CHIRURGIE THORACIQUE / THORACIC SURGERY

PEDIATRIC CHEST TRAUMA IN BOUAKE TEACHING HOSPITAL BOUAKE COTE D'IVOIRE

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Objective: Chest trauma in children is rare. However, they remain a source of substantial mortality. The purpose of this study was to highlight the management and outcomes of children received with chest trauma in our institution.**Patients and Methods:** We reviewed retrospectively, from 2012 to 2018, 15 children under 18 years hospitalized for chest trauma. Low chest trauma that were discharged immediately from the hospital for outpatient medical treatment were excluded. There were 13 males and 2 females. Mean age was 11.93±3.97 years. We obtained data on patient demographics, lesions, diagnostic explorations and the clinical results, treatment and results from patients' medical records. **Results:** Pediatric chest trauma represented 12.29 % (15/122) of all chest trauma we received in the study period. We collected 11 (73.33%) blunt injuries and 4 (26.66%) penetrating injuries. Traffic accidents (n=11; 73.33%) were the leading cause of the trauma. Hemothorax (n=8; 53.33%), pneumothorax (n=2; 13.33%), hemopneumothorax (n=4; 26.66%), rib fractures (n=3; 20%), lung contusion (n=2; 13.33%) and diaphragmatic rupture (n=1; 6.66%) were the most common types of thoracic injury. Extra-thoracic injuries were associated in 26.66% (n=4) of cases. Pleural drainage (n=12; 80%) was efficient in most of our cases. Mean hospital length of stay was 7.14 days (range 4-18 days). Hospital mortality was 13.33% (n=2) due to respiratory acidosis and haemorrhagic shock.**Conclusion:** Chest trauma in children is rare. Traffic accidents are the main etiology. Mortality remains high.

Keywords: Chest, Trauma, Bouake, Pediatrics.

Introduction

Chest trauma in children is rare[1]. Because, child is not an adult in miniature[2] and because of the anatomy and mechanisms differences, pediatric chest trauma should be distinguished from adults[3] . Difficulties in accurate diagnosis of chest trauma in children is due to the paucity of clinical symptoms[4]. The purpose of this study was to highlight the management and outcomes of children we received with chest trauma in our institution.

Patients and Methods

We reviewed retrospectively, from 2012 to 2018, 15 children under 18 years hospitalized for chest trauma. Low chest trauma that were discharged immediately from the hospital for outpatient medical treatment were excluded. There were 13 males and 2 females. Mean age was 11.93±3.97 years. We obtained data on patient demographics, lesions, diagnostic explorations and the clinical results, treatment and results from patients' medical records.

Results:

Pediatric chest trauma represented 12.29 % (15/122) of all chest trauma we received in the study period. We collected 11 (73.33%) blunt injuries and 4 (26.66%) penetrating injuries. Causes of chest injury were traffic accidents (n=11; 73.33%), violence (n=2; 13.33%), and do-mestic accident (n=2; 13.33%). (Table1). Table 2 lists types of chest trauma. Thus hemothorax (n=8; 53.33%), pneumothorax (n=2; 13.33%), hemopneumothorax (n=4; 26.66%), rib fractures (n=3; 20%),

lung contusion (n=2; 13.33%) and diaphragmatic rupture (n=1; 6.66%) were the most common types of injury. Extra-thoracic injuries were associated in 26.66% (n=4) of cases.
(Table 3). Pleural drainage (n=12; 80%) was effi cient in most of our cases. Mean hospital length of stay was 7.14 days (range 4-18 days). Hospi-tal mortality was 13.33% (n=2) due to respirato-ry acidosis and haemorrhagic shock.

Table 1 : Causes of chest injury

Variables	Number	%
Traffic accident	11	73.33
Domestic accident	2	13.33
Violence	2	13.33

Table 2 : Types of chest trauma.

Variables	Number	%
Rib fractures	3	20
Hemothorax	8	53.33
Pneumothorax	2	13.33
Hemopneumothorax	4	26.66
Lung contusion	2	13.33
Diaphragm lesion	1	6.66

Table 3 : Types of chest trauma.

Variables	Number	%
Cranial trauma	2	13.33
Abdominal trauma	2	13.33

Discussion

Thoracic trauma is relatively uncommon in children. Okonta[5], in Nigeria, in 2015 repported 12.1% of chest trauma in children among all chest trauma managed in his thoracic units. In our se-ries chest trauma in children represents 12.29 % of all chest trauma we received. Chest trauma in children is not occur frequently as that seen in adults and the aetiology of chest injuries in child-ren is different from that of adults[5]. Althouth ot eud saw cicaroht fo ecneuqesnoc niam ehtthe impairment of oxygen delivery and/or transport, children do not have the same responses to trauma as adults do[6]. Children have reduced functional residual capacity with higher oxygen consumption per unit body mass[7]. Thus, the major complications of chest trauma in the early period is hypoxia. Futhermore, children have a softer chest wall so that an apparently simple chest injury may easily damage the intrathoracic organs[9]. In addition to this anatomic and physiologic considerations, thoracic or pediatric surgeons must also know the most common causes of chest trauma[7]. In fact, blunt trauma is the most frequent cause of chest injuries in children[8-11].

It represents between 60% and 80% of chest injuries in younger children. Theses blunt trauma, were due to impact with motor vehicles[12, 9]. According Ismail MF[13], in 2012, in Egypt, blunt chest trauma
represented 98% of the total cases. In our series, blunt chest trauma represented 73.33% of all chest trauma. According to literature [6, 13,15], the most common thoracic injuries in pediatric trauma are pulmonary contusion, pneumothorax and Rib fractures. According to Nakayama DK [16], hemothorax is less common in blunt trauma. Our finding is contrary to this statement İn fact, ın our sis.

According to Okonta[5], in Nigeria, in 2015 and Balcı, in 2004, in Turkey, hemothorax was the secund and the third common diagnosis in pediatric chest trauma respectively. Penetrating chest trauma are rare in patients under 18 years old. We repport in our series, 26.66%. Okonta [5], in Nigeria, in 2015 repported 22.6%. Ismail MF [13], in 2012, published 2.1%. The most common injury from penetrating chest trauma is a pneumothorax, with or without a hemothorax [6].

Whether blunt or Penetrating chest trauma in children requires early resuscitative measures are to avert mortality. Most thoracic injuries can be managed either non-operatively or by tube thoracostomy[17]. Thoracotomy is reserved for persistent bleeding through chest tube, mediastinal injury or uncontrollable hemorrhage[15,18]. In our series thoracotomy was required in one child who had diaphragmatic rupture occurs by left side abdomino-thoracic blunt trauma.
Futhermore, chest can be associated to extrathoracic injury and head injury is the common cause of death [8]. According to literature, mortality rate of chest trauma in children is from 6.7% up to 25%[14,16,19,20]. Our mortality rate was 13.33%.

Conclusion:

Chest trauma in children is rare.
Traffic accidents are the main etiology.
Mortality remains high.

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