

Post-Traumatic Diaphragmatic Rupture in Children: A Case Report at Ziguinchor Regional Hospital (Senegal)

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Abstract

Post-traumatic diaphragmatic rupture is defined as the passage of a portion of the abdominal viscera into the thorax through the diaphragmatic tissue following trauma. It is rare in children and most often fits in a context of polytrauma. We report a case of fracture of the left diaphragmatic cupola associated with stage II spleen fracture following thoracoabdominal trauma by the fall of a cart in a boy of 07 years without any particular pathological antecedents. The surgical management of the patient consisted of a suture of the diaphragmatic cupola with the mersuture and a monitoring of the splenic rupture. The postoperative course was simple.

Introduction

Post-traumatic diaphragmatic rupture is defined as the passage of a portion of the abdominal viscera into the thorax through the diaphragmatic tissue following trauma [1].

Its incidence in patients admitted to the emergency room for closed trauma is between 0.2% and 4% [1,2].

This is a rare surgical emergency in children because the life-threatening condition can be quickly put in play. The aim of this work is to report a rare case of rupture of the left diaphragmatic dome associated with stage II spleen fracture in a 7-year-old child following thoracoabdominal trauma.

Observation

A 07-year-old child with no history of emergency surgery who received emergency surgery for abdominal pain and respiratory distress following a road accident. The child would have fallen from a cart with an estimated height of about 150 cm with reception on the left side of the trunk. Two hours after trauma, the child was transported aboard an unsanitary ambulance to the emergency department and the initial examination revealed a general condition with colored conjunctives at a temperature of 37 degrees Celsius. Moderate of the wings of the nose, an intense and supersternal intercostal impression, an absence of a xiphoidal funnel, an immobile thorax, an audible whine at the stethoscope, a slightly painful abdomen on palpation without a palpable mass. Auscultation, had highlighted intestinal peristalsis in the left hemi-thorax. In addition, there was benign cranioencephalic trauma and dermabrasion of the left leg. The rest of the physical exam was normal. The blood test showed any particularity. The radiograph of the frontal thorax (Figure1) showed a digestive clarity occupying almost all of the left hemi-thorax with mediastinal discharge. A thoraco-abdominal CT scan was performed urgently (Figure 2) and we retained the diagnosis of a post-traumatic diaphragmatic rupture. The transversal surgical approach under the left rib was performed under general anesthesia with orotracheal intubation. Exploration of peritoneal cavity, showed a left diaphragmatic rupture with an orifice approximately 12 cm in diameter with presence of the stomach, the transverse colon, a part of the small bowel, a spleen fracture stage II and hemoperitoneum (Figures 3 and 4). A reduction of herniated viscera was performed associated with a diaphragmatic suture in the mersuture and an abdominal toilet. The operative follow-up was simple and he was discharged from hospital on the tenth day after clinical and paraclinical control. The child was asymptomatic after six months of follow-up.



Figure 1: Chest x-ray showing abdominal viscera in the thorax.



Figure 2: Thorax CT showing abdominal viscera in the thorax.



Figure 3: Splenic rupture.



Figure 4: Diaphragmatic rupture.

Discussion

Traumatic diaphragmatic hernias are rare lesions in children [3,4]. The mechanism of diaphragmatic lesions is usually intra-abdominal hyperpressure which causes tearing of the cupolas as was our case. In case of thoracic trauma, the intra-thoracic hyperpressure generated that can lead to rupture or diaphragmatic disinsertion. Although bilateral involvement is still possible, the rupture of the left diaphragmatic cupola is the most common and frequent, because it is an anatomically fragile and poorly protected zone [4,5]. The diagnosis of diaphragmatic rupture was made on the basis of a chest X-ray by the presence of digestive elements in a pulmonary field, but the CT scan proved to be of great help. However, chest X-rays are sometimes sufficient to make the diagnosis in more than 50% of cases [5]. The thoraco-abdominal ultrasound is sometimes effective, the latter was not performed in our patient [4,6]. The associated lesion in our patient was a fracture of the spleen grade II to the American Association for the Surgery of Trauma. Usually diaphragmatic fractures are often secondary to high kinetic energy trauma explaining the association with intestinal perforations [3,4,6]. The absence of intestinal perforations in our patient could be explained by the lesion mechanism which is a low energy trauma. In our patient, we made a diaphragmatic suture with X-points in the mesh suture, which is in accordance with the data of the literature [3,4,6,7]. However, when the patient is stable, the cure of the hernia can be performed by laparoscopic surgery [2,6]. The postoperative outcome was simple for our patient, it was not thoracic drainage.

Conclusion

The rupture of the post-traumatic diaphragm is serious and rare in the child; the fracture of spleen is exceptional. Life-threatening can be involved because of the associated lesions. Early management gives good results.

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