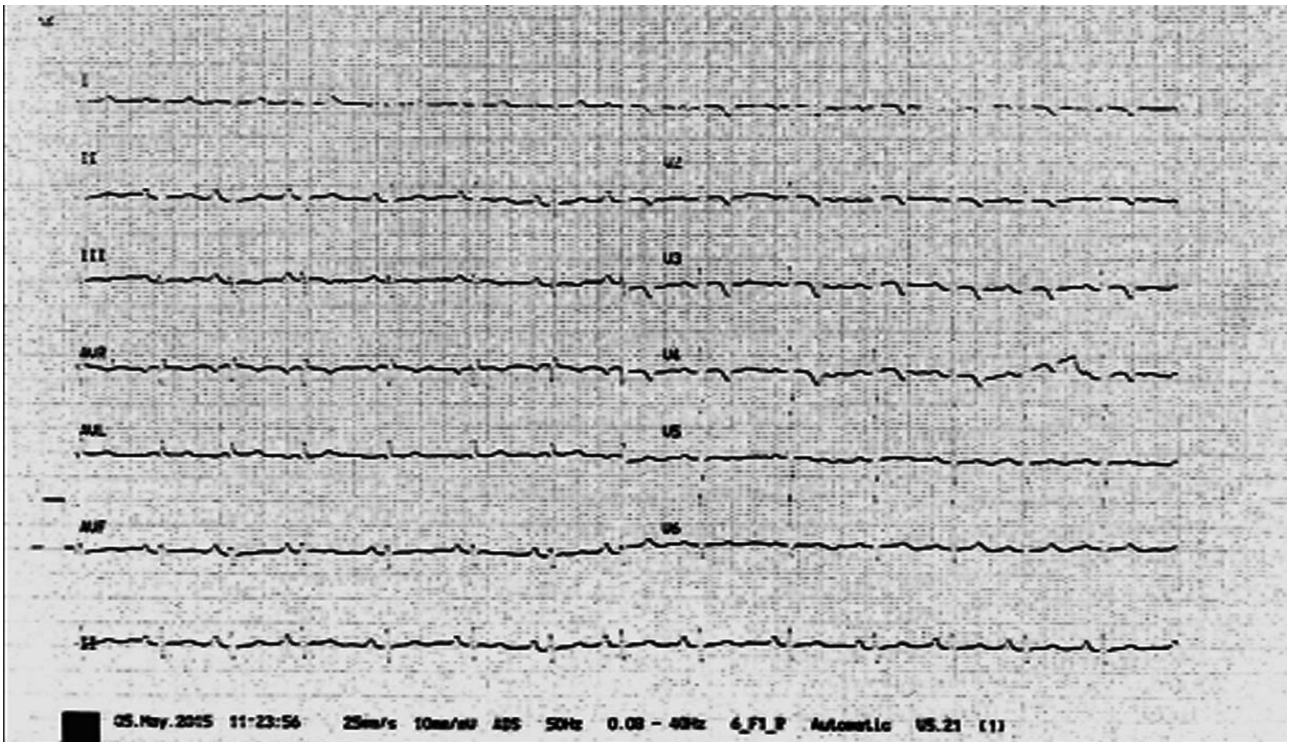

Figure 2. ECG very suspicious for arrhythmogenic right ventricular cardiomyopathy (ARVC)

testing, and send the family into a cycle of life-ruining anxiety.

The European and American societies of cardiology came up with guidelines relating to the athlete's ECG. The percentage of false positive ECGs is still high, around 10% [4].

The low specificity of the ECG in the hands of most experienced cardiologists using the best known criteria is the main problem we face when trying to screen asymptomatic populations.

A large population-based work in the UK, looking for the outcomes of cardiac screening in adolescents soccer players, found that the incidence of sudden cardiac death was 1 per 13794 person years, or 6.8 per 100000 athletes; most of these deaths were due to cardiomyopathies that had not been detected on screening [5].

But two deaths were potentially prevented performing screening in athletes in the same trial.

A simple, non costly, no time consuming or anxiety generating screening test for sudden cardiac death doesn't exist. We have to rely on the tools we have and that we need to perfect. Using artificial intelligence to improve ECG specificity is possible and may be applicable in the near future.

The ECG remains a simple non invasive test and with all its flaws can be helpful in initiating a process that certainly needs to be refined, to prevent a sudden death in a child who might live a long life.

CONCLUSION

In 1412 ECGs, one was suspicious for inherited channelopathy, and one WPW was identified.

Fortunately the rate of anomalies in random ECG in school children is very low.

This does not mean that random ECGs are not useful. It all depends on how much we are willing to invest as a community in identifying a child at risk of sudden death.

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ANNEXE 1

Beyrouth, Le 20/05/2016

Monsieur Le Directeur Kanaan Tarchichi
Directeur du Collège des sœurs Antonines -Jamhour

Sujet : Recherche d'Anomalie Cardiaque et Etude statistique sur des adolescents.

Cher Monsieur Tarchichi,

Le département de recherche de l'Hôpital Mont Liban entame une étude pour évaluer l'incidence des électrocardiogrammes anormaux chez les adolescents (13 – 14 ans).
Certaines anomalies électrocardiographiques pourraient être totalement asymptomatiques mais être aussi un marqueur d'un risque élevé de mort subite.
Les autorités de Santé publique à travers le monde sont divisées sur l'opportunité d'un tel dépistage systématique par électrocardiogramme chez tous les adolescents.
L'Italie pratique ce dépistage systématique chez tous les adolescents. Par contre d'autres pays le font seulement sur les athlètes.

Nous voulons mener un essai dans les écoles libanaises en choisissant une école dans chaque district (Kadaa) dans la région du Mont Liban.
Après accord de la Direction de l'école nous enverrons une équipe complète de l'Hôpital Mont Liban, tous des bénévoles pour visiter l'école, pour une journée afin d'effectuer gratuitement des ECG chez tous les enfants de la classe de 4ème (13 – 14 ans). Cette équipe sera dirigée par le Chef de Service de Cardiologie Docteur Samer Nasr.
Les ECG seront interprétés par les Cardiologues de l'Hôpital et toute anomalie sera rapportée et une lettre sera envoyée au médecin scolaire qui informera ensuite les parents et l'enfant pourra être suivi par le cardiologue de famille.
Une analyse sera faite pour interpréter des résultats de cette étude et constater s'il y a un bénéfice ou non d'un tel dépistage.

Cette recherche sera soutenue par le Centre Hospitalier Mont Liban, elle est à but non lucratif et ne présente aucun conflit d'intérêt.

Je vous prie, Monsieur le Directeur, de croire à mes sentiments les plus respectueux.

Dr. Nazih Gharios
Président Directeur Général
Hôpital Mont Liban

ANNEXE 2

May 22, 2015

Samer Nasr, M.D.
Chair, Department of Cardiology.
Board Certified in Internal Medicine,
Cardiology and Clinical Cardiac Electrophysiology.
Mount Lebanon Hospital,
Hazmieh Lebanon.

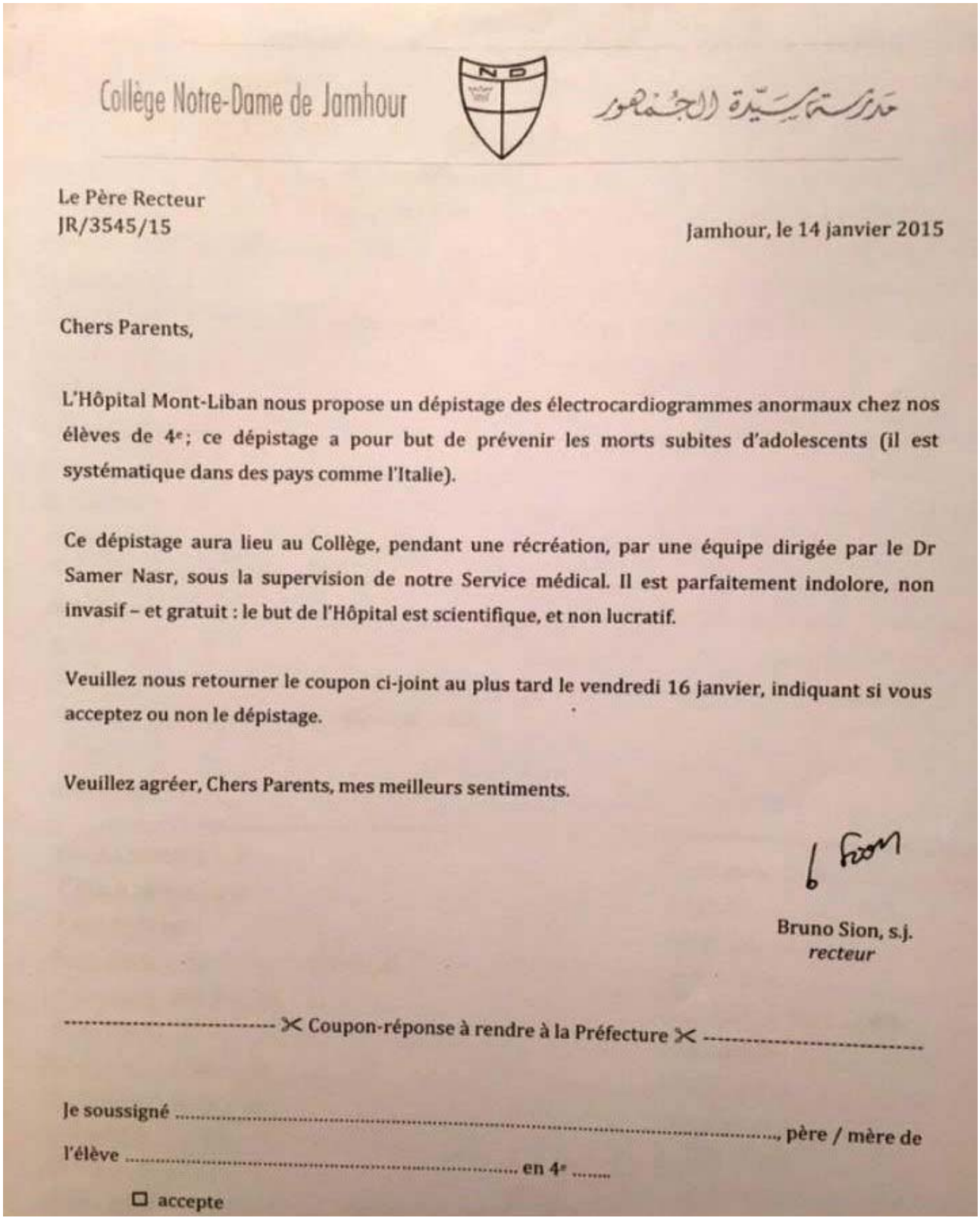
I am writing to you concerning an observational trial to assess the incidence of abnormal electrocardiogram in adolescents that could be a set up for sudden cardiac arrest.

Electrocardiographic anomalies could be totally asymptomatic and still could be a marker of sudden death.
Public health authorities around the world are divided in terms of requesting routine screening electrocardiogram for all adolescents.
Few countries do request electrocardiogram on all the adolescents i.e. Italy, and most others request electrocardiogram on athletes.
We want to conduct a trial in Lebanese schools, choosing one school in every district (kadaa) in Mount Lebanon area.
After getting the approval from the school, we will have a full team from Mount Lebanon Hospital, all volunteers to visit the school for one day and perform free of charge ECG's on all the children in the eight's grade, EB 8.
The ECG's will be interpreted in the Cardiology department at Mount Lebanon Hospital, and any anomalies in the ECG's will be reported and a letter will be sent to the school physician.
The school physician will then inform the parents to follow the children with whomever the parents want (their own cardiologist).
We will then analyze and report our data with the results showing either a benefit or no benefit from screening asymptomatic adolescents with ECG's.
The trial is supported by Mount Lebanon Hospital and no conflict of interest of any sort is present.

Thanking you,
Sincerely

Samer Nasr, M.D.
9613723395

ANNEXE 3



Collège Notre-Dame de Jamhour

مدرسة سيدة الجمهور

Le Père Recteur
JR/3545/15

Jamhour, le 14 janvier 2015

Chers Parents,

L'Hôpital Mont-Liban nous propose un dépistage des électrocardiogrammes anormaux chez nos élèves de 4e ; ce dépistage a pour but de prévenir les morts subites d'adolescents (il est systématique dans des pays comme l'Italie).

Ce dépistage aura lieu au Collège, pendant une récréation, par une équipe dirigée par le Dr Samer Nasr, sous la supervision de notre Service médical. Il est parfaitement indolore, non invasif – et gratuit : le but de l'Hôpital est scientifique, et non lucratif.

Veuillez nous retourner le coupon ci-joint au plus tard le vendredi 16 janvier, indiquant si vous acceptez ou non le dépistage.

Veuillez agréer, Chers Parents, mes meilleurs sentiments.

Bruno Sion, s.j.
recteur

---------- ✂ Coupon-réponse à rendre à la Préfecture ✂ ----------

Je soussigné ....., père / mère de

l'élève ..... en 4e .....

☐ accepte

ARTICLE ORIGINAL / ORIGINAL ARTICLE

PREVALENCE OF CHRONIC KIDNEY DISEASE IN AN OUTPATIENT SETTING
A Lebanese Cross-Sectional Study

http://www.lebanesemedicaljournal.org/articles/67-2/original6.pdf

Mabel AOUN[1,2*], Ghassan SLEILATY[3], Randa TABBAH[4], Leony ANTOUN[4], Hiam MATTA[5], Dania CHELALA[1]

Aoun M, Sleilaty G, Tabbah R, Antoun L, Matta H, Chelala D. Prevalence of chronic kidney disease in an outpatient setting: a Lebanese cross-sectional study. J Med Liban 2019 ; 67 (2) : 89-93.

ABSTRACT • Background : Chronic kidney disease's prevalence worldwide is estimated at an average of 10%. This study aims to assess the prevalence of different stages of chronic kidney disease (CKD) in a Lebanese outpatient setting. **Materials and Methods:** It is a cross-sectional study that included all consecutive adult outpatients who underwent a dosage for serum creatinine in Saint Georges - Ajaltoun Hospital's laboratory department during March 2016. **Results** : 315 patients were included: 55.6% were female and 44.4% male. Mean age was 53.4 ± 17.6 years. Median serum creatinine was 0.78 (0.63; 0.90) mg/dl. Based on eGFR, 8.5% of patients had chronic kidney disease stage 3 (eGFR 30-60 ml/min), 2.5% stage 4 (15-30 ml/min) and 1.6% stage 5 (< 15 ml/min). After including albuminuria in stages 1 and 2, CKD prevalence increased to 17.1%. Age was significantly correlated with eGFR with the eldest patients in stage 3 ($p < 0.001$). **Conclusion** : Chronic kidney disease defined as eGFR < 60 ml/min was found to be present in 12.5% of Lebanese individuals tested in a rural outpatient setting. This finding should be confirmed by larger national and regional studies.

Keywords : chronic kidney disease; prevalence; outpatient setting; Eastern Mediterranean country; referral

Aoun M, Sleilaty G, Tabbah R, Antoun L, Matta H, Chelala D. Prévalence de l'insuffisance rénale chronique chez les patients ambulatoires: une étude transversale libanaise. J Med Liban 2019 ; 67 (2) : 89-93.

RÉSUMÉ • Contexte : La prévalence mondiale de l'insuffisance rénale chronique est estimée à 10%. Cette étude a pour but d'évaluer la prévalence des différents stades de l'insuffisance rénale chronique dans un groupe de patients ambulatoires libanais. **Matériels et méthodes** : Étude transversale qui a inclus toutes les personnes ayant eu un dosage de créatinine sérique en mars 2016 dans un laboratoire attaché à un grand hôpital rural libanais. **Résultats** : 315 patients ont été inclus: 55,6% étaient des femmes et 44,4% des hommes. L'âge moyen était de 53,4 ± 17,6 ans. La concentration médiane de créatinine sérique était de 0,78 (0,63; 0,90) mg/dl. En se basant sur le taux eGFR, 8,5% des patients avaient une insuffisance rénale chronique stade 3 (eGFR 30-60 ml/min), 2,5% stade 4 (15-30 ml/min) et 1,6% stade 5 (< 15 ml/min). Après avoir inclus l'albuminurie dans les stades 1 et 2, la prévalence de l'insuffisance rénale chronique a augmenté à 17,1%. L'âge était corrélé de façon significative avec le taux eGFR, les personnes les plus âgées étant au stade 3 ($p < 0.001$). **Conclusion** : L'insuffisance rénale chronique définie par un eGFR < 60 ml/min a été retrouvée dans 12,5% des patients libanais testés en ambulatoire. Ceci est à confirmer dans de plus larges études à l'échelle nationale et régionale.

Mots-clés : insuffisance rénale chronique; prévalence; patients ambulatoires; pays de l'Est de la Méditerranée

INTRODUCTION

Chronic kidney disease (CKD) is a highly prevalent non-communicable disease. Since 2006, the international nephrology community is celebrating yearly the World Kidney Day. It is a joint initiative of the International Society of Nephrology (ISN) and the International Federation of Kidney Foundations (IFKF) that aims to raise awareness about CKD. Despite those efforts, screening for chronic kidney disease in the general population is not yet recommended by the international guidelines although it could be beneficial for many reasons. Screening seems to be cost-effective in areas where the prevalence of kidney disease is high [1]. And an early discovery of kidney dysfunction would ensure adequate referral timing to a nephrologist in order to prevent possible cardiovascular complications, avoid nephrotoxic medications and make proper adjustment of medications' dosage [2-4].

CKD is defined by the Kidney Disease Improving Global Outcomes Initiative (KDIGO) as abnormalities of kidney structure or function, present for > 3 months, with implications for health [5]. International studies estimate the prevalence of CKD stages 3 to 5 at an average of 10% in the general population [6]. It can increase to 17% in diabetic patients [7] and even 50% in high-risk sub-populations [6,8]. In the Arab countries, we lack epidemiological studies assessing kidney disease prevalence especially in the rural population [9].

Lebanon is an Eastern Mediterranean country with a total population estimated at 4.1 million. Our country lacks a kidney registry and data about CKD prevalence in any setting. We know that the total number of end-stage renal

From Lebanon [1]Nephrology Department, St Joseph University (USJ), Beirut [2]Nephrology Department, St Georges Hospital (SGH), Ajaltoun [3]Department of Epidemiology & Biostatistics, School of Medicine, USJ [4]Internal Medicine Department, Holy Spirit University, Kaslik [5]Laboratory Department, SGH.
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e-mail: aounmabel@yahoo.fr

disease (ESRD) patients assessed in 2015 was 3500 but so far there has been no study evaluating the prevalence of non-dialysis CKD (ND-CKD). There are no data as well about the follow-up distribution of these CKD patients among general practitioners, nephrologists and other specialists.

With this in mind, we conducted a cross-sectional study over one month in one rural hospital's laboratory by collecting the serum creatinine and if available the albuminuria of all incident outpatients.

The aim of this study is to assess the prevalence of different stages of estimated Glomerular Filtration Rate (eGFR) and to identify the different specialists that follow CKD patients.

METHODS

Study design, setting and participants

This is a cross-sectional study over a one-month period. We included all outpatients above 18 years old who had a serum creatinine dosage at the laboratory of Saint-Georges Hospital during March 2016. Saint-Georges Hospital is located in a rural area of Kesrouan in Lebanon and is the only hospital that serves this area. Kesrouan district includes around 123600 inhabitants. Only outpatients were included and all duplicate and dialysis patients were removed. To ensure the chronicity of kidney disease, patients with an eGFR < 60 ml/min were included only if their eGFR was confirmed lower than 60 ml/min beyond the three last previous months, based on our laboratory data-set; otherwise the patient was excluded.

Data were collected based on the demographics (age, gender, race), laboratory parameters (serum creatinine [mg/dl] and urinary albumin-to-creatinine (ACR) ratio [mg/g] in spot urine) and referral physician's specialty (general practitioner [GP], endocrinologist, cardiologist, nephrologist or other) at the time of the study.

The past laboratory records of patients were also reviewed for serum creatinine, urine dipstick, repetitive serum glucose and HbA1c in the last two years.

The study was approved by the ethics committee of Saint Joseph University-Beirut (approval number CEHDF 984) and performed in compliance with the Declaration of Helsinki of 1975. The committee waived the need for patients' consent and data were collected anonymously.

Serum creatinine measurement

Serum creatinine was measured in the laboratory using the Jaffe method calibrated for traceability to the reference method, IDMS (via SRM 967).

Definitions and classifications

GFR was estimated for each patient using the 2009 Chronic Kidney Disease Epidemiology collaboration (CKD-EPI) equation. CKD stages were defined based on the Kidney Disease Improving Global Outcomes (KDIGO) 2012 Clinical Practice classification [5]: stage 1, G1, eGFR > 90 ml/ min; stage 2, G2, eGFR 60-89 ml/min; stage 3a, G3a, eGFR 45-59 ml/min; stage 3b, G3b, eGFR 30-44 ml/min; stage 4, G4, eGFR 15-29 ml/min and stage 5 non-dialysis, G5, eGFR < 15 ml/min.

Urinary ACR was divided into three categories based on the KDIGO classification: A1, mild albuminuria ACR < 30 mg/g; A2, moderate albuminuria ACR 30-300 mg/g and A3, severe albuminuria ACR > 300 mg/g.

Based on the KDIGO, CKD is defined as any eGFR < 60 ml/min or an eGFR > 59 ml/min with ACR > 30 mg/g.

The patients were classified concerning diabetes into three subgroups:

1. *Diabetics* based on high glycemia (> 124 mg/dl) and high HbA1c levels (> 6.4%);
2. *Non diabetics* based on several (> 3 tests) low glycemia (< 100 mg/dl) and/or low HbA1c levels (< 5.6%),
3. *Non defined* if HbA1c was between 5.7 and 6.4% or with missing glucose and HbA1c levels.

Statistical analysis

Descriptive statistics were summarized in terms of numbers and percentages for categorical variables and means and standard deviation (SD) or median and interquartile range (IQR) for continuous variables. Comparisons between categorical variables were performed with Chi-square test. The relationship between age and eGFR was assessed using a linear quadratic model. P-value < 0.05 was considered statistically significant. Analyses were performed using the Statistical Package for Social Sciences (SPSS, version 24).

TABLE I

DEMOGRAPHIC CHARACTERISTICS & CKD STAGES BASED ON eGFR OF THE 315 OUTPATIENTS

TOTAL NUMBER OF PATIENTS	315
M / F	140 / 175
Mean age ± SD (years)	53.40 ± 17.68
Median serum creatinine [IQR] (mg/dl)	0.78 (0.63; 0.90)
Mean eGFR ± SD (ml/min)	92 ± 26.15
Total of Stage 1 (%)	210 (*66.7*)
Total of Stage 2 (%)	65 (*20.6*)
Total of Stage 3a (%)	19 (*6*)
Total of Stage 3b (%)	8 (*2.5*)
Total of Stage 4 (%)	8 (*2.5*)
Total of Stage 5 (%)	5 (*1.6*)

Stage 1: G1, eGFR > 90 ml/min **Stage 2**: G2, eGFR 60-89 ml/min
Stage 3a: G3a, eGFR 45-59 ml/min **Stage 3b**: G3b, eGFR 30-44 ml/min
Stage 4: G4, eGFR 15-29 ml/min **Stage 5**: non-dialysis, G5, eGFR < 15 ml/min

RESULTS

Overall characteristics

315 consecutive individuals were included (Table I). Their age ranged between 18 and 93 years. 55.6% were female and 44.4% male; 12.6% of the patients had an eGFR < 60 ml/min. ACR was available in 21.3% of the sample and ≈half of them had an ACR > 30 mg/g.

Fifty-four percent of patients had an HbA1c or glucose level where half of them had only a measured HbA1c. Among these 54% of patients, 30.6% were confirmed diabetics, 39.4% non-diabetics and 30% non-defined. This leads to an estimation of 16.5% of confirmed diabetes in our sample.

Staging of CKD

Based on eGFR, 12.6% of patients had stages 3 to 5 (Table II). Among the 315 patients, 67 patients had an available ACR. After including ACR in stages 1 and 2, CKD prevalence increased to 17.1%.

Age was significantly correlated with eGFR with the eldest patients in stage 3 (Figure 1).

Distribution of CKD stages among different referring physicians

Patients were referred to the laboratory as follows: 28.6% by a GP, 13.6% by a cardiologist, 10.2% by an endocrinologist, 5.5% by a nephrologist (Table III).

Fifty percent of those with eGFR < 60 ml/min and 80% of those with eGFR < 30 ml/min were referred by a nephrologist; 21% of patients had an ACR measurement. Those ACR measurements were distributed as follows: 32.8% by cardiologists, 28.4% by endocrinologists, 11.9% by nephrologists, 10.4% by GPs. The percentage of ACR testing in each medical specialty was found to be 47% in nephrology, 56% in endocrinology, 51% in cardiology and 7.6% in primary care (GPs). Thirty percent of the diabetic patients referred by GPs had an ACR.

TABLE II

DISTRIBUTION OF THE PATIENTS BASED ON eGFR & ACR

	A1	A2	A3	Missing ACR	Total (%)
G1	34	6	3	167	210 (*66.7*)
G2	11	5	0	49	65 (*20.6*)
G3a	2	1	0	16	19 (*6*)
G3b	1	1	0	6	8 (*2.5*)
G4	0	1	1	6	8 (*2.5*)
G5	0	0	1	4	5 (*1.6*)
Total	**48**	**14**	**5**	**248**	**315 *(100)***

Stage 1: G1, eGFR > 90 ml/min **Stage 2**: G2, eGFR 60-89 ml/min **Stage 3a**: G3a, eGFR 45-59 ml/min **Stage 3b**: G3b, eGFR 30-44 ml/min **Stage 4**: G4, eGFR 15-29 ml/min **Stage 5**: non-dialysis, G5, eGFR < 15 ml/min **A1**: mild albuminuria with **ACR** < 30 mg/g **A2**: moderate albuminuria with **ACR** 30-300 mg/g **A3**: severe albuminuria with **ACR** > 300 mg/g

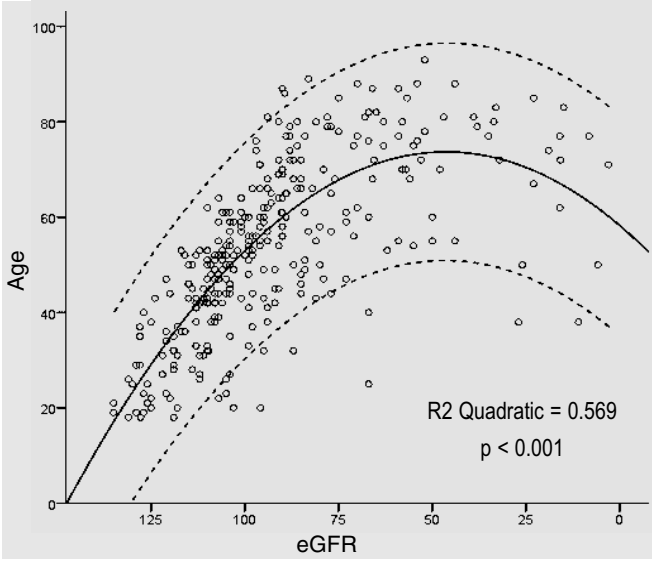

Figure 1. Association between age & eGFR using a linear quadratic model

TABLE III

DISTRIBUTION OF PATIENTS' REFERRAL BY MEDICAL SPECIALTIES ACROSS CKD STAGES

	Nephrologists %	Cardiologists %	General Practitioners %	Endocrinologists %	Other %
G1 n = 210	2.4	14.3	29	8.6	45.7
G2 n = 65	3.1	15.4	33.8	15.4	32.3
G3a n = 19	10.6	5.3	21.1	10.5	52.5
G3b n = 8	0	12.5	12.5	25	50
G4 n = 8	50	12.5	12.5	0	25
G5 n = 5	80	0	20	0	0
TOTAL n = 315	**5.5**	**13.6**	**28.6**	**10.2**	**42.1**

Stage 1: G1, eGFR > 90 ml/min **Stage 2**: G2, eGFR 60-89 ml/min **Stage 3a**: G3a, eGFR 45-59 ml/min **Stage 3b**: G3b, eGFR 30-44 ml/min **Stage 4**: G4, eGFR 15-29 ml/min **Stage 5**: non-dialysis, G5, eGFR < 15 ml/min

DISCUSSION

This is the first study to assess the prevalence of CKD in a Lebanese outpatient setting. It shows that 12.6% of outpatients have CKD, which is concordant with the global prevalence of CKD in the general population assessed at 10.6% for stages 3 to 5 [6]. One may think that the sample includes a majority of unhealthy individuals and can overestimate the prevalence of the CKD in the general population. However, on the other hand, it could reflect well the general population knowing that 16.5% of individuals in our sample were confirmed diabetics, a percentage similar to the recent reported prevalence of diabetes in the country [10]. It is well-known that CKD prevalence increases secondary to diabetic nephropathy. A Spanish study published in 2005 showed a prevalence of 5% of CKD stages 3 to 5 and it included only 8% of diabetic patients [11]. In Cape Town, the prevalence of CKD was also estimated at 6% and was increasing proportionally to diabetes [12]. Therefore, a possible explanation for the higher prevalence of CKD in our Lebanese sample, compared to the Spanish and African countries, could be attributed to the higher percentage of diabetics. It would have been interesting to compare our findings to the neighboring countries but unfortunately, they have only published data on end-stage renal disease [9]. In the Arab countries, information about various kidney diseases is very limited [9]. In Saudi Arabia, a pilot study of 491 healthy individuals showed a prevalence of 5.3% of CKD using both the Modification of Diet in Renal Disease (MDRD) and the CKD-EPI equation [13]. Few studies worldwide used the 2009 CKD-EPI equation when assessing the prevalence of chronic kidney disease and most of the results in the literature were based on the MDRD Study equation [6]. However, CKD-EPI was found to be more accurate than MDRD equation that overestimated the proportion of patients with CKD stages 3 to 5 [14,15]. Our findings can be used as a baseline to assess in the future the progression of chronic kidney disease in our setting. In the USA for instance, there has been no significant increase in the prevalence of stages 3 and 4 CKD in the population overall during the last decade [16].

Another important finding of this study is the variation in albuminuria testing among different physicians. Albuminuria screening is recommended in some conditions such as diabetic patients but not in the general population [5,17]. This study shows that one out of five individuals with eGFR > 60 ml/min had a screening for ACR coupled with the serum creatinine test. Only half of patients referred by nephrologists had an ACR testing mostly because those patients had advanced CKD where the follow-up is mainly based on serum creatinine. Interestingly also, screening for albuminuria appeared to be more frequent among cardiologists in our series. A plausible explanation is the prognostic value of albuminuria regarding cardiovascular morbidity and mortality. The KDIGO 2012 recommends that CKD be classified based on cause, glomerular filtration rate (GFR) category, and urinary ACR category [5]. This classification helps to assess the cardiovascular risk at each stage and is an important tool for cardiologists. General practitioners in this study were the least to test for ACR and only one third of their diabetics had an ACR measurement. This points out the fact that many high-risk patients are not screened for ACR in our rural primary care setting. In contrast to our results, a survey done in the United Arab Emirates (UAE) among physicians non-nephrologists showed that primary care physicians asked for ACR in CKD patients more than other medical specialties [18]. The international societies of primary care recommend also a yearly measurement of ACR in CKD patients stages 1 to 3 [19]. Those contradictory results between countries highlight the difference in health systems and the higher importance of the primary care in the UAE and other countries compared to Lebanon.

Another remarkable finding in our study is the older age of patients with CKD stage 3 compared to more advanced stages, reflecting the possibility that CKD patients are dying before reaching advanced CKD stages. This is concordant with previous longitudinal studies that showed that CKD patients die before developing ESRD [20,21]. Dalrymple *et al*. demonstrated that the majority of those patients die from cardiovascular disease and after a 9-year follow-up, 61% of the patients died and only 5% reached ESRD [20]. However, this issue remains controversial because those findings were not confirmed in the MDRD Study that showed that patients reached ESRD before death [22].

The international guidelines consider eGFR < 30 ml/min and ACR > 300 mg/g as criteria for referral to a nephrologist [5,23]. Fortunately, most of our patients with advanced CKD stages 4 and 5 were referred to the laboratory by nephrologists and consequently followed by them. When it comes to earlier stages of CKD, the guidelines suggest that a follow-up by primary care physicians might be sufficient, but this could be debatable. Indeed, our study revealed that a very small proportion of patients with CKD stage 3, referred by general practitioners and endocrinologists, were screened for ACR. Even in Canada, 70% only – and not all – CKD patients, followed by primary physicians, are tested for ACR or proteinuria [24]. Therefore, a follow-up by nephrologists would be more beneficial at earlier stages than suggested by the guidelines.

Early referrals to nephrologists have been shown to reduce mortality and morbidity, increase uptake of perito-

neal dialysis and improve anemia [2]. Patients with CKD are also very often not aware of their disease [13,25], thus increased awareness about early nephrology care should target simultaneously all physicians and the community they serve.

Limitations

This study reflects for the first time the prevalence of CKD in an outpatient setting in one of the 25 districts in Lebanon, but it has several limitations. First, it included outpatients that were not all healthy and this may have overestimated the prevalence of CKD in the general population. And the prevalence of early CKD stages might have been on the contrary underestimated because less than a quarter of patients had a spot urine for ACR. Second, patients were not interviewed, leading to missing data about different causes of CKD and whether a CKD patient might have consulted a nephrologist despite being referred to the laboratory by non-nephrologists. Finally, GFR was estimated based on serum creatinine and not on direct measurement leading to a less accurate GFR assessment.

CONCLUSION

Chronic kidney disease defined as eGFR < 60 ml/min was found to be present in 12.5% of Lebanese individuals tested in a rural outpatient laboratory setting and a small proportion of these patients were screened for albuminuria. These findings should be confirmed by larger national and regional studies.

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MISE AU POINT/IN-DEPTH REVIEW

PALLIATIVE CARE ASSESSMENT TOOLS FOR OLDER ADULTS
A Review

http://www.lebanesemedicaljournal.org/articles/67-2/review1.pdf

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Dakessian Sailian S, Abu-Saad Huijer H, Dhaini S, Adra M. Palliative care assessment tools for older adults: A review. J Med Liban 2019 ; 67 (2) : 94-102.

ABSTRACT • Background : The global population of people aged 60 years and older is expected to more than double. The prevalence of multiple chronic diseases among individuals is substantial among older adults. Therefore, palliative care remains a central part of healthcare services provision whether in the community or institutions. Assessing older adults' palliative care needs is the first step to delivering quality comprehensive care. **Objectives :** This review aims to describe existing assessment tools used to measure palliative care needs of older adults, their scope of use, contents, and psychometrics. **Methods :** A systematic review search in electronic databases CINAHL, MedLine OVID, PsychInfo, and Academic Search Complete, was conducted for the years 2000 to 2016. Older patients with palliative care needs regardless of their setting were included. **Results :** The initial search yielded 942 articles. Seventeen articles met the inclusion criteria, describing nine palliative care assessment tools used for older patients in various settings. **Conclusion :** This review increases understanding of existing tools to assess older patients with palliative care needs. It can be concluded that no ideal tools are available to allow care providers to detect palliative care needs at an earlier stage in older adults. The POS and RAI tools demonstrated better comprehensiveness and sensitivity to change in comparison to others.

Keywords : palliative care; assessment tool; older adult; systematic review

Dakessian Sailian S, Abu-Saad Huijer H, Dhaini S, Adra M. Outils d'évaluation des soins palliatifs pour les personnes âgées : Mise au point. J Med Liban 2019 ; 67 (2) : 94-102.

RÉSUMÉ • Contexte : La population mondiale de personnes ≥ 60 ans devrait plus que doubler. La prévalence de multiples maladies chroniques chez les personnes âgées est importante. Les soins palliatifs demeurent donc un élément central de la prestation de services de soins de santé, que ce soit dans la communauté ou dans les institutions. L'évaluation des besoins en soins palliatifs des personnes âgées est la première étape vers la prestation de soins complets de qualité. **Objectifs :** Cette étude vise à décrire les instruments d'évaluation existants utilisés pour mesurer les besoins en soins palliatifs des personnes âgées, leur champ d'utilisation, leur contenu et leurs paramètres psychométriques. **Méthodes :** Une recherche systématique dans les bases de données électroniques CINAHL, MedLine OVID, PsychInfo et Academic Search Complete, a été réalisée pour les années 2000 à 2016. Les patients âgés nécessitant des soins palliatifs, quel que soit leur environnement, ont été inclus. **Résultats :** La recherche initiale a donné 942 articles dont 17 répondaient aux critères d'inclusion, décrivant neuf instruments d'évaluation des soins palliatifs utilisés pour les patients âgés dans divers contextes. **Conclusion :** Cette étude améliore la compréhension des instruments existants pour évaluer les besoins des patients âgés en soins palliatifs. On peut en conclure qu'aucun instrument idéal n'est actuellement disponible pour permettre aux personnels soignants de détecter à un stade précoce les besoins en soins palliatifs chez les personnes âgées. Parmi les instruments existants les questionnaires POS et RAI ont montré une meilleure compréhension et une meilleure sensibilité au changement.

Mots-clés : soins palliatifs; outil d'évaluation; adulte âgé; revue systématique

INTRODUCTION

The global population of people aged 60 years and older is expected to more than double, rising from 900 million in 2015 to about 2 billion in 2050 [1]. In 2030, when the last baby boomer turns 65, more than 20% of the U.S. population will be older adults [2]. Similarly, by 2050, estimates indicate that more than one quarter of the population of the European Region will be aged 65 years and older. Specifically, the greatest percentage increase will be among people over 85 years [3]. For older adults, good health ensures independence and security as they age. Unfortunately, millions battle everyday with the burden of chronic diseases [2]. A chronic disease refers to a *"condition that lasts a year or more and requires ongoing medical attention and/or limits activities of daily living"* [4]. In fact, the prevalence of multiple chronic diseases among individuals is substantial among older adults [5]. For example, more than one in four Americans have multiple concurrent chronic conditions, including arthritis, asthma, chronic respiratory conditions, diabetes, heart disease, human immunodeficiency virus infection, and hypertension [6]. Older adults are disproportionally affected by other chronic conditions including malnourishment, confusion, functional decline, incontinence, anxiety and sleep deprivation [7]. Consequently, chronic

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diseases can limit a person's ability to perform daily functions and lead to dependence [2]. Therefore, palliative care remains a central part of healthcare services provision.

Palliative care refers to the *"approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual"* [8]. The physical and psychosocial needs are a major concern for people in the final stages of life that tend to significantly reduce their quality of life. Hence, the assessment and management of symptoms is one of the chief goals of palliative care [3]. Studies have shown that timely palliative care reduces the physical and emotional stress of a variety of serious life-threatening diseases for both patients and their family caregivers [9]. It may not only improve quality of life for patients, but also reduce unnecessary hospitalizations and use of healthcare services [10].

While more than 40 million people around the world are in need of palliative care, only 14% are receiving it [10]. Studies have reported a number of significant barriers to palliative care provision including: 1) lack of awareness among policy makers, health professionals, and the public about what palliative care is, and the benefits it can offer the patient; 2) cultural and social barriers [10]; and 3) lack of access to palliative care services for non-malignant diseased patients [11]. Consequently, national health systems need to incorporate palliative care in the continuum of care for people with chronic and life-threatening conditions, integrating it with early detection and treatment programs [10].

Nevertheless, appropriate provision of care can only be possible through diligent identification and impeccable assessment of palliative care needs using valid and robust tools for older adults and their caregivers. Identified tools should capture different domains of palliative care including physical, psychosocial, spiritual, end of life care, and advance directives [12]. Despite the fact that palliative care assessment tools for older adults have been well established and widely used in palliative care research, several studies have focused on specific diseases [13] and targeted group of symptoms [14,15] or particular settings. Accordingly, to gain a comprehensive insight into the existing palliative care assessment tools, regardless of setting, disease condition, or symptoms, we conducted a systematic review of available data from the literature.

The current paper will describe existing assessment tools in palliative care for older adults, their scope of use, content and psychometrics.

METHODS

Literature search strategy

A systematic literature search in electronic databases was performed for the years 2000 to 2016. Two authors independently conducted a formal computer-assisted search of CINAHL (January 1, 2000 to December 31, 2016), MedLine OVID, PsychInfo, and Academic Search Complete databases. The design of the search strategy was done in collaboration with a health librarian and in consultation of the PRISMA checklist [16]. Keywords used were palliative care, terminal care, end-of-life care, older adults, elderly, tool, instrument, appraisal, survey, questionnaire, assessment, scale, and index. No limitation was applied to the period of publication. Studies published in peer-reviewed journals in the English language were identified.

Study selection

The study followed the integrative review methodology for systematic review studies by including all study designs [17]. Two authors independently screened all search results, initially on the basis of title and abstract, and then the full text of potentially eligible papers were retrieved. Studies were included if they were written in English, were full text articles, described tools which assessed palliative care in older adults whether self-administered or those completed by caregivers expressing patients' views and experiences. All chronic health conditions, irrespective of the stage of the illness, were included. Studies that described assessment instruments of dementia patients, or those not specific to palliative care or older adults populations, or scales that measure solely the perception of family members or healthcare providers, were excluded. Disagreements about inclusion were resolved in a consensus meeting with the primary research investigator.

Data extraction

Two independent researchers reviewed the identified data on palliative care assessment tools for content and psychometric properties. The following data were extracted from the qualified studies and elaborated in a table (see Table I): 1. Instrument / 2. Number of items / 3. Scale used / 4. Setting / 5. Type of patients / 6. Domains / 7. Reliability / 8. Construct validity / 9. Content validity/ 10. Concurrent validity / 11. Filled out by / 12. Completion time.

Some retrieved studies did not include the complete measurement properties of their used tools, thus the reference lists were searched to complete information on origin of the instrument, number of items, scale, and psychometrics.

TABLE I SUMMARY OF PALLIATIVE CARE ASSESSMENT TOOLS

Instrument	Items	Scale	Reliability	Validity			Filled out by	Completion Time
				Construct	Content	Concurrent		
Palliative Care Outcome Scale (POS)	11	5-point Likert Scale & 3-point Likert scale (item 9) 1 open-ended question	Cronbach's α: .65-.70	N/A	N/A	Tested against EuroQoL & Herth Hope Index	Staff & Patient versions	10 min
Resident Assessment Instrument for Palliative Care (RAI-PC)	74	Ordinal	The inter-rater reliability > .77 in all domains (average Kappa = .83)	N/A	N/A	N/A	Multidisciplinary health care team	20 min
McMaster Quality of Life Scale (MQLS)	32	7-point numerical scale	Internal consistency (α = .80), a high intra-rater reliability (r ≥ .83) and a moderate inter-rater reliability (r = ≥ .55)	Verbally administered scores are lower than scores of self-completers t = 1.83 (p = .04)	N/A	The staff-MQLS is correlated with the Spitzer Quality of Life Index (SQLI) (r = .70) and the patient-MQLS correlated with the SQLI (r = .50)	Staff or patient	3-30 min
Assessment Symptoms Palliative Elderly (ASPE)	40	5-point Likert scale to assess: (i) frequency & (ii) 4-point Likert scale to asses intensity. Binary answer (yes/no) was used for "weight loss"	Test-retest showed substantial agreement for 87.5% of the items	N/A	Face- and content validity assessed in a 3-round Delphi procedure and Cognitive interviewing. (I-CVI 81.8% - 100.0% and S-CVI 92.9%)	N/A	Staff or patient	21 min
Needs Near the End-of-Life Screening Tool (NEST)	13	0 to 10 scale	Demonstrated reliability	Demonstrated content and construct validity		N/A	Staff or patient	N/A
McGill Quality of Life Index (MQOL) **McGill Quality of Life Index (MQOL) - Cardiff Short form**	17 versus 9 items	0 to 10 scale	Original version: Cronbach's α: .62 - .83 Short version: Cronbach's α: .462 - .858 Test-retest reliability: .512 - .861	The Existential domain of QOL McGill is validated. Construct validity was demonstrated through analysis of patterns of correlations with items from the Spitzer Quality of Life Index	N/A	Correlations with the items from the Spitzer Quality of Life Index.	Staff or patient	10-30 min
Edmonton Symptom Assessment Scale (ESAS)	9	0 to 10 scale	Reliability established for daily administration	N/A	Validated in two Italian palliative care settings	N/A	Patient or Staff	2 min
Modified Quality-of-Life Concerns in the End of Life (mQOLC-E)	23	4-point Likert scale	Internal consistency (α = .89) Inter-rater reliability (r = .83) Cronbach's α: 0.89 Cronbach's α of the 6 subscales: r = .71 - .86	N/A	Culturally validated for Chinese older people	Correlated with the Single-Item Quality of Life Scale (SIS) (r = .60, p ≤ 0.001) and correlated in a negative way with the Cumulative Illness Rating Scale (CIRS) (r = -.14, p = .013)	Multidisciplinary Health care team	20-60 min

RESULTS

The initial search yielded 942 articles, identified in the original search (Figure 1); 67 duplicates were removed, resulting in 814 articles, which were screened by title and abstract for inclusion.

Eighty-six full-text articles were retrieved to assess for eligibility. Ten more articles were identified via reference list search. Eighteen articles met the inclusion criteria describing nine different palliative care assessment tools in older adults.

Overall, five palliative care instruments were used in long-term care settings: • Palliative Care Outcome Scale (POS) • Resident Assessment Instrument for Palliative Care (RAI-PC) • McMaster Quality of Life Scale (MQLS) • the modified Quality-of-Life Concerns in the End of Life Questionnaire (mQOLC-E), and • the Integration of two instruments: a) Symptom Assessment Scale (SAS) and b) General Well-being Schedule (GWB). One tool was used in a community setting; the Assessment Symptoms Palliative Elderly (ASPE) instrument.

The remaining three instruments were used in a hospital setting: • Needs Near the End-of-Life Screening Tool (NEST) • McGill Quality of Life Index (MQOL) and • Edmonton Symptom Assessment Survey (ESAS).

The content of each instrument was evaluated based on setting, type of patients, and covered domains (Table II).

The following is a description of the measurement.

Palliative care Outcome Scale (POS)

The POS was primarily developed by Hearn and Higginson in 1999 [18] to assess the quality of life, the quality of

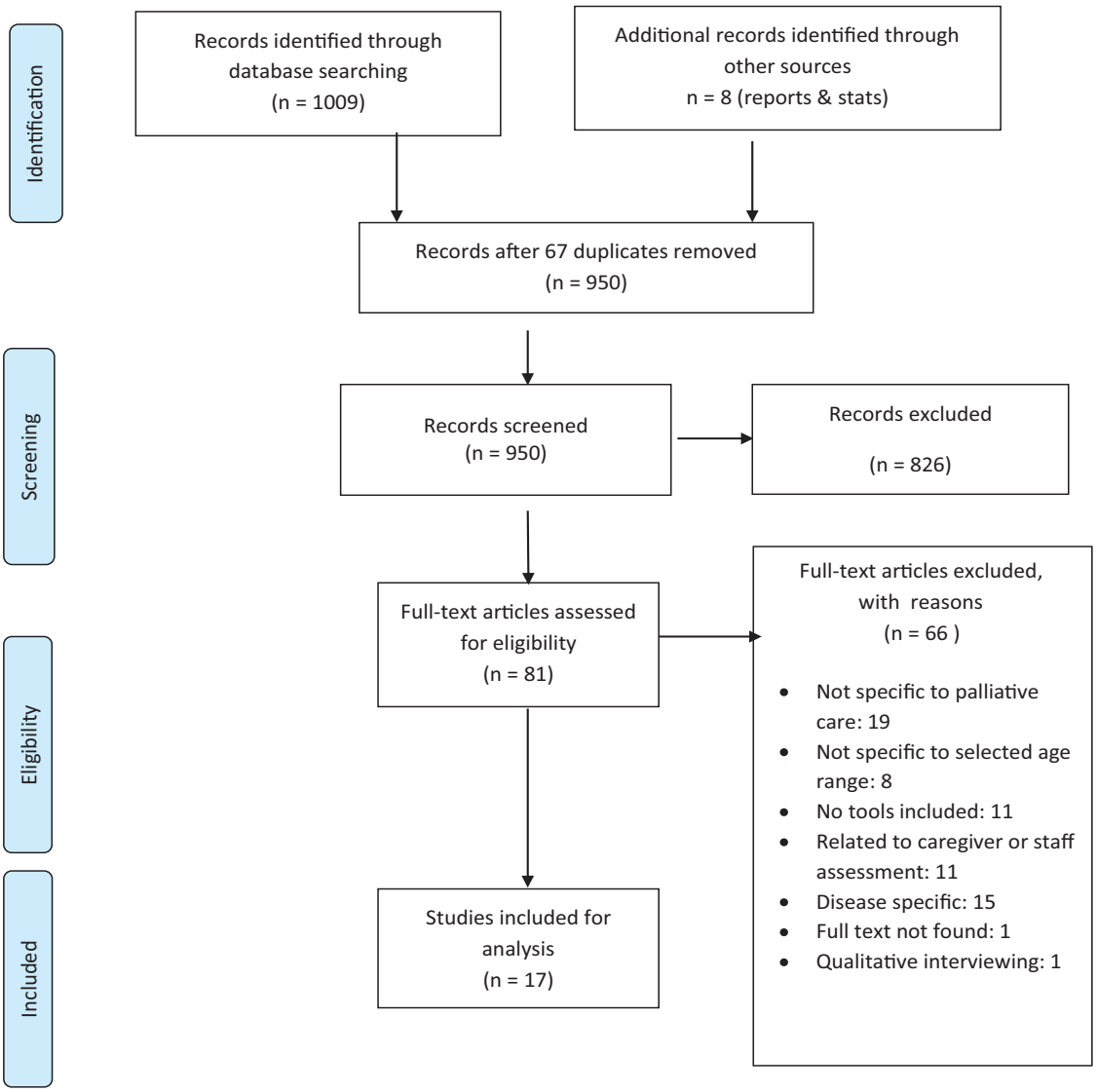

Figure 1. PRISMA Flowchart

care and the palliative care (PC) service organization.

It was utilized with patients suffering from advanced disease to improve outcome assessment by evaluating various key outcomes in palliative care. It is a suitable instrument to assess cancer and non-cancer as well as moderately to severely demented patients. It has two versions: the POS-patient version and POS-staff version. It consists of a total of 11 items capturing the physical, psychosocial, spiritual, practical, and psychosocial domains. The POS includes one open-ended question on patients' concerns. It has established reliability and acceptability with both staff and patients, and is responsive to changes in patient condition over time. It can be used with patients who have palliative care needs irrespective of their clinical setting (e.g. hospital, hospice, or nursing home). Completion time is estimated to be 10

TABLE II PALLIATIVE CARE ASSESSMENT TOOL DOMAINS

Instrument	Setting	Patients category	Covered domains
POS	Home Hospital Hospice Nursing home	Cancer and non-cancer & (moderately) severely demented patients	Physical Psychological Spiritual Practical Psychosocial
RAI-PC	Inpatient or outpatient	N/A	Symptoms/Conditions Cognitive competency & communication Mood - Functional status Preferences - Social relations Spirituality Services and treatments
MQLS	Nursing homes	Age 65 ± 15.5.	Physical symptoms Functional status Social functioning Emotional status Cognition Sleep and rest Energy and vitality General life satisfaction & Meaning of life
ASPE	Hospitalized or non-hospitalized	Older palliative cancer patients	Physical Psychological Functional Spiritual Social
NEST	Bedside setting	Terminally ill patients < 6 months prognosis; with a full range of diagnoses.	Needs Existential matters Symptoms Therapeutic matters
MQOL **MQOL Cardiff short form**	Hospice, outpatient and inpatient	All phases of the disease trajectory for people with a life-threatening illness, mostly cancer	Existential Physical wellbeing Physical symptoms Psychological & Support
ESAS	Inpatient & Home care	Advanced cancer patients	Physical symptoms
mQOLC-E	Outpatient and Nursing home	Frail older people palliative care phase	N/A

minutes. Concurrent validity was tested against EuroQoL (EQ-5D) and the Herth Hope Index. Cronbach Alpha is between .65 and .70 [19].

Resident Assessment Instrument for Palliative Care (RAI-PC) - former Minimum Data Set (MDS)

The RAI-PC was created by multinational research collaboration (Inter-RAI) [20] in order to assess and manage residents in long-term care facilities. It has a core set of screening elements that assess clinical and functional status, that in turn enable health care professionals in coding categories, which forms the groundwork of the comprehensive assessment for all residents of long-term care facilities qualified to participate in Medicare or Medicaid. It is an all-inclusive questionnaire comprised of 74 items, measured using an ordinal scale. Multidisciplinary healthcare providers of in- and out-patients are eligible to fill it.

The questionnaire covers several domains: • Symptoms/ Conditions • Cognitive competency and communication • Mood • Functional status preferences • Social relations • Spirituality • Services and • Treatments. The inter-rater reliability is greater than .77 in all domains (average Kappa = .83). Completion time requires 20 minutes.

The instrument improves the transfer of information between caregivers and health care settings and ensures continuity of care.

McMaster Quality of Life Scale (MQLS)

The MQLS took birth in McMaster University, Canada [21]. It was developed to measure the quality of life in a palliative patient population. MQLS is a 32-item in-strument that uses a 7-point numerical scale for measurement. It is employed in nursing homes for residents older than 65 years, and covers physical symptoms, functional status, social functioning, emotional status, cognition, sleep and rest, energy and vitality, general life satisfaction, and meaning of life domains.

Staff or patients can fill the questionnaire in 3 to 30 minutes depending on the domain content. The MQLS shows good internal consistency (α = .80), high intra-rater reliability ($r \geq .83$) and a moderate inter-rater reliability ($r = \geq .55$). Verbally administered scores are lower than scores of self-completers ($t = 1.83$, $p = 0.04$). It has also evidence on concurrent validity where the staff-MQLS is correlated with the Spitzer Quality of Life Index (SQLI, r = .70) and the patient-MQLS is correlated with the SQLI (r = .50) [21-22].

Assessment Symptoms Palliative Elderly (ASPE)

The ASPE was developed in 2016 by Van Lancker [23] to assemble data on frequency and intensity of symptoms in the older palliative cancer patient population. It consists of 40 items covering the physical, psychological, functional, spiritual, and social domains of in- and out- older cancer patients. Items were measured using a 5-point Likert Scale to assess frequency, and a 4-point Likert scale to assess intensity. A binary answer was used to assess weight loss items.

Staff or patients require 21 minutes of completion time. Test-retest showed substantial agreement for 87.5% of the items [24]. Findings on face and content validity in a 3-round Delphi procedure and Cognitive interviewing showed (I-CVI 81.8% - 100.0% and S-CVI 92.9%).

Needs Near the End-of-Life Screening Tool (NEST)

The NEST [25] was originally designed by a series of 15 focus groups and interviews that were conducted with patients, family caregivers and professionals, followed by a national survey of 988 patients with a terminal diagnosis. The tool is used primarily at the bedside for sequential evaluations to chart progress, for related team coordination, or for programmatic assessments. The questionnaire includes 13 items covering needs, symptoms, existential and therapeutic matters, measured on a 0 to 10 scale. NEST is relevant for hospitalized terminally ill patients, with all ranges of diagnosis, and with less than 6 months prognosis. Evidence demonstrated good reliability, content and construct validity.

McGill Quality of Life Index (MQOL)

Originally, it was developed by Cohen *et al*. in 1995 [26] to assess older patients with life threatening illnesses, mostly cancer, and consisted of 17 item questions.

It was adapted to meet the needs of people with advanced diseases. MQOL-Cardiff Short form, consisting of 9 items, is relevant to all phases of the disease trajectory. All items were measured using a 0 to 10 scale. The instrument is used in hospice, outpatient and inpatient settings. Findings on the original version showed evidence of reliability: Cronbach's $\alpha = 0.62 - 0.83$. Similarly, the Short version: Cronbach's $\alpha = 0.46 - 0.85$ and test-retest reliability r = .51 - .86. The Existential domain of QOL McGill was validated; construct validity was confirmed through analysis of patterns of correlations with items from the Spitzer Quality of Life Index. Patients or staff can complete the questionnaire in 10 to 30 minutes for the original version, as opposed to 3 minutes for the short version. Lo *et al*. (2001) [27] investigated the cross cultural validity of the tool in Hong Kong and it showed robust constructs.

Edmonton Symptom Assessment Scale (ESAS)

The Edmonton Symptom Assessment Scale is a short instrument intended to assess older patients with advanced cancer in hospitals or candidates for home care. It was

devised by Chang (2000) [28] to assess 9 common symptoms experienced by advanced cancer patients.

The tool investigates distress in palliative care patients with advanced cancer, and contains detailed questions on the severity of physical and mental symptoms. Assessed symptoms are measured on a 0 to 10 scale. The ESAS consists of nine 100 mm visual analogue scales (VASs), which include pain, activity, nausea, depression, anxiety, drowsiness, appetite, wellbeing and shortness of breath. Scores can range from 0 to 100 (higher scores reflect greater symptom severity). The ESAS is validated in two Italian palliative care settings. Reliability was established for daily administration by patients or staff, within 2 minutes of completion time [29].

Modified Quality-of-Life Concerns in the End of Life Questionnaire (m-QOLC-E)

The Quality-of-Life Concerns in the End of Life Questionnaire (QOLC-E) [30] was originally designed to evaluate quality of life concerns of patients with terminal cancer. In 2008, the QOLC-E was modified to adapt to the needs of frail palliative care older people in nursing homes.

The m-QOLC-E questionnaire (23 items, using 4-point Likert scale) measured in 6 subscales: 1) value of life; 2) care and support; 3) food-related concerns; 4) negative emotions; 5) physical discomfort; and 6) existential distress. Time completion requires between 20 to 60 mi-nutes, and can be filled by patients or the multidisciplinary healthcare providers. The instrument demonstrated good reliability: Internal consistency ($\alpha = 0.89$) and inter-rater reliability ($r = 0.83$); Cronbach's α 0.89 and Cronbach's α of the 6 subscales: $r = 0.71 - 0.86$.

It was culturally validated for Chinese older people. It correlated with the Single-Item Quality of Life Scale (SIS) ($r = 0.60$, $p \leq 0.001$) and correlated in a negative way with the Cumulative Illness Rating Scale (CIRS) ($r = -0.14$, $p = 0.013$) [30].

Integration of two instruments SAS & GWB

The Symptom Assessment Scale (SAS) and the General Wellbeing Schedule (GWS) [31] are used in residential aged care settings and filled by patients. They assist in assessing frail elderly (≥ 69 years). While the SAS tool contains 7 items, the GWB comprises 18 items, later shortened to 5-8 items. They both assess three domains: 1) physical: nausea, pain, insomnia, fatigue, breathing, bowel, and appetite; 2) psychological; and 3) quality of life comprising six sub-scales: anxiety, depression, general health, positive wellbeing, self-control, and vitality. Items are measured on a 10-point scale.

In hospice setting, the SAS internal consistency reliability coefficient was >.60. As for the GWB, internal consistency coefficients ranged from .72 to .88. For the total original 18-item scale, internal consistency coefficients range from .88 to .95 [32].

DISCUSSION

This review resulted in nine palliative care assessment tools used in older adults in various settings as delineated above. Psychometrically, some of the tools had more robust evidence of validity and reliability than others. For example, the MQLS, which was culturally validated in a Chinese population, covers nine domains of palliative care and shows high internal consistency ($\alpha = 0.80$) and sensitivity to change in QOL. However, it is only relevant for use in nursing home residents. Furthermore, the NEST instrument has a well-established validity and reliability (Cronbach's α 0.90), but it lacks comprehensiveness of domains. The mQOLC-E is a psychometrically robust tool: Internal consistency .89, Cronbach' α .89, and is culturally validated in Chinese older adults. It is however, only validated for use in outpatient settings and nursing homes. It is also time consuming given its required completion time (i.e. 20-60 min). In addition to validity and reliability properties, ability to detect change over time is a major element in assessing the psychometric properties of instruments.

Our findings indicated that very few instruments were able to show evidence for responsiveness to change, such as the MQLS instrument. Another key aspect is the clinical relevance of the tools, their length, and the time needed for completion.

Finally, no ideal tools are currently available to assess palliative care needs in older adults. Although the POS and the RAI are the most comprehensive tools, each of the other tools has specific strengths that should not be overlooked. The POS can be used in a wide range of settings, including home, hospital, hospice and nursing home, and has been used in the Unites States and in Europe. It is a suitable instrument to assess patients irrespective of diagnosis to improve their quality of life, quality of care, and palliative care services. It can also be used in the training of health professionals, in the early referral phases to palliative care. It is tested against different tools with acceptable reliability and validity in different settings.

The RAI is also a well-established assessment tool that is used extensively in various palliative care settings, community or facility based, and is the standard tool in long-term care facilities in the United States. It is utilized to determine patient care needs and in case mix and outcome research. It is psychometrically tested and has been adopted for use in various countries in Europe and Canada. The time for completion is around twenty minutes.

Tables III and IV summarize the findings regarding the two selected tools and list the advantages and disadvantages of the remaining tools. In summary, this review demonstrates that further research is needed to provide robust tools for early detection of palliative care needs. The clinical relevance and cultural sensitivity of these tools need to be studied when used in different countries and cultures. Thus instrument validation is highly recommended in palliative care of older adults irrespective of diagnosis or disease trajectory.

TABLE III RECOMMENDED TOOLS FOR PALLIATIVE CARE OLDER PATIENTS

Instrument	Domains	Setting	Responsiveness	Validity/Reliability	Less burden
POS	6	Home Hospital Hospice Nursing homes	Responsive to change but not validated	Reliability & internal consistency (0.7) Construct validity (Spearman rho = 0.43 to 0.80) Adapted and validated in a number of cultural and linguistic settings	10 min Has a patient & staff version
RAI-PC	10	Hospital & Outpatient clinics	Sensitive to change but not validated	Kappa 0.83	20 min

POS: Palliative care outcome scale **RAI-PC:** Resident assessment instrument for palliative care

TABLE IV ADVANTAGES AND DISADVANTAGES OF TOOLS

Instrument	Advantages	Disadvantages
MQLS	• Covers 9 domains • Internal consistency (α = 0.80) • Has patient & staff version • Sensitive to change in QOL	• Relevant to nursing home residents only • Can take up to 30 min completion
ASPE	• Relevant to hospital and community patients • Covers 5 domains • Face and content validity established • 21 min time completion	• Content validity not established in older adults • Does not allow assessment of trends & variations
NEST	• Covers 4 domains with 13 subcategories • Content & construct validity & reliability established (Cronbach's α: 0.90) • Sensitivity to change not validated	• Relevant to terminally ill institutionalized patients with < 6 months prognosis
MQOL- I	• Relevant to hospice, inpatient and outpatient setting • Covers the Existential domain • Has original and short version • 10-30 minutes to complete • Culturally valid to Chinese population	• Physical domain is not predominant • Missing psychometric data
ESAS	• Covers 1 domain (physical symptoms) • Useful in day-to-day assessment • Clinically relevant for use in practice • Completion time is 2 minutes	• Relevant to in patient & home care only • Does not allow assessment of trends
mQOLC-E	• Covers 6 domains • Specific to frail older adults • Internal consistency .89 • Cronbach's α: .89 • Culturally validated for Chinese older people	• Relevant to outpatients & nursing home residents only • 20-60 min completion time
SAS & GWB	• Together cover 7 domains • SAS: internal consistency reliability of > 0.60 in hospice setting • GWB : Internal consistency 0.72 to 0.88	• Relevant to > 69 yrs, in residential homes & hospice only

CONCLUSION

A regular evaluation of palliative care assessment is the foundation of good palliative care of older adults with chronic health conditions. For a wholesome assessment of palliative care with the older adult population, a better understanding of patients' attitudes towards the quality of palliative care they are receiving is needed. The use of a dedicated, standardized instrument that measures palliative care purely from the patients' perspective is an important development in palliative care in older adults. This study has the potential to identify gaps in the research of palliative care assessment for older adults and inform evidence-based practice. Furthermore, this review can set the stage for policy development by recommending the standard assessment of palliative care within older adults.

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CAS CLINIQUE / CASE REPORT

INTRACTABLE COURSE OF A SUBMANDIBULAR ABSCESS FOLLOWING DIFFICULT ENDOTRACHEAL INTUBATION

A Case Report

http://www.lebanesemedicaljournal.org/articles/67-2/case1.pdf

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Ayoub E, Tohme J, Abi Lutfallah A, Jabbour H, Chalhoub V, Naccache N. Intractable course of a submandibular abscess following difficult endotracheal intubation. A case report. J Med Liban 2019 ; 67 (2) : 103-106.

ABSTRACT • Purpose : Failure to manage airway might lead to severe life-threatening events. Oral and pharyngeal perforation and subsequent peripharyngeal abscess formation is a perilous complication of tracheal intubation. We present the case of a difficult endotracheal intubation and delayed recognition of an associated tear in the floor of the mouth in a patient undergoing a minor surgery. We also describe the management of subsequent submandibular abscess. **Clinical features :** A 24-year-old male was scheduled for strabismus surgery. He was classified as Mallampati class III. Endotracheal intubation was achieved at the third attempt, using the D-Blade™ of a C-MAC™ with a stylet. Five hours after uneventful extubation, the patient complained of sore throat and a mild neck pain. He was however discharged from hospital against medical advice. Two days later, the patient presented to the emergency department after experiencing increased neck pain, odynophagia and a 39°C fever. Computed tomography scan revealed a right submandibular abscess. He was transferred to the OR for abscess drainage. Because no fiberscope was available at the time of induction, intubation was attempted using a C-MAC™ video laryngoscope. However, the abscess drained in the oral cavity. Facing difficulties to ventilate, an emergent tracheotomy was performed immediately. A tear in the floor of the mouth was identified and was surgically repaired. The patient received adequate antibiotics and fully recovered twelve days later. **Conclusion:** In rare cases, endotracheal intubation may lead to life-threatening pharyngoesophageal complications. Therefore, anesthesiologists must be aware of such injuries because early detection is a cornerstone to successful management of these complications.

Keywords : submandibular abscess; difficult intubation; abscess drainage; floor of the mouth

Ayoub E, Tohme J, Abi Lutfallah A, Jabbour H, Chalhoub V, Naccache N. Prise en charge laborieuse d'un abcès sous-mandibulaire suite à une intubation oro-trachéale difficile. J Med Liban 2019 ; 67 (2) : 103-106.

RÉSUMÉ • Objectif : Ne pas pouvoir sécuriser les voies aériennes peut avoir des conséquences redoutables menaçant la vie. Une plaie du plancher buccal et par conséquent la formation d'un abcès sous-mandibulaire, est une complication périlleuse de l'intubation trachéale. Nous présentons le cas d'une intubation endotrachéale difficile avec un retard de diagnostic d'une plaie du plancher buccal chez un patient qui devait être opéré d'une chirurgie mineure. Nous décrivons par la suite la prise en charge de l'abcès sous-mandibulaire subséquent. **Présentation clinique :** Un jeune homme de 24 ans programmé pour une chirurgie de strabisme. L'examen clinique a montré un score de Mallampati III. L'intubation endotrachéale a été réussie à la 3e tentative, à l'aide d'un C-MAC™ avec une lame D-Blade™ et un mandrin. L'extubation s'est déroulée sans problème. Cinq heures plus tard, le patient s'est plaint d'une irritation à la gorge avec douleur au niveau du cou. Cependant, il a quitté l'hôpital contre avis médical. Deux jours plus tard, le patient s'est présenté aux urgences pour une douleur importante au niveau du cou avec odynophagie et fièvre à 39°C. Un CT scan cervical a montré un abcès sous-mandibulaire à droite. Il a été transféré au bloc opératoire pour drainage d'abcès. Une intubation a été tentée avec un C-MAC™ vu que le fibroscope n'était pas disponible au moment de l'induction. À l'introduction du C-MAC™, l'abcès s'est drainé dans la cavité orale. Face à des difficultés de ventilation, une trachéotomie a été réalisée immédiatement. Une perforation pharyngée a été identifiée et réparée. Le patient a reçu une antibiothérapie adéquate et a entièrement récupéré 12 jours plus tard. **Conclusion :** Dans de rares cas, l'intubation endotrachéale peut aboutir à des complications orales et pharyngo-œsophagiennes redoutables. Une détection précoce de ces dernières aidera l'anesthésiste à mieux prendre en charge le patient.

Mots-clés : abcès sous-mandibulaire; intubation difficile; drainage d'abcès; plaie du plancher buccal

INTRODUCTION

The incidence of a difficult airway intubation is relatively low and is reported to occur in 1 to 5.8% of patients [1-3]. However, failure to manage an airway might lead to severe life-threatening events including cerebral anoxia and cardio-respiratory arrest [4]. Healthcare providers, facing the urgency of securing a patient's airway, may cause several traumatic lesions while performing endotracheal intubation. Those complications might affect all the anatomic structures exposed to the laryngoscope and the endotracheal tube [3,5-6]. They include lip injuries, dental trauma, local scarring, vocal cords laceration or paralysis, arytenoid dislocation and in some severe cases

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aerodigestive tract perforation [5]. Oral or pharyngeal perforations in particular, and subsequent submandibular or peripharyngeal abscess formation, is a rare yet perilous complication of tracheal intubation. Its incidence increases with the number of intubation attempts and is more likely to occur with an inexperienced staff facing an emergent and difficult intubation [7-8].

Early recognition of pharyngeal perforation resulting from tracheal intubation is crucial, as delayed diagnosis can lead to a significant risk of morbidity and mortality [3,7-8]. However, prompt identification of such lesion is not always easy, as in half of the reported cases there were no signs of perforation or injury, and the anesthesia provider considered the intubation to be atraumatic [6-8].

Several authors have reported between 1974 and 2016 oral and pharyngoesophageal perforations and abscess formation after endotracheal intubation. However, the resulting course and management of this rare complication can be highly unpredictable. To our knowledge, none have described the need to perform an urgent tracheotomy during the management of a submandibular and retropharyngeal abscess that occurred following traumatic tracheal intubation.

In this paper, we present the case of a difficult endotracheal intubation and delayed recognition of an associated tear in the floor of the mouth in a patient undergoing strabismus surgery. We also describe the management of subsequent submandibular abscess.

CASE REPORT

This study was conducted after written informed consent was obtained from the patient. A 24-year-old male, with a BMI of 30.4, was scheduled for strabismus surgery. Physical examination showed right eye strabismus. His past medical record included extraocular muscles surgery during infancy. No recent ENT infection was noted. Referring to difficult intubation criteria, he was classified as Mallampati class III.

Following preoxygenation with 100% oxygen, induction was performed using intravenous lidocaine, propofol and fentanyl and IV rocuronium.

A first intubation attempt was performed by a fourth year anesthesia resident using a Macintoch® laryngoscope blade. After having failed to visualize the vocal cords, the patient was ventilated, and afterwards, a second attempt was conducted by an attending anesthesiologist using a C-MAC™ Storz® videolaryngoscope, but he failed to direct the endotracheal tube towards the vocal cords. Finally, on the third attempt, endotracheal intubation was achieved using the D-Blade™ of the C-MAC™ with a stylet that was properly placed in the endotracheal tube. Hydrocortisone 100 mg bolus IV was administered after intubation to prevent laryngeal edema. Surgical duration was about 65 minutes, and extubation was performed without any complications.

Two hours after observation in the postanesthesia care unit, the patient was returned to the ward. Five hours after extubation, he complained of sore throat and a mild neck pain. He was however discharged from hospital on the same day against medical advice.

Two days after surgery, the patient presented to the emergency department after experiencing increased neck pain, odynophagia and a 39°C fever. Physical examination showed right submandibular tumefaction, drooling and trismus. No dyspnea or dysphonia were noted.

Direct nasofibroscopy showed salivary stasis with fill of the right vallecular space, without laryngeal edema. Computed tomography scan of the neck revealed a right submandibular abscess measuring 45 mm in diameter, with infiltration of adipose tissue in the parapharyngeal and retropharyngeal spaces (Figure 1). He was transferred to the OR for abscess drainage.

We decided to go for a nasal intubation, because no fiberscope was available at the time of induction. We introduced the endotracheal tube in the left nostril, under a light sedation using propofol, but after cautiously introducing the laryngoscope blade on the right side, the abscess drained in the oral cavity, resulting in a difficult visualization of laryngeal structures.

Facing oxygen desaturation and difficulties to ventilate, an emergent tracheotomy was performed immediately, under local anesthesia. In fact, before starting the induction, we made sure that the ENT surgeons were

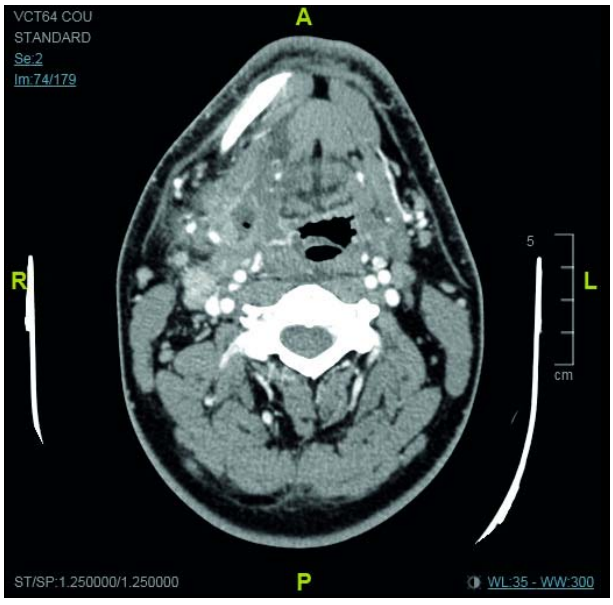

Figure 1
CT Scan of the submandibular abscess with infiltration into the parapharyngeal and retropharyngeal spaces

prepared for the possibility of an emergent tracheotomy. After securing the patient's airway, general anesthesia was started (using lidocaine, sufentanil, propofol and rocuronium). A pharyngeal perforation was identified between the right anterior tonsillar pillar and the tongue, and was surgically repaired after draining the abscess. A nasogastric tube was inserted and the patient was then transferred to the intensive care unit where he was kept NPO and received broad spectrum antibiotics (vancomycin + clindamycin + imipenem).

The culture sent from the drained abscess showed *Staphyloccocus aureus* methicillin sensitive so the antibiotics were downgraded to amoxicillin and clavulanic acid. Progressive oral alimentation was introduced at day 4 uneventfully, and a CT scan at day 11 showed complete abscess regression. The patient was discharged home on day 12 after having fully recovered.

DISCUSSION

Endotracheal intubation is used to maintain an open airway during general anesthesia or emergency situations. Complications from prolonged intubation have been widely studied, while acute traumatic injuries associated with laryngoscopy and endotracheal tube insertion have received a relatively recent attention as more cases are reported each year [3]. Aerodigestive tract perforation in particular is a rare, yet serious complication, that needs to be considered and diagnosed promptly by anesthesiologists, as subsequent morbidity and mortality can be significant [5].

Three patient factors are positively correlated to oral and pharyngoesophageal perforation: difficult intubation, age older than 60 years and female gender [3,5]. Other contributing factors include emergent intubation and laryngoscopy being performed by inexperienced personnel. In addition, curved endotracheal tubes and the use of stylets are also incriminated in this aerodigestive tract injury [5,7-8]. Moreover, any situation causing a poor visualization of the vocal cords and leading to blind intubation attempts was found to be a contributing factor; such situations include improper patient positioning, poor muscle relaxation and secretions in the airway [7-8]. Note that some authors have also reported pharyngeal injury and retropharyngeal abscess following a laryngeal mask airway insertion [9].

In the present case, we encountered several of the above-listed risk factors: in fact, it was a difficult intubation (Mallampati III, Cormack III) with three attempts to intubate, and the stylet was used at the third attempt of intubation (despite the fact that it was properly placed in the endotracheal tube). A C-MAC™ Storz® video laryngoscope could have been used from the beginning before any blind attempts of insertion of the endotracheal tube, since the patient had a Mallampati score of III. On the other hand, in order to rule out the idea that abscess formation was related to immunosuppression, it is important to note that the patient had a normal dentition and no lesions were noted in the oral cavity. Also, viral serology testing was performed and turned out to be negative.

Moreover, to prevent desaturation, the patient was ventilated between the multiple attempts of intubation. Despite the fact that there were no signs of lesions following intubation (no blood was noted at the tip of the laryngoscope blade or the endotracheal tube after extubation), minimal lesions could have occurred and could have been aggravated by face mask ventilation. In fact, in case of an airway perforation and in combination with manual ventilation, air might enter unusual locations in the neck and chest, leading to neck crepitance and subcutaneous emphysema, pneumothorax or pneumomediastinum associated with early nonspecific signs such as sore throat, cervical pain, dyspnea, and chest pain [3,10-11]. In case of delayed diagnosis, fever, odynophagia and dysphagia may follow, reflecting additional infections including cervical or retropharyngeal abscess, pneumonia and mediastinitis [10,11]. In the present case, facing manifestations such as sore throat and neck pain, our patient should have been kept in the hospital and evaluated by ENT surgeons. However, he decided to leave following surgery against medical advice.

Whenever an oral or pharyngoesophageal perforation is detected, broad spectrum antibiotics should be administered intravenously promptly [12-13]. Oral feeding is prohibited, and parenteral nutrition is initiated concomitantly. Many patients have been found responsive to this conservative treatment [12-14]. In case of evidence of abcedation or sepsis, surgical repair of the perforation and drainage of neck or mediastinal abscesses are indicated, which was the case of our patient. When facing an unstable or compromised airway, tracheostomy and surgical exploration of lesions is strongly suggested [12-14]. Whatever the case, a multidisciplinary evaluation and management is recommended; otolaryngologist, anesthesiologist, infectious disease specialist and, in some cases, thoracic surgeon, should be consulted without any delay. Despite proper preplanning, the course of management might be unpredictable in some rare situations; in the present case, our patient had undergone an attempt of nasal intubation using oral video laryngoscopy secondary to which the abscess drained in the oral cavity. In fact, the endotracheal tube was inserted in the left nostril, but the laryngoscope blade was introduced on the right side, and shortly afterwards the abscess drained. This turning of events could have been avoided if fiberoptic intubation had been performed as described by Raval *et*

al. [15]. But no fiberscope was available at the time of induction. On the other hand, we thought about introducing the laryngoscope blade on the left side since the abscess was located on the right, but this could have resulted in a difficult intubation and possibly also drainage of the abscess.

It is important to note that there are no established guidelines describing the course of action to be taken when facing a retropharyngeal abscess following aerodigestive tract perforation.

CONCLUSION

Endotracheal intubation is a seemingly innocuous maneuver that is widely encountered. However, in some rare cases, it may lead to pharyngoesophageal complications that can be life-threatening with poorest outcomes when diagnosis and treatment are delayed [5,7-8]. Even professional anesthesiologists are at risk of encountering complications in situations of difficult intubation. Therefore, anesthesiologists must be aware of such injuries because early detection is a cornerstone to successful management of oral and pharyngoesophageal complications.

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CAS CLINIQUE / CASE REPORT

PERFORATING BRAIN INJURY IN A ONE-YEAR-OLD INFANT

http://www.lebanesemedicaljournal.org/articles/67-2/case2.pdf

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El Husseini M, Hajj J, Tannous A. Perforating brain injury in a one-year-old infant. J Med Liban 2019 ; 67 (2) : 107-112.

ABSTRACT • Background : Perforating head injuries in children constitute only a small part of the total number of traumatic head injuries seen in the emergency department. Craniocerebral gunshot injuries are increasingly encountered by neurosurgeons in Lebanon, a country with increased gun culture, especially in Bekaa. Traumatic brain injury caused by a gunshot wound is the most devastating injury with a broad spectrum of symptoms and high rates of mortality and morbidity. **Case:** We present a case of a 1-year-old male infant with a perforating brain injury. Although this kind of injuries has been previously reported, the present case is special, because the patient showed no neurological deficit after surgery, despite the dangerous trajectory of the bullet. **Conclusion :** The es-tablishment of management protocol in this kind of injuries is difficult because of the variability of reported cases. Although the current literature predicts poor outcomes in patients with gunshot injuring bi-hemispheres and ventricles, this may not apply equally to the pediatric population. The pediatric population tends to demonstrate more favorable outcomes following intracranial gunshot injury when compared with the adult population.

Keywords : craniocerebral gunshot; wound; pediatric; brain injury; traumatic

INTRODUCTION

Traumatic brain injury (TBI) is the fourth leading cause of death in the United States and is the leading cause of death in persons aged 1 to 44 years. The gunshot wound to the head is associated with a mortality rate of 20-90% in adults and 20-65% in the pediatric population. Approximately 2 million traumatic brain injuries occur each year, and about $25 billion per year is spent in social and medical management of people with such injuries in the U.S. [1,2].

Fifty percent of all trauma deaths are secondary to traumatic brain injury (TBI), and 35% resulting from gunshot wounds to the head. The current increase in firearm-related violence and subsequent increase in perforating head injury remains of concern to neurosurgeons in particular and to the community as a whole.

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Perforating head injuries belong to the class of most severe traumatic brain injuries. Bihemispheric is the most common injury pattern in these cases [3]. Less frequent are injuries from knife, nails, pencils, chopsticks and scissors [4-6]. A wide variety of damage can be seen. CT and skull X-ray can demonstrate the extent of the damage. Surgery should be performed as soon as possible with debridement and proper wound closure [7]. Complications of craniocerebral gunshot injuries include infection, cerebrospinal fluid (CSF) fistula, seizures, intracranial hematoma and hydrocephalus [8,9].

CASE REPORT

We report a case of a 1-year-old male child who presented with a perforating injury of his head. His head was perforated by a bullet breaking a car's window, while he was sleeping in his mother's arms in the car. The bullet penetrated the head from the right temporal lobe and went out through the right temporal lobe. The scalp was covered by blood matted hair. The entrance wound was on the right frontotemporal lobe, with the exit wound on the left frontotemporal region. The aspect of the wound was irregular (Figure 1).

On the presentation at the hospital, the patient came in coma with Glasgow Coma Scale of 8. He was afebrile. The vital signs were stable (pulse rate: 100/min, blood pressure: 100/60 mm Hg, and respiratory rate: 18-20/min). The pupils were equal in size. Clinical features did not

Figure 1. The exit of the bullet on the left frontotemporal lobe (with the consent of K.Z.'s parents)

suggest raised intracranial pressure. No associated systemic injuries were found. We performed a CT scan showing a trajectory of the bullet and intraparenchymal bone fragments (Figure 2).

A frontotemporal right craniotomy was performed and the bullet and bone fragments were removed along with a bone flap (Figure 3).

The wound was irrigated and the necrotic brain tissue and accessible bone fragments were removed (Figure 4).

We had a conservative approach toward cerebral debridement, because removal of fragments in the eloquent areas of the brain is usually associated with worse outcome and morbidity. The wound was closed after debridement of the track. We ensured the drainage of the area of cerebral contusion (Figure 5). To avoid intracranial infection, the patient received antibiotics i.v. for 10 days and antiseizure prophylaxis.

Although this type of brain injury has the worse outcome among the three types (penetrating, tangential and perforating), the patient was able to breastfeed and drink from bottle on the second day. There was no motor or sensory loss and he was able to communicate verbally in a coherent manner. He recognized his parents and called his father (Figures 6 & 7).

Figure 2. CT scan showing the trajectory of the bullet and remaining bone fragments

Figure 3. During surgery: removal of the bone and missile fragments

Figure 4. Fragments of the bone removed

Figure 5
System of drainage used for area of cerebral contusion

Figures 6 & 7. The baby is holding his father's finger (with the consent of K.Z.'s parents)

The absence of major neurological deficits resulted from the fact that the patient was right-handed, with left cerebral dominance. CT scan of the head was done 48 hours after surgery to look for CSF leak, intracranial hematoma or abscess formation (Figures 8 & 9).

The patient presented a CSF leakage at the entry point in the first 24 hours which ceased spontaneously later. The wounds healed without complication and he had no postoperative seizures. The patient had an eventful recovery and was discharged on the 10th postoperative day. At the time of discharge, his neurological examination was normal. The parents were advised to bring him for follow-up monthly and to report immediately if there were any abnormal movement of the body parts or high-grade fever with vomiting and drowsiness.

There has been no report of seizure till date. At present he is not receiving any treatment. His growth and development are normal for his age (Figures 10 & 11).

DISCUSSION

Head trauma is common in children, but rarely presents as a perforating injury of the skull [3]. Firearm injuries are the cause of death of 18 children and young adults (24 years of age and under) each day in the U.S. Children and young adults constitute 38% of all firearm deaths and nonfatal injuries. Lebanon occupies world rank 28 by rate of gun ownership and has 36.5% of gun homicides, with 27% injury to frontal lobe and 25% multiple injuries.

Ballistics

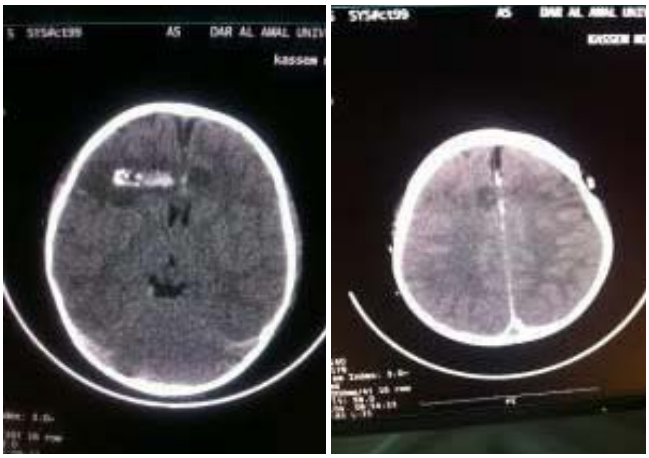
A wound in which the projectile breaches the cranium but does not exit is described technically as penetrating, and an injury in which the projectile passes entirely though the head, leaving both entrance and exit wounds, is described as perforating. Wounds are affected by many factors such as magnitude of energy transferred, distance travelled by the bullet, type of bullet, and the structures encountered before and on perforation. Low-velocity injuries do not cause concentric zones of cavitations and necrosis, but the damage is predominantly restricted to hemorrhagic infarction in the line of the wound track [10,11]. They are also very unlikely to have countercoup injuries and diffuse axonal injury. Thus, in the absence of damage to vital centers and large vessels, the prognosis is usually favorable [11,12].

A projectile loses its kinetic energy rapidly as it travels through air because of its resistance. Projectiles traveling at higher velocities carry more kinetic energy, and cause more damage, so a brain injury is expected to be much more severe in case of a close range firearm injury. If the caliber of a bullet increases, the likelihood of its perforating tendency also increases. Full metal-jacketed bullets have a greater tendency to perforate the head than lead or semi-jacketed bullets of the same or approximate caliber [13, 14]. As a projectile passes through the head, it creates a permanent cavity that is 3-4 times larger than the missile diameter and a temporary cavity that expands outward and can be as much as 30 times larger than the bullet diameter. With a centerfire rifle bullet, the permanent cavity in tissue is usually larger in diameter than the bullet [15-20].

The pathological consequences of perforating brain injuries depend on numerous factors including the kinetic energy, the trajectory of the missile and bone fragments through the brain, intracranial pressure changes, and secondary mechanisms of injury [10,21].

Classification

An early classification of craniocerebral gunshot wounds was made by Cushing and later modified by Matson.



Figures 8 & 9
CT scan performed 48 hours after surgery

Figure 10 & 11. The patient at 2 months after surgery (with the consent of K.Z.'s parents)

According to Matson there are four classes:

- Class I. Scalp wound with unassociated skull fracture.
- Class II. Skull fracture without dural penetration.
- Class III. Compound skull fracture with dural and associated brain penetration.
- Class IV. Wounds with the following complicating factors (ventricular penetration, fracture of the orbit or sinus, injury to the dural sinus & intracerebral hematoma).

Class III wounds were further divided into subtypes:

IIIa. Gutter type with no retained missile

IIIb. Penetrating variety with retained missile in the brain parenchyma and

IIIc. Perforating type with no retained missile, like in our case.

Diagnosis

Clinical evaluation and imaging exams, such as X-ray skull and CT scan, are most often used. The "tram track sign" or a hypodense wound track with hyperdense blood on either side has been associated with poor outcomes. MRI can be dangerous in cases of retained ferromagnetic objects due to possible movement in response to the magnetic torque. Nonmissile injuries should undergo a preoperative angiogram to rule out any vascular injury.

Angiography is required in cases with increased risk of vascular injury if wound trajectory is through or near the Sylvian fissure and, therefore, M1 and M2 segments of the middle cerebral artery, peripheral branches of the anterior cerebral artery, the supraclinoid carotid artery, the vertebra-basilar vessels, the cavernous sinus region or the major dural venous sinuses. Angiography can play a significant role too in delayed vascular complications such as aneurysm [22].

Management

Management goals focus on: immediate resuscitation, evacuation of masses, debridement to remove necrotic tissue, metal, bone fragments, or other foreign bodies to prevent infections, preservation of nervous tissue, hemostasis, dural and scalp closure and restoration [10].

Regarding surgical approach, some neurosurgeons prefer minimal local debridement while preserving as much cerebral tissue as possible, while others are more aggressive and try to remove all bone and any metallic fragments that are reasonably accessible. In theory, intracranial bone and metallic fragments that are not removed might be associated with a higher rate of infection, may predispose to fibroglial scarring with secondary epilepsy, or may migrate within the intracranial or intraspinal compartments. Because retained fragments have not been associated strongly with infection, they should be removed only if the fragments are accessible. Many studies based on data collected from patients who sustained craniocerebral injuries (Vietnam, "Operation Desert Storm") preferred a less aggressive surgical approach (meticulous debridement of necrotic tissue, removal of hematoma and accessible in-driven fragments and a watertight dural closure). No aggressive procedures or repeated surgery are used to remove non accessible bone fragments or shrapnel [23-25]. Bullets and other metallic fragments remain as potential sources of infection for years.

Some studies indicated that CSF fistulas were the main predisposing factor in post debridement central nervous system infections [26]. During primary surgery all efforts should be directed to primary repair of the dura to prevent CSF fistulas. The early treatment of CSF fistulas reduces the risk of infective complications and associated morbidity and mortality [27].

Complications

The most frequent complications are infection and seizures. The infection rate is higher in patients with retained bone fragments [8]. Less common complications are cerebrospinal fluid fistula and neuro-endocrine dysfunction.

Prognosis

Admission Glasgow Coma Scale score (GSC), trajectory of the missile track, abnormal pupillary response to light (APR), and patency of basal cisterns were significant determinants of patient outcome in Salar *et al*. study of 786 patients with gunshot wounds to the head, among whom 712 (91%) died [10].

A predictor tool often used is St. Louis Scale for Pediatric Gunshot Wounds to the Head [4] with a number of predictors of mortality identified: 1) bilateral fixed pupils; 2) deep nuclear injury; 3) transventricular projectile trajectory; 4) bihemispheric injury; 5) injury to ≥ 3 lobes; 6) systolic blood pressure < 100 mmHg; 7) anemia (hematocrit $< 30\%$); 8) Glasgow Coma Scale score ≤ 5; and 9) a blood base deficit < -5 mEq/L.

Based on data from the 71 patients in Memphis researchers' study from 2016, the positive predictive value of the St. Louis scale in predicting death (score ≥ 5) was 78% [28]. This system, due to the high rate of mortality, suggests that a patient with a score of 5 or higher should first undergo medical management and further, more invasive treatment depending on the patient's ongoing clinical status.

Craniocerebral gunshot injuries in children may cause sequelae depending on the site of lobe injury. According to Ewing-Cobbs *et al*. [29], cognitive and motor function is clearly more impaired in children younger than five years of age at the time of injury than in older children.

In older children and adolescents, gunshot wounds to the head are associated with impaired attention, adaptive behavior and behavioral disorders.

CONCLUSIONS

Treatment ranges from pure medical management to decompressive craniectomies.

A bullet crossing the anteroposterior plane carries the mortality rate of 25% as opposed to the 83% mortality rate for the bullet that crossed the mid-sagittal plane, mainly due to the involvement of both hemispheres. Bifrontal injuries may have much better outcomes than more posterior injuries and lateral injuries have worse outcomes than antero-posterior injuries.

There is a high probability of death or poor outcome if the areas of injury include the brain stem, eloquent cortex or ventricles. Patients presenting with a Glasco Coma Scale < 5 have a mortality rate nearing 100%. The pediatric population tends to demonstrate more favorable outcomes following intracranial gunshot injury when compared with the adult population due to the increased plasticity of the brain in young age [30]. The developing brain is capable of more significant reorganization and recovery after injury and is less likely to develop progressive cognitive decline, and the ongoing development may in actuality promote recovery [31-33]. Children admitted with a missing motor response or fixed and bilaterally dilated pupils also have a lower mortality rate and higher functional outcome (72.2% versus 63.1%, respectively) than adults with the same initial presentation, therefore they could benefit from early and aggressive treatment [4,34-36]. A careful history, thorough examination, observation and neuroimaging in selected cases should provide timely identification of the patients that require further treatment.

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CAS CLINIQUE / CASE REPORT

LEFT PARA-UMBILICAL INCISIONAL HERNIA APPENDICITIS
A Case Report and a Review of the Literature

http://www.lebanesemedicaljournal.org/articles/67-2/case3.pdf

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Abou Ghazaleh R, Sarraf D, Moussa T, Sabbah M. Left para-umbilical incisional hernia appendicitis: A case report and a review of the literature. J Med Liban 2019 ; 67 (2) : 113-116.

ABSTRACT • Background : Acute appendicitis is widely considered a surgical emergency. The herniation of an inflamed appendix is not common, it occurs in 0.13% of all appendicitis cases; it has been described in groin hernias as Amyand's hernia referring to Claudius Amyand, the first surgeon who performed an appendectomy in 1735. **Case report :** We describe the case of a 65-year-old female with acute appendicitis situated in a left para-umbilical incisional hernia following a vertical caesarian section. Acute appendicitis was highly suspected preoperatively on computed tomography scan (CT scan) and confirmed intraoperatively. A concomitant severe right colitis was noticed along with localized peritonitis. A right hemicolectomy was performed with subsequent primary repair of the hernial defect. **Discussion** : Even if atypical herniated appendicitis constitutes a rare presentation, we should be aware of its complications and make an early assessment with CT scan when clinical signs are doubtful. The herniation of digestive contents through large defects caused by laparotomies is usually more frequent than through laparoscopic port sites. Defects should be repaired considering their size and the degree of contamination of the hernial sac. There is no consensus for mesh use in contaminated incisional hernias. The primary goal must remain, as in our case, treating the acute abdomen.

Keywords : incisional hernia; acute appendicitis; appendectomy; peritonitis; hernia repair.

Abou Ghazaleh R, Sarraf D, Moussa T, Sabbah M. Appendicite para-ombilicale gauche éventrée: Rapport d'un cas et revue de la littérature. J Med Liban 2019 ; 67 (2) : 113-116.

RÉSUMÉ • Contexte: L'appendicite aiguë est largement connue comme une urgence chirurgicale. L'issue d'un appendice inflammatoire à travers une hernie n'est pas fréquente, elle survient dans 0,13% de toutes les appendicites; elle a été décrite dans les hernies de l'aine et nommée hernie d'Amyand en référence à Claudius Amyand, le 1er chirurgien qui a pratiqué une appendicectomie en 1735. **Cas clinique** : Une femme de 65 ans présentant une appendicite aiguë située dans une éventration paraombilicale gauche survenant après une césarienne verticale. L'appendicite aiguë était hautement suspectée en préopératoire sur le CT scan et confirmée en peropératoire ainsi qu'une colite droite sévère avec une péritonite localisée ; une hémicolectomie droite a été réalisée avec une fermeture primaire de l'orifice herniaire. **Discussion :** Malgré la rareté de l'appendicite herniaire atypique, on doit anticiper ses complications et faire une évaluation précoce par CT scan lorsque la clinique est douteuse. La hernie du contenu digestif à travers les grands orifices de laparotomie est généralement plus fréquente que via les orifices de trocarts laparoscopiques. Les orifices herniaires doivent être réparés compte tenu de leur taille et du degré de contamination du sac herniaire. Il n'y a pas de consensus pour l'utilisation de mèches dans les éventrations contaminées. Le but principal doit rester, comme dans notre cas, le traitement de l'abdomen aigu.

Mots-clés : hernie incisionnelle; appendicite aiguë, appendicectomie; péritonite; réparation herniaire.

INTRODUCTION

Acute appendicitis is widely considered a surgical emergency. Incarcerated appendicitis has been described in all types of external hernias, mostly in inguinal hernias known as Amyand's hernias referring to Claudius Amyand, the first surgeon who performed an appendectomy in 1935 [1,2]. However, the finding of acute appendicitis in an incisional hernia is rare and is reported at 0.008% [1,3]. Anatomic causes for atypical locations of the appendix, whether it is normal or inflamed, include malrotation during embryonic development, previous surgery and hypermobility of the caecum [1,4-7). Extraluminal compression has been proposed as the explanation for acute inflammation in hernial appendicitis. The cause of extraluminal compression varies from a narrowed hernial neck causing direct ischemia to repeated trauma creating inflammatory adhesions [1,4]. Abdominal findings, pyrexia and leukocytosis are not helpful in the differential diagnosis [8].

Atypical appendicitis does not share the same symptoms of acute appendicitis, it presents with symptoms and signs of incarcerated hernia, therefore an accurate preoperative diagnosis is difficult. Preoperative computed tomography (CT) may be of benefit in demonstrating

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the presence of the appendix within atypical incisional hernias and searching for eventual complications [1,7,9]. The management can globally vary from appendectomy and hernia repair to more aggressive treatments as digestive segments resection [10-11]. Herein, we would like to report our case of a successfully treated acute perforated appendicitis with a severely affected right colon presenting in a left para-umbilical hernia in a 65-year-old lady with 3-months follow-up. To the best of our knowledge, this is the first case of incisional hernia appendicitis described in the Lebanese literature.

CASE REPORT

A 65-year-old female with a history of diabetes mellitus, hypertension, coronary artery disease and vertical caesarian presented to the emergency department with abdominal distension, nausea, severe abdominal pain, especially in the left para-umbilical region where we had found a huge incarcerated mass associated with erythematous inflammatory skin that had developed three days earlier. The patient was also complaining of low-grade fever, constipation and loss of appetite.

Blood tests on admission showed: White blood count (WBC): 15870/mm^3 with PMN: 79.4%; hemoglobin: 12.9 g/dl, hematocrit: 39.3%; C-reactive protein (CRP): 102 mg/L; creatinine: 0.63 mg/dL; potassium: 4 mmol/L; sodium: 139 mmol/L; platelets: 254000/mm^3; SGOT (serum glutamic-oxaloacetic transaminase): 19 U.I.; SGPT (serum glutamic-pyruvic transaminase): 11 U.I.

Abdominal CT scan showed a mobile caecum and complete disinsertion of the righ colon, both of them contained almost completely in a huge hernia situated in the lower left para-umbilical abdominal wall; there was an enhancement of the wall and a mucosa edema of the last ileal loop which was partially situated in the hernia. The great omentum was incarcerated through the same hernia with some tissue retention.

There was no free fluid in the abdomen.

The patient was admitted for surveillance and a symptomatic treatment was conducted.

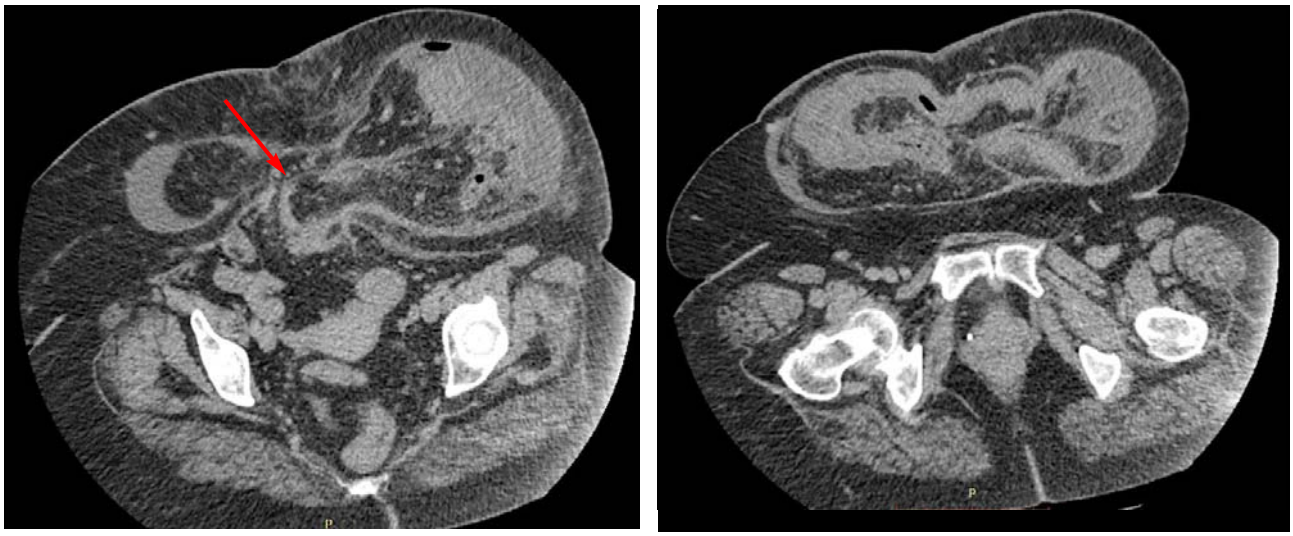
We did a blood test control 48 hours post admission that showed a severe systemic infection with huge increase of WBC to 36800/mm^3 with PMN to 86.3%. The CRP level also showed a fearsome increase to 540 mg/L. The procalcitonine was at very high level: 186.26 ng/ml.

Concomitantly, the patient was exhibiting a net clinical deterioration with high grade fever, asthenia, persistent abdominal pain and diarrhea.

An abdominal CT scan of control showed previously known abdominal wall hernia containing this time many bowel loops with parietal thickening and submucosal edema, especially in the right colon. The appendix was very dilated with suspicion of inflammation and perforation because of ileocecal fat stranding and free fluids and gas. (Figures 1,2)

We consequently carried out an urgent laparotomy under general anesthesia using the same vertical caesarian incision. The pathologic findings were fortunately limited to the abdominal hernia where we had encountered a severe purulent localized peritonitis, mostly due to the perforated tip of the appendix which has also led to the inflamed aspect of right colon. We performed a right colectomy and a right para-umbilical ileostomy leaving a closed colon loop free in the abdomen.

A meticulous peritoneal toilet was done especially in



Figures 1 & 2. Abdominal CT scan showing an abdominal hernia with a neck not so thight, containing a big amount of fluids and suspected free gas particles due to a perforated appendicitis (⟶). Many intestinal loops with parietal thickening and submucosal edema are present. We can see fat stranding of the mesos.

the hernial pouch. The hernial sac was resected and the defect was primarily repaired using resorbable sutures without involving a mesh. A Penrose was used to drain superficially the inflammatory skin corresponding to the hernia. Finally, we closed the vertical abdominal wall incision in separate simple sutures with multilevel drainage installed in the abdomen and superficially.

On postoperative (post-op) day 2, the patient was clinically well, she had gas through the ileostomy and tolerated the liquid diet, blood tests were significantly better with WBC dropping to 21260/mm^3 and CRP level to 285.8 mg/L; these two tests were completely normalized on post-op day 13. We consequently allowed the ablation of the drains and discharged the patient.

Meanwhile, the pathology report received on post-op day 10 showed the following:

– No tumoral lesion in the resected segments.
– All the mesos were inflamed and characterized by a deposit of some necrotic and stercoral particles.
– The overall aspect was of a perforated necrotic appendicitis.

The patient was regularly seen for post-op control in the outpatient department and a closure of ileostomy was programmed 10 weeks after the first intervention.

It was successfully conducted with the same laparotomy incision, the anastomosis was done manually with resorbable sutures. The post-op period was satisfying and no major accidents or complications occurred.

DISCUSSION

Incisional hernias remain a major problem in health care services. They constitute the most common long-standing complication after laparotomies, with incidences ranging from 3.8% to 20% [1]. Port site hernias (PSH) are the laparoscopic equivalent of open incisional hernias [4] with a reported occurrence of 0.8 - 2.8% [8].

The incidence of acute appendicitis in a hernial sac is rare and reported at 0.008% [1,4]. This entity is called Amyand's hernia when it occurs in inguinal region; it refers to Claudius Amyand, the surgeon who performed, in 1735, the first appendectomy in history of an inguinal rupture with a pin in the appendix coeci incrusted with stercolitis [2]. On the other hand, in 2013, Sugrue *et al*. were the firsts to describe a case report of an acute appendicitis presenting in a 5 mm laparoscopic port site hernia [1].

Unusual anatomical locations of the appendix may be due to malrotation during embryonic development, previous surgery and hypermobility of the caecum. Extraluminal compression has been proposed as the explanation for acute inflammation in hernial appendicitis. The cause of extraluminal compression varies from a narrowed hernial neck causing direct ischemia to repeated trauma creating inflammatory adhesions. Consequently, diagnosis is virtually never made preoperatively, strangulation being considered the likely diagnosis [8].

In our case, the herniated appendicitis through a paraumbilical defect is mostly a result of the past vertical caesarian, the defect was not so narrow to compress the appendix exteriorly, so the main reason retained for the inflammation in hernial appendicitis was the inflammatory adhesions caused by repeated traumas through the hernia. The concomitant right colitis could be due to the same mechanism of appendicitis or to the perforated appendicitis itself with consequent localized peritonitis.

The symptoms of our patient were not specific for an acute appendicitis but for an incarcerated bowel loop. As indicated in the literature, we recommend making an early abdominal CT scan to get a more accurate diagnosis and an early assessment to elude serious complications, especially when symptoms are doubtful. In our case, the first abdominal CT scan done upon admission did not show major findings related to the incarcerated hernia and the wait-and-see strategy was justified. Forty-eight hours after admission, a second CT scan done for clinical and biological deterioration showed signs of localized peritonitis.

Because of some severe findings encountered intraoperatively, such as acute perforated appendicitis, localized stercoral peritonitis, preperforated fragile right colon and bloody dissection, we adopted a very aggressive management carrying out a right colectomy. It was not justified to repair the hernia neck with neither a prosthetic nor a synthetic mesh; the first type would certainly have led to an increase of recurrent rate, and the second type could have carried a 50% risk of wound infection [1,7]. We adopted the most rational approach in infected cases doing a primary closure of the hernia with parietal wound irrigation and drainage, and large spectrum antibiotics [8] in addition to a terminal ileostomy which was closed ten weeks later.

In summary, atypical herniated appendicitis constitutes a rare presentation but should be meticulously investigated. An early assessment with CT scan should be conducted, for it can modify the surgical technique. Globally, the management includes appendectomy and hernia repair; multiple approaches were proposed in the literature including transherniotomy, transabdominal and laparoscopic procedures [10]. Appendectomy through transherniotomy with subsequent primary hernia repair are justified in the early diagnosis of an atypical appendicitis, any delay in such diagnosis could lead to a complicated pathology and a higher mortality as well as morbidity rate [1,4-5,8,11] and would certainly modify the intraoperative strategy to adopt an aggressive treatment as for

strangulated digestive segments. Defects should be repaired considering their size and the degree of contamination of the hernial sac. There is no consensus for mesh use in contaminated incisional hernias. The primary goal must remain, as in our case, treating the acute abdomen and hernia primary repair if applicable. Use of a non-biological mesh should be avoided given the high incidence of infection, and hernia repair should be delayed if the defect is too large to close primarily. Biological meshes may have an increasing role in the closure of contaminated incisional hernias [9].

In conclusion, there are no sufficient scientific and medical evidences concerning this issue, and the optimal management is not yet determined.

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CAS CLINIQUE / CASE REPORT

GROWING TERATOMA SYNDROME OF THE OVARY
Case Report and Review of the Literature

http://www.lebanesemedicaljournal.org/articles/67-2/case4.pdf

Paul Henri TORBEY[1], Carla EL HABER[1*]

Torbey PH, El Haber C. Growing teratoma syndrome of the ovary: Case report and review of the literature. J Med Liban 2019 ; 67 (2) : 117-119.

ABSTRACT • Growing teratoma syndrome (GTS) is defined by Logothetis *et al.* in 1982 as a growth of a benign tumor after removal of a primary malignant germ cell tumor during or after treatment with chemotherapy. We report the case of a twelve year-old girl with immature ovarian teratoma who underwent surgery and chemotherapy. Her tumor markers normalized by the end of chemotherapy. However, she developed months later retroperitoneal masses that were subsequently and repeatedly resected. Histopathology revealed each time mature teratoma consistent with the diagnosis of GTS.

Keywords : ovary; immature teratoma; growing teratoma syndrome; chemotherapy; tumor markers; recurrence

Torbey PH, El Haber C. *Growing teratoma syndrome* de l'ovaire. Cas clinique et revue de la littérature. J Med Liban 2019 ; 67 (2) : 117-119.

RÉSUMÉ • Le *growing teratoma syndrome* (GTS) est défini par Logothetis *et al.* en 1982 comme une croissance d'une tumeur bénigne suivant l'ablation d'une tumeur maligne primaire pendant ou après le traitement par chimiothérapie. Nous rapportons le cas d'une fille de douze ans ayant un tératome ovarien immature traité par chimiothérapie et chirurgie. Les marqueurs tumoraux se sont normalisés à la fin du traitement par chimiothérapie. Cependant, elle a développé des mois plus tard des masses rétropéritonéales réséquées à plusieurs reprises et l'histopathologie révélait invariablement un tératome mature constituant un GTS.

Mots-clés : ovaire; tératome immature; *growing teratoma syndrome*; chimiothérapie; marqueurs tumoraux; récidive

INTRODUCTION

The growing teratoma syndrome (GTS) is defined as a mature teratoma combined with normal tumor marker levels that may occur after treatment of malignant nonseminomatous germ cell tumors (NSGCT) [1]. It has been reported in 12% of ovarian germ cell tumors [2]. It typically affects young adults and adolescents [3]. Diagnostic criteria include: enlarging or new masses despite appropriate chemotherapy for nonseminomatous germ cell tumors, the exclusive presence of mature teratoma and normalization of previously increased tumor markers (AFP, β-HCG or both) [4]. These tumors can metastasize particularly to the retroperitoneum, mediastinum and cervical region. Although prognosis is excellent after complete excision, it is essential that the patient be regularly followed-up with serum tumor markers and imaging. We report a case of GTS with multiple recurrences to stress the need for early recognition of this syndrome in order to prevent unnecessary chemotherapy and optimize management.

CASE

A twelve-year-old prepubertal girl presented with a one-week history of nausea, progressive abdominal pain and vomiting. Physical examination revealed abdominal distension with a large palpable pelvic mass. Laboratory tests were normal, except for AFP, CA 125 and LDH which were 500 UI/ml, 313 UI/ml and 865 U/l respectively. Abdominal and pelvic MRI identified a mass in the lower abdomen and pelvis (Figure 1). At laparotomy, a left ovarian mass of cystic and solid nature measuring 19 x 12 x 6.5 cm was completely resected without preservation of the ovary, along with several suspicious nodules

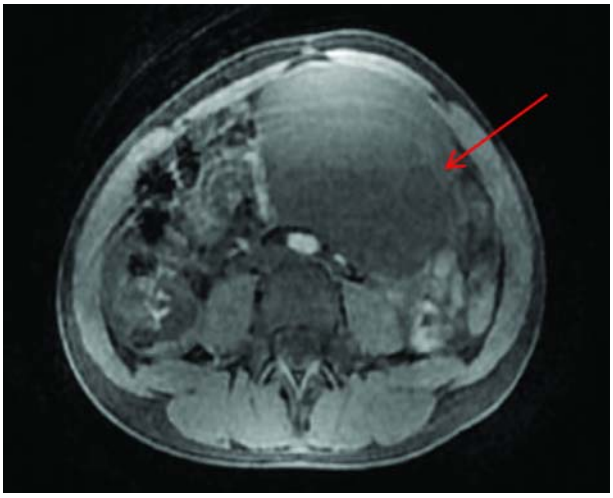

Figure 1. Abdominal and pelvic MRI showing the mass in the lower abdomen and pelvis

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within the omentum. Liver, contralateral ovary, retroperitoneal, and pelvic lymph nodes were inspected and no suspicious lesions were found nor biopsied. Histopathologic diagnosis was grade II immature ovarian teratoma. She was started on a chemotherapy regimen based on vinblastine 3 mg/m^2/day x 2 days, bleomycine 15 mg/m^2/day x 2 days and cisplatin 100 mg/m^2/day x 1 day for three cycles according to the French protocol SFOP TGM 95.

The patient remained asymptomatic with normal serum tumor markers for four months (β-hCG 2.1 mUI/ml, AFP UI/ml and CA 125 16 U/ml) and when she reported lower abdominal discomfort, tumor markers at that time were negative. A pelvic ultrasound showed a right ovarian multilobulated mixed solid and cystic mass measuring 71 x 54 x 57 mm (Figure 2).

A second laparotomy showed right ovarian mass and many peritoneal implants that were all removed and sampled for pathologic examination with preservation of the right ovary. Histopathology showed mature teratoma with no malignant component.

Eight months later, a third exploratory laparotomy for recurrent abdominal masses showed multiple implants studding the right subdiaphragmatic space and hepatic capsular region. The lesions were all resected and histopathology revealed again mature teratoma with no malignant cells.

The patient was followed with serial ultrasonography and serum tumor markers which remained normal. At the time of this report, the patient is a healthy fourteen-year-old girl with no evidence of disease.

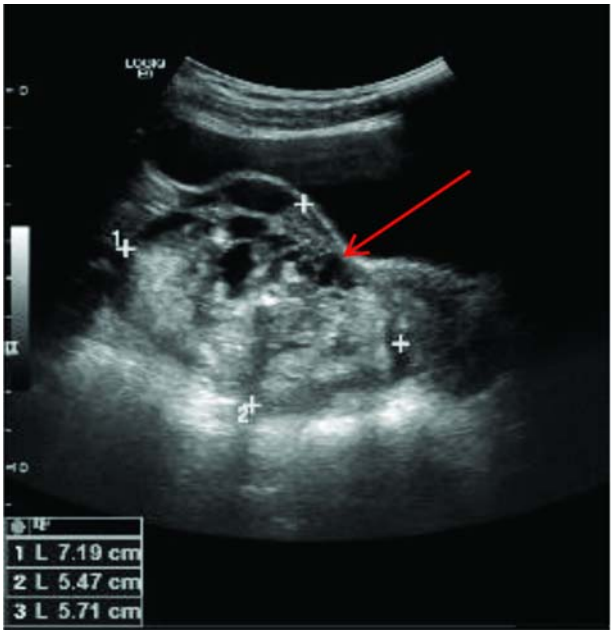

Figure 2. Abdominal and pelvic ultrasound identified a right ovarian multilobulated mixed solid and a cystic mass measuring 71 x 54 x 57 mm.

DISCUSSION

Germ cell tumors are rare in children under fifteen years, accounting for approximately 3% of cancers in this age group [1].. GTS is an unusual syndrome that may occur after treatment of malignant nonseminomatous germ cell tumors (NSGCT), with an incidence of 1.9 to 7.6% [4]. Three criteria are needed to define GTS: 1) An evolving tumor mass or occurrence of a new tumor mass during or after chemotherapy for NSGCT; 2) the normalization of previously increased tumor markers (AFP, β-HCG or both) and 3) the presence of mature teratoma only on histology [4].

The average age at presentation of germ cell tumors is 13.8 years (4-27 years) [5]. The incidence of extracranial GCTs in 0-4 and 10-14 years old girls is 5.8 and 7.8 per 1 million respectively [6]. The precise cause of GTS is unknown and its development has been reported as early as three months after an initial malignant tumor up to eight years after diagnosis. In patients with primary ovarian NSGCT and initial peritoneal extension, GTS occurs mainly in the peritoneum [7,8].

The initial presenting symptoms are usually abdominal distension or discomfort. Diagnosis is based on the combination of imaging with evidence of one or multiple masses increasing in size and containing fat, calcifications or cysts in a patient with a history of a germ cell tumor during or after completion of chemotherapy along with normal tumor markers [9]. Metastatic lesions may appear anywhere in the pelvis, retroperitoneum, liver, lungs or mediastinum. Peritoneal, lymphatic and hematogenous dissemination routes are suggested [10]. The appearance of distant GTS suggests that metastatic malignant cells are initially present in these sites at the time of initial diagnosis even before surgery and nonruptured tumor capsule. Despite normalization of serum tumor markers during chemotherapy, the metastatic tumor continues to grow.

Surgery is the cornerstone of the management of GTS. Early diagnosis is crucial as delay might result in significant symptoms due to mechanical compression and makes surgery more difficult with higher morbidity [8]. Surgery alleviates compressive symptoms and prevents the very rare probability of sarcomatous transformation within these lesions.

Although laparoscopic surgery is an option in small tumors, in many cases open surgery was preferred based on tumor size and spread [11].

Complete excision of GTS is mandatory, because ovarian GTS recurrence rates are 50 to 83% when incompletely resected versus 0 to 4% when completely resected [5,8]. Long-term follow-up with serum tumor markers is crucial as recurrence may develop up to ten

years after initial diagnosis and should be combined with imaging [9,12]. Long-term prognosis is generally favorable [13] and the 5-year overall survival rate of patients who underwent surgery following GTS is 89% [14].

CONCLUSION

The case we report here shows that ovarian GTS may occur in prepubertal girls despite good response to chemotherapy and complete initial germ cell tumor removal. Absence of malignant components in recurrent tumor, even when tumor implants are multiple, precludes the role of chemotherapy. Laparoscopy is a tool to differentiate GTS from recurrent immature teratoma. Recurrent lesions, even when multiple, can be removed and GTS cured. In some cases tumor may recur repeatedly and multiple successive surgical interventions may be required to relieve compression of adjacent structures [15].

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CAS CLINIQUE/CASE REPORT

SEVERE CHRONIC ANEMIA SECONDARY TO GASTRIC ANTRAL VASCULAR ECTASIA

http://www.lebanesemedicaljournal.org/articles/67-2/case5.pdf

Antoine ABOU RACHED[1*], Joyce SANYOUR[1], Charelle SALEM[1]

Abou Rached A, Sanyour J, Salem C. Severe chronic anemia secondary to gastric antral vascular ectasia. J Med Liban 2019 ; 67 (2) : 120-124.

ABSTRACT • Background : Gastric antral vascular ectasia (GAVE) is a rare cause of upper gastrointestinal bleed and is associated with severe underlying chronic illness. Two major types of GAVE had been described based on endoscopic appearance: the classic "watermelon" secondary to autoimmune disease and the diffuse antral angioma related to liver cirrhosis. **Case presentation :** We report two cases of gastric antral vascular ectasia secondary to systemic disease (Sjogren's and scleroderma), presented for multiple episodes of severe anemia, responding very well after combination of endoscopic treatment (band ligation and argon plasma coagulation (APC)) **Discussion :** The clinical manifestation of GAVE ranges from asymptomatic anemia to severe acute gastrointestinal bleeding. Diagnosis is based on endoscopic appearance. Biopsies of the antral lesion show microvascular thrombi, vascular ectasia and fibrohyalinosis. Treatment can be divided into conservative, endoscopic and surgical therapy. The currently embraced endoscopic treatment modality for GAVE is APC, but in extensive deep lesions or refractory cases, endoscopic band ligation can be used.

Keywords : GAVE; endoscopic treatment; band ligation; plasma argon

Abou Rached A, Sanyour J, Salem C. Sévère anémie chronique secondaire à une ectasie vasculaire antrale. J Med Liban 2019 ; 67 (2) : 120-124.

RÉSUMÉ • Contexte: L'ectasie vasculaire antrale gastrique (GAVE) est une cause rare de saignement gastro-intestinal supérieur et est associée à une maladie chronique sous-jacente grave. Deux grands types de GAVE ont été décrits sur la base de l'aspect endoscopique : la «pastèque» classique secondaire à la maladie auto-immune et l'angiome antral diffus lié à la cirrhose du foie. **Présentation des cas:** Nous rapportons deux cas d'ectasie vasculaire antrale gastrique secondaire à une maladie systémique (Sjogren et sclérodermie), présentés pour des épisodes multiples d'anémie sévère, répondant très bien à un traitement endoscopique combinant ligature de bande et coagulation au plasma d'argon (CPA). **Discussion:** La manifestation clinique de GAVE va de l'anémie asymptomatique au saignement gastro-intestinal aigu sévère. Le diagnostic est basé sur l'apparence endoscopique. Les biopsies de la lésion antrale montrent des thrombus microvasculaires, des ectasies vasculaires et des fibrohyalinoses. Le traitement peut être divisé en thérapie conservatrice, endoscopique et chirurgicale. La modalité de traitement endoscopique actuellement adoptée pour GAVE est CPA, mais dans des lésions profondes étendues ou des cas réfractaires, la ligature endoscopique peut être utilisée.

Mots-clés : ectasie vasculaire antrale gastrique; traitement endoscopique; ligature élastique; plasma argon

CASE I

A 78-year-old lady, with history of Sjogren's disease (anti-SSA and anti-SSB positive) presented with fatigue, dizziness and epigastric pain. She denied any other gastrointestinal, respiratory or urinary symptoms.

The laboratory investigtion was significant for severe microcytic anemia with hemoglobin level of 5g/L and very low iron and ferritin level; others laboratories tests (BUN, liver function tests, prothrombin time) were within reference range.

The colonoscopy found a small adenoma. Once removed, the pathology showed an adenoma with low grade dysplasia.

The esophagogastroduodenoscopy (EGD) showed severe antral gastritis with surelevated erythematous stripes (watermelon stomach) (Figure1). Biopsies didn't show typical aspect of gastric antral vascular ectasia (GAVE).

Computer tomography scan of the abdomen and the pelvis were normal.

Video capsule endoscopy was normal.

The patient underwent two repeated sessions of band ligation of GAVE and one session of plasma argon coagulation without complications (Figure 2).

After follow-up during a period of one year by laboratory test and EGD (at 6 months), patient was asymptomatic, no evidence of gastrointestinal bleed and absence of anemia.

CASE II

A 69-year-old lady, with a history of hypertension, coronary artery disease with stent placement one month ago, dyslipidemia, hyperthyroidism, on aspirin and ticagrelor, was admitted for fatigue and dizziness with small joints

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morning stiffness. She had history of microcytic anemia which was not investigated. She denied any history of melena, hematochezia or other gastrointestinal symptoms.

The esophagogastroduodenoscopy showed gastric antral vascular ectasia with multiples antral erythematous and surelevated lesions (watermelon stomach). Biopsies didn't show typical aspect of gastric antral vascular ectasia (GAVE).

The colonoscopy was normal. Video capsule endoscopy didn't show any lesions in the small bowel.

For small joints stiffness, immunological work-up was done: anti-nuclear antibodies were positive, centromere aspect and titrate 1/2560.

Diagnosis of scleroderma was made.

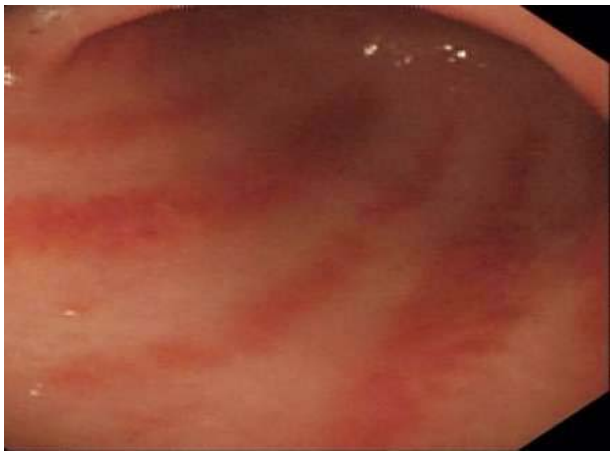

Figure 1. Upper gastroduodenal endoscopy of Case 1 showing severe antral gastritis with surelevated erythematous stripes (watermelon stomach).

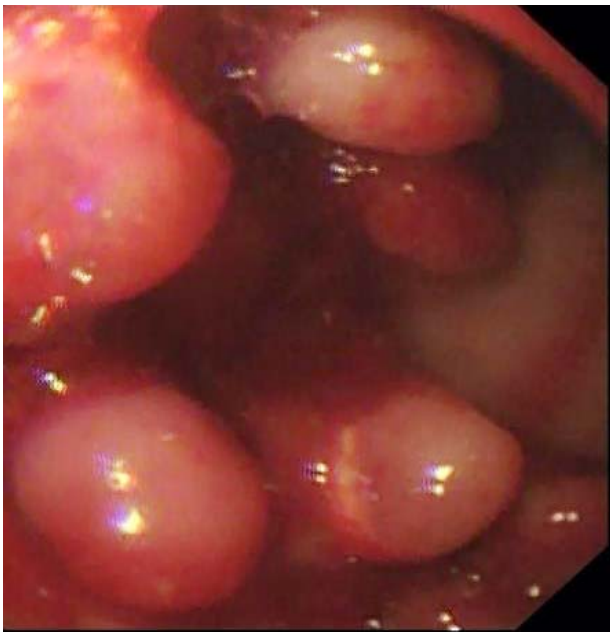

Figure 2. Band ligation of GAVE in Case 1

The patient underwent one session of band ligation followed six weeks later by a session of plasma argon coagulation without any complications.

Follow-up during 14 months by EGD at 6 months and monthly laboratory tests, the patient still had normal and stable hemoglobin and normal iron level.

DISCUSSION

We reported two cases of gastric antral vascular ectasia (GAVE) secondary to autoimmune disease, who presented for severe anemia, treated with band ligation and plasma argon coagulation, without complications and good response.

GAVE is a rare cause of upper gastrointestinal bleeding (UGIB), and causes up to 4% of nonvariceal UGIB [1,2]. It was described by Rider *et al*. in 1953 as an erosive type of gastritis with marked veno-capillary ectasia. Then in 1984, Jabbari *et al*. gave a more accurate definition of "longitudinal antral fold" [1].

The understanding of the pathophysiological changes leading to GAVE remains poor. Generally, GAVE is associated with underlying chronic illness; 30% of cases are related to cirrhosis without any relation with the degree of portal hypertension [1]. But relationship between liver cirrhosis, mainly liver dysfunction, and GAVE exists as few patients report resolution of GAVE after liver transplant [3,4]. These cirrhotic patients tend to be males (75%) with a mean age of 65 years [1].

Also 62% of patients with GAVE had coexistent autoimmune connective tissue disorder, particularly Raynaud's phenomenon in 31% [5]. Other underlying conditions include systemic sclerosis (5.7% in symptomatic and 22.3% in asymptomatic) and CREST syndrome [6]. Several antibodies have been detected in these patients (ANAs, anti-centromere and anti-RNA helicase II) especially in patients diagnosed with systemic sclerosis and GAVE with the suggestion that these antibodies could possibly have a cross-reaction with specific proteins in the gastric mucosa and submucosa that could lead to the clinical findings of this entity [5,6]. 71% of these patients are females with a mean age of 73 years [1].

GAVE is also associated with essential hypertension, chronic renal failure [7,8], acute myeloid leukemia [9] and bone marrow transplant [10,11]. It should be considered in patients with end-stage renal disease and anemia resistant to recombinant human erythropoietin [10].

In diabetic patients, the physiopathology characterized by microvascular disease due to chronic ischemia, reactive oxygen species (ROS) mediated oxidative stress, and several growth factors like VEGF-A may be considered to be the primary angiogenesis factor [12].

Other mechanisms for GAVE may be expected with

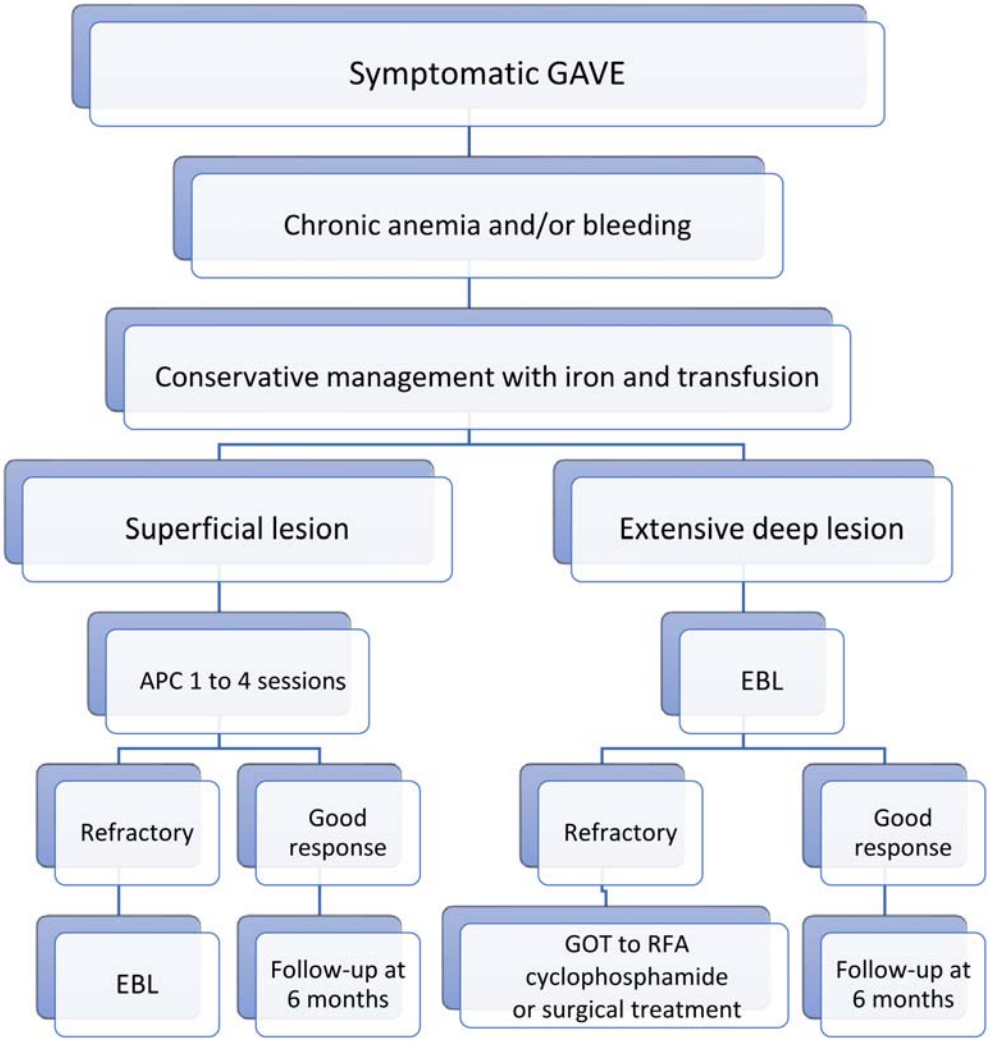

Figure 3. A summary algorithm resuming the workup and management of GAVE, *Abou Rached et al. 2017*.

achlorhydria, raised levels of gastrin and low levels of pepsinogen [1], or with prostaglandin E2 hormone having vasodilation properties [13]. Other studies show that locally high concentrations of the neurotransmitters (5-hydroxytryptamine and vasoactive inhibitory peptide) lead to the development of GAVE, by extra-epithelial and intra-epithelial proliferations of neuroendocrine cells in close proximity to ectatic blood vessels [14]. Quintero *et al*. reported the theory of mechanical stress [15]. Peristaltic waves are believed to cause a partial prolapse of loosely attached distal gastric mucosa through the pyloric ring and induce the formation of ectatic vessels [14].

The clinical manifestations range from asymptomatic anemia (low hemoglobin and MCV), symptomatic iron deficiency anemia with chronic occult blood loss [1,16, 17] (weakness, fatigue, or dyspnea), rarely heavy acute gastrointestinal bleeding and even refractory anemia [2, 17]. Some patients can also present with abdominal pain or gastric outlet obstruction.

Several studies have shown that the majority of GAVE patients will develop skin telangiectasia [18,19] in up to 60% and can be the only manifestation of systemic sclerosis with similarities in skin biopsies and gastric mucosal biopsies [5].

Endoscopically, the forms of GAVE differ between cirrhotic and non-cirrhotic patients. The first group are mostly diffuse from proximal region of stomach to the antrum while the classic form of watermelon stomach with prominent erythema traversing the antrum are more likely in non-cirrhotic patients [2,10,20]. In addition, patients without cirrhosis are at higher risk to develop active severe GI bleeding [21].

Biopsies show hyperplasia of the mucosa with capillary ectasia and thrombosis, fibromuscular hyperplasia of the lamina propria and abnormal vessels in the submucosa [1].

The treatment can be divided into conservative, endoscopic and surgical therapy (Figure 3).

The mainstay of conservative management is iron replacement, red blood cell transfusion, and treatment of underlying conditions (including cirrhosis, diabetes, scleroderma, and chronic renal diseases).

Pharmacologic treatments currently have no definitive place in the management. Therapies, such as cyclophosphamide, estrogen, progesterone, corticosteroids, tranexamic acid, octreotide, cyproheptadine, and thalidomide, have shown positive results in case reports but may result in unnecessary side effect [6,22]. In 2001, Lorenzi *et al*. reported the first improvement with cyclophosphamide in patients with diffuse systemic sclerosis and severe transfusion dependent GAVE. [23]; as well by Schulz SW *et al*. in 2009 [24] and D.A. Papachristos *et al*. in 2015 [6].

Endoscopic therapy aimed to achieve a widespread eradication of mucosal ectasia with reepithelialization without damaging the deeper layers, mostly using thermal techniques [20]. Earlier endoscopic treatment of GAVE in 1990s-2000s focused on laser technology, particularly with neodymium-doped yttrium aluminum garnet (Nd: YAG) laser with deeper mucosal injury to 4-6 mm depth which result in thermal destruction of tissue and risk of perforation [22].

Then argon plasma coagulation (APC) became the preferred endoscopic treatment because it is easy to use, safe, and has an acceptable cost with treatment success reported at up to 77% [6,25]. It is able to treat large areas of mucosa with short- and long-term efficacy [21].

Leclaire *et al*. show that noncirrhotic patients require more sessions of APC to treat GAVE lesions adequately than cirrhotic patients (2.18 *vs*. 3.77) with successful response 83.3% [26]. Multiple sessions (1 to 4 sessions) are necessary [26], and overall, hemoglobin stability is currently achieved in only one-third of patients. APC has some complications, most notably, sepsis, antral stenosis, and gastric outlet obstruction [27,28,29] with lower percentage of perforation and deeper mucosal injury [21].

Radiofrequency ablation (RFA) has strong benefits for superficial stomach lesions, initially used in the treatment of Barret esophagus. A minimal time interval of 6 weeks is usually chosen [25] with 2 to 6 sessions performed until complete eradication of the lesions is achieved [30]. Gross *et al*. report benefit of RFA after a median follow-up of 2 months with no serious adverse event [31]. As by McGorisk *et al*. by evaluating 21 patients for whom APC had failed, 18 (86%) patients did not require transfusion during the 6-month follow-up after a mean number of two RFA sessions [25,32]. RFA was considered as alternative treatment for patients with refractory GAVE and diffuse nodular type with larger and deep surface ablation [20]. But it is unclear if this technique is able to ablate the deeper submucosal vascular lesion of GAVE and larger studies and longer follow-ups are needed [22]. APC and RFA are respectively first and second-line therapy for GAVE [25]).

Endoscopic band ligation became a therapeutic modality for GAVE and required less sessions than APC. It has been used as standard treatment in esophageal varices, hemorrhoids, and Dieulafoy lesions. Wells *et al*. demonstrated the efficacy of EBL versus other modalities, specifically APC, with less need for transfusion and higher hemoglobin level [22,33]. On medium and long-term follow-up after treatment, APC has a high recurrence rate. Therefore, EBL was recently found to be useful as a treatment for GAVE and alternative for APC, especially if refractory [34]. It could be considered first line treatment in extensive area of involvement [35].

Well *et al*. and Elhendawy *et al*. compare treatment with either EBL or APC, in 88 cirrhotic patients. They revealed that EBL is more effective with lower number of treatment sessions and is comparable in safety to APC in the treatment of GAVE, and after 6 months of follow-up [34]. Other modalities like cryotherapy and sclerotherapy with Podiocanol can treat large mucosal areas and refractory cases in combination of APC; but further studies are needed to validate this approach [19].

Surgically, antrectomy is considered the only cure, but it has a 10% mortality rate[25] and especially those with combined liver cirrhosis and other serious concomitant diseases. It remains the last resort for refractory recurrent cases with extensive lesions [36].

In conclusion, GAVE should be considered in all patients with underlying chronic illness and iron deficiency anemia. The treament is based on conservative managment and endoscopic procedure. For superficial lesion, APC is the first line treatment with 1 to 4 sessions. For extensive deep lesion or refractory superficial lesion, EBL should be used with endoscopic follow-up at 6 months and one year.

Conflict of interest

The authors declare no conflict of interest.

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Dr. Boutros Amin Touma. The photo most probably dates back to the 1950s, Batroun (North Lebanon) © Alfred Moussa

Dr. Toufic Sara, examining the patient Jabbour Ouaijan; to the right is nurse Felli Hanna Salloum, to the left is nurse Marie Awad. The photo most probably dates back to the 1950s, Batroun (North Lebanon) © Alfred Moussa

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