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RESEARCH ARTICLE

ACUTE LIFE-THREATENING ILLNESSES EPIDEMIOLOGY AT A PEDIATRIC UNIVERSITY HOSPITAL'S MEDICAL EMERGENCY DEPARTMENT IN MOROCCO

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ABSTRACT

Introduction: Acute life-threatening illnesses are rarely encountered conditions at pediatric medical emergency wards but require fast and adequate management to save patient's life. The aim of this study was to assess acute life-threatening illnesses epidemiology, outcome and factors associated with death of patients at a university pediatric hospital's medical emergency department in Morocco.

Material and Methods: This cross-sectional observational study of all cases of children aged from 29 days to 15 years admitted for an acute life-threatening illness at Rabat children hospital's medical emergency room, was carried over a period of one year, from January 1, to December 31, 2014.

Results: A total of 183 patients were included, corresponding to 0.3% of all admissions during the same period. The acute life-threatening illness was related to a respiratory disorder in 45.3% of cases, to a hemodynamic disorder in 20.7% of cases, to a neurological disorder in 25.1% of cases and to another disorder in 8.7% of cases. The overall death rate was 44.8%. Acute life-threatening respiratory disorders were more frequent in patients younger than 2 years ($p < 0.001$), while acute life-threatening illnesses other than respiratory or hemodynamic or neurologic disorders were more frequent in patients over 2 years of age ($p = 0.009$). Factors associated with death were age less than 2 years (OR = 2.872 (1.528;5.399), $p = 0.001$).

Conclusion: Acute medical life-threatening illnesses in children were unfrequent but were burdened with heavy mortality in this study. Children younger than 2 years were more at risk of death.

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INTRODUCTION

An acute life-threatening illness is a life-threatening pathological process liked to a failure of at least one of the neurological, respiratory or cardiovascular functions. It's a rarely encountered condition in pediatric medical emergency wards but it requires fast and adequate management to save patient's life. The aim of this study was to assess acute life-threatening illnesses epidemiology, outcome, and factors associated with death of patients at a university pediatric hospital's medical emergency department in Morocco.

MATERIALS AND METHODS

This cross-sectional observational study of children admitted for an acute life-threatening illness at Rabat children hospital's medical emergency department was carried over a period of one year, from January 1, to December 31, 2014. All children aged from 29 days to 15 years and admitted for an acute life-threatening illness were included in this study. Data was retrospectively collected from the records of all hospital departments where children older than 29 days were admitted. Ethical clearance was obtained from the ethics committee of the faculty of medicine and pharmacy of Rabat. Data was analysed using IBM® SPSS® Statistics version 23 for Microsoft® Windows®. Descriptive statistics were calculated to describe patient's characteristics and acute life-threatening illnesses etiology. Chi-square test was used to assess association between categorical variables. A *p*-value of less than 0.05 was considered statistically significant. Univariate and multivariate analysis were conducted to determine factors associated with death. Variables that had *p*-value less than 0.25 in the univariate logistic regression analysis were entered to the multiple logistic regression model for analysis. A *p*-value less than 0.05 was finally taken as significant with 95% confidence interval.

RESULTS

During the year 2014, 55,580 children were admitted the pediatric medical emergency department. Prevalence of acute life-threatening illnesses was 0.3% (183 cases). Median age

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Table 1. Patients characteristics*

Characteristics	Patients (n = 183)	Deaths (n = 82)
Age range		
29 days to 2 years	108 (59)	60 (73.2)
2 to 15 years	75 (41)	22 (26.8)
Sex		
Male	116 (63.4)	50 (61)
Female	67 (36.6)	32 (39)
Geographic origin		
Rabat-Salé	136 (74.3)	60 (73.2)
Other	47 (25.7)	22 (26.8)
Type of acute life-threatening illness		
Respiratory disorders	83 (45.3)	36 (43.9)
Hemodynamic disorders	38 (20.7)	19 (23.2)
Neurological disorders	46 (25.1)	21 (25.6)
Other disorders	16 (8.7)	06 (7.3)
Season of admission		
Winter	41 (22.5)	21 (25.6)
Spring	48 (26.4)	20 (24.4)
Summer	41 (22.5)	18 (22.0)
Autumn	52 (28.6)	23 (28.0)
Time of admission		
During business hours (8 am to 4 pm)	75 (41)	36 (43.9)
Outside business hours	108 (59)	46 (56.1)
Initial hospitalization department		
Pediatric intensive care unit	49 (26.8)	16 (19.5)
Pediatric department	134 (73.2)	66 (80.5)

*Values are given as number (percentage).

Table 2. Etiology of acute life-threatening illnesses*

Life-threatening illnesses	Patients (n = 183)	Deaths (n = 82)
Respiratory disorders		
Laryngeal dyspnea	13 (7.1)	1 (1.2)
Acute bronchiolitis	12 (6.6)	9 (10.9)
Airway foreign body	12 (6.6)	5 (6.1)
Acute pneumonia	6 (3.3)	2 (2.4)
Acute asthma exacerbation	4 (2.2)	0 (0)
Drowning	1 (0.5)	0 (0)
Other disorders	35 (19.1)	19 (23.1)
Hemodynamic disorders		
Hypovolemic shock	13 (7.1)	7 (8.5)
Anaphylactic shock	11 (6)	1 (1.2)
Cardiogenic shock	8 (4.4)	6 (7.3)
Septic shock	6 (3.3)	4 (4.8)
Neurological disorders		
Status epilepticus	18 (9.8)	7 (8.5)
Meningoencephalitis	14 (7.7)	9 (10.9)
Coma	11 (6)	5 (6.1)
Acute flaccid paralysis	3 (1.6)	0 (0)
Other disorders		
Poisoning	7 (3.8)	1 (1.2)
Liver failure	4 (2.2)	2 (2.4)
Acute leukemia	4 (2.2)	3 (3.6)
Sickle cell disease complication	1 (0.5)	1 (1.2)

*Values are given as number (percentage).

Table 3. Life-threatening illnesses by age range*

Life-threatening illnesses	29 days to 2 years (n = 107)	2 to 15 years (n = 76)	*P-value*
Respiratory disorders	63 (58.9)	20 (26.7)	< 0.001
Hemodynamic disorders	18 (16.8)	20 (26.7)	0.119
Neurologic disorders	22 (20.6)	24 (32)	0.904
Other disorders	4 (3.7)	11 (14.7)	0.009

*Values are given as number (percentage)

Table 4. Results from univariate an multivariate logistic regressions for factors associated with patients death

	Univariate analysis			Multivariate analysis		
	OR	[IC95%]	*P−value*	OR	[IC95%]	*P−value*
Sex						
Male	1.207	[0.660;2.208]	0.541			
Female	1					
Age						
29 days to 2 years	3.011	[1.611;5.628]	0.001	2.872	[1.528;5.399]	0.001
2 to 15 years	1			1		
Geographic origin						
Rabat-Salé	0.952	[0.750;1.207]	0.683			
Other	1					
Season						
Winter	1.324	[0.583;3.010]	0.503			
Spring	0.901	[0.408;1.990]	0.796			
Summer	0.987	[0.433;2.251]	0.975			
Autumn	1					
Time of admission						
During business hours	1.244	[0.688;2.249]	0.470			
Outside business hours	1					
Initial hospitalization department	0.500	[0.251;0.992]	0.048	0.554	[0.273;1.126]	0.103
Pediatric intensive care unit	1			1		
Pediatric department						
Type of acute life-threatening illness	1					
Respiratory disorders	0.806	[0.376;1.730]	0.580			
Hemodynamic disorders	0.884	[0.376;2.079]	0.778			
Neurological disorders	0.702	[0.210;2.351]	0.566			
Other disorders						

OR: odds ratio; [IC95%]: 95% confidence interval

was 2 years (1 year − 6 years). Patients aged from 29 days to 2 years accounted for 59% of all patients. Sex-ratio was 1.73. The majority of children (74.3%) were from Rabat-Salé region. Children were admitted during working hours (before 4 pm) in 41% of the cases. Only 26.8% of the patients were admitted initially to intensive care in the shooting room. Other patients' characteristics are described in Table 1. The acute life-threatening illness was related to a respiratory disorder in 45.3% of cases, to a hemodynamic disorder in 20.7% of cases, to a neurological disorder in 25.1% of cases, and to another disorder in 8.7% of cases. The overall death rate was 44.8% (82 patients). Detailed etiology of acute life-threatening illnesses is given in Table 2. Acute life-threatening respiratory disorders were more frequent in patients younger than 2 years ($p < 0.001$), while acute life-threatening illnesses other than respiratory or hemodynamic or neurologic disorders were more frequent in patients over 2 years of age ($p = 0.009$). Other life-threatening illnesses by age range data is summarized in Table 3. In univariate analysis, factors significantly associated with death were age between 29 days and than 2 years (OR = 3.011 (1.611;5.628), $p = 0.001$) and initial hospitalization in a non intensive care unit (OR = 0.50 (0.251;0.992), $p = 0.048$). In multivariate analysis, and adjusting to all other factors close to significance in univariate analysis which explained 8% of death causes, only age less than 2 years remained significantly associated with death (OR = 2.872 (1.528;5.399), $p = 0.001$) as shown in Table 4.

DISCUSSION

Acute medical life-threatening illnesses were unfrequent but were burdened with heavy mortality in our study. This high rate of mortality could be explained by the lack of ICU beds and sometimes by the lack of coordination in case of patient referral to our department or the excessive waiting times for the diagnosis and treatment due to the large flow of patients seen in hospital emergencies (Gentile *et al*., 2010; Jeandidier *et al*., 1999). Children younger than 2 years who are particularly vulnerable were predictably more at risk of death in this study. The management of medical emergencies around the world has improved considerably over the past forty years (Gatti *et al*., 2014; Saint-Martin *et al*., 1999). Many journals, books and conferences are now devoted to emergency medicine, and emergency medicine was established as a medical specialty in many countries. However, this emergency management improvement concerned more emergencies occurring outside the hospital. Interest in emergency management in hospitals is more recent. Guidelines in emergency medicine were published in the early 2000s and some experiments of implementing these recommendations have been reported in the literature (Kirk and Nilsen, 2016). However, it seems that the management of emergencies remains to be organized in many hospitals. This study allowed us to assess medical acute life-threatening illnesses epidemiology in our hospital. Our patients median age was 2 years which was comparable to the findings of Gatti *et al*. (median age of 3 years) and Hamze-Sinno *et al*. (median age of 2.19 years) (Gatti *et al*., 2014; Hamze-Sinno *et al*., 2011). Patients aged from 29 days to 2 years accounted for 59% of all patients in our study which was consistent with other studies findings who determined that one-third to one-half of patients admitted to pediatric intensive care units were less than one year old (Gatti *et al*., 2014; Hernandorena *et al*., 2008; Thiriez *et al*., 2010). Acute life-threatening illness was mainly related to respiratory, hemodynamic or neurological disorder in our study. Similar results were reported in other studies. Respiratory disorders accounted for 26 to 47.4% of cases, hemodynamic disorders accounted for 5 to 15% of cases and neurological disorders accounted for 14 to 17% of cases in these studies (Gatti *et al*., 2014; Hamze-Sinno *et al*., 2011; Hernandorena *et al*., 2008; Thiriez *et al*., 2010). Some limitations of this study must be reported. Newborns and surgical acute life-threatening illnesses in children were not

taken into consideration since they were managed in two other departments of our hospital. A similar study that would include all medical and surgical acute life-threatening illnesses in children including newborns should be conducted to provide a global view of children's acute life-threatening illnesses epidemiology.

Conclusion

Acute medical life-threatening illnesses in children were unfrequent but were burdened with heavy mortality in our study. Children younger than 2 years were more at risk of death. Actions should be taken toward avoiding delays in the management of patients admitted for an acute life-threatening illness and in a better coordination in case of patient referral to our department which could lead to a reduction in mortality.

What is already know on this topic

- Acute life-threatening illnesses are rarely encountered conditions at pediatric emergency wards.
- To our knowledge, no previous study has evaluated pediatric acute life-threatening illnesses epidemiology in Morocco.

What this study adds

- Medical acute life-threatening illnesses in children were unfrequent but were burdened with heavy mortality in this study.
- Children younger than 2 years were more at risk of death in case of a medical acute life-threatening illness.

Competing interests

The authors declare no competing interest.

Authors' contributions

This work was carried out in collaboration between all authors. All authors took participation in the design of the study. Brahim El Gajoui: literature searches, statistical analysis and draft writing of the manuscript. Mohamed El-Mahdi Boubkraoui: data collection. Nour Mekaoui: translation of the manuscript into English. Lamia Karboubi: proofreading of the manuscript. Badr Sououd Benjelloun Dakhama: revision of the manuscript and supervision of the study. All authors read and approved the final manuscript.

REFERENCES

Gatti H, Dauger S, Sommet J, Chenel C, Naudin J. 2014. Unité de surveillance continue pédiatrique en centre hospitalier général : l'expérience récente de l'hôpital de Polynésie française. *Arch Pediatr*., 21(3):272-8. PMID: 24503456.

Gentile S, Vignally P, Durand AC, Gainotti S, Sambuc R, Gerbeaux P. 2010. Nonurgent patients in the emergency department? *BMC Health Serv Res.*, 15;10:66. PMID: 20230602.

Hamze-Sinno R, Abdoul H, Neve M, Tsapis M, Jones P, Dauger S. 2011. Can we easily anticipate on admission pediatric patient transfers from intermediate to intensive care? *Minerva Anestesiol*., 77(10):1022-3. PMID: 21952 602.

Hernandorena X, Oyharcabal V, Jouvencel P. 2008. Place des unités de surveillance continue en hôpital général. *Arch Pediatr*., 15(5):686-8. PMID: 18582715.

Jeandidier B, Dollon C, Laborde H, Paries J, Gaudelus J. 1999. Le faux débat des fausses urgences. *Arch Pediatr*., 6 Suppl 2:464s-466s. PMID: 10370571.

Kirk JW. and Nilsen P. 2016. Implementing evidence-based practices in an emergency department: contradictions exposed when prioritising a flow culture. *J Clin Nurs*., Feb; 25(3-4):555-65. PMID: 26818380.

Saint-Martin J, Devictor D, Gaudelus J. 1999. Organisation actuelle de l'accueil des urgences pédiatriques: les améliorations possibles. *MT Pédiatr*., 2(5):301-6.

Thiriez G. and Lefebvre A. 2010. Estimation des besoins en lits d'unité de surveillance continue pédiatrique, résultats d'une enquête sur 3 régions françaises. *Arch Pediatr*., 17(8):1147-52. PMID: 20510591.

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