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Original Article

Outcome of undiagnosed traumatic diaphragmatic injuries: A review of our management

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Abstract

The authors relate on the outcomes of traumatic diaphragmatic injuries unknown early. The files of three patients have been reviewed retrospectively. All of them presented early undiagnosed injuries. The first patient had a left diaphragmatic injury consecutive to a stab wound to the left hypochondrium. The diagnosis was made 18 days later. He died 2 days after operation because of septicaemia. The second patient presented a colonic strangulation through a left diaphragmatic rupture consecutive to a stab wound three years before. A resection and anastomosis to the colon was performed. The patient left the hospital with a definitive pachypleuritis. The third patient was admitted for blunt trauma to the chest with dyspnoea. The chest X-ray showed the diaphragmatic rupture. The peri- operative exploration showed an old rupture with fibrosis banks. The lesion had been respected. The outcomes of early missed traumatic diaphragmatic rupture are various. Their treatment is sometime difficult and dangerous.

Introduction:

Trauma involving the diaphragms is rare [1]. The diaphragmatic injuries are qualified to be at the head of missed lesions occurring in traumas [2]. The diagnosis of these injuries can be reached following thorough clinical examination, plain X-ray and/or the CT scan. No matter how meticulous the physician is some diaphragmatic injuries may be missed and present later with complications. Some patients have presented with gut strangulation in the chest with dyspnea long after an initial missed injury at first assessment. [3,4]. This study reviews our experience in the management of the missed diaphragmatic hernia.

Case 1

In February 1997, a 19 year old teenager was admitted at the emergency unit of our hospital with a left hypochondrial penetrating stab wound. He had no known co morbidity and his hemodynamic was stable. He was dyspnoeic. On chest examination, there was a left sided chest wall sucking wound. A chest X-ray showed a moderate hemo-pneumothorax. A chest tube was urgently inserted draining some blood but there was no improvement on the respiratory difficulty. On the 7th day post insertion of chest tube he began to run a fever.

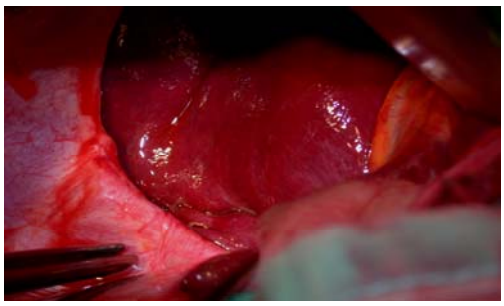

Fig 1 liver In the chest herniated through a diaphragmatic hernia

There was evidence of leucocytosis on complete blood count. On day 18th an egress of gastric contents was seen draining through the chest tube. At exploration there was a septic fluid collection in both subphrenic recesses and another large collection in the left pleural cavity. The fundus of the stomach was herniated into the left hemithorax through a large left diaphragmatic defect of about 10 cm in diameter. There was a tear on the body of the stomach. The defects were repaired and the abscesses drained. The patient continued to run a relentless fever and went into septic shock and died two days post op

Case 2

A 24 year old student presented with acute intestinal obstruction. Plain abdominal X-rays done confirmed obstruction. He was resuscitated and operated

urgently. At laparotomy it was noted that the splenic diaphragm the herniated loops were gangrenous with perforation. There was a huge empyema on the left pleural space. The gangrene segment was resected and primary anastomosis effected and the abscess was drained. A chest tube was fixed. A post operative chest X-ray revealed the lung was collapsed with evidence of fibrosis but there was no fluid collection. He recovered without incidence and was discharged home.

Case 3

A 28 years old man was admitted to our emergency unit following blunt chest trauma following a road traffic accident. There was also a 21 year history of blunt trauma to the chest at age 7 years. The nature of treatment given was not available. He was restless with a Glasgow scale score of 11. He was in shock with a blood pressure of 80/50mmHg and a pulse of 124/mn. The respiratory rate was 46/mn. A chest X-ray showed a defect (rupture) at the dome of the right diaphragmatic with intestinal herniation into the right chest (picture 1). A CT scan showed the liver herniation with it's adhesion to the parietal pleura. At surgical exploration, there was an old diaphragmatic defect on the right dome of the diaphragm with thick fibrosis of the edges. Small bowel, colon and the liver had herniated into the chest. The liver was morbidly adhered to the pleura and could not be detached. No further attempt was made at freeing the loops of gut as this was assessed to be very dangerous. The patient did well post op and was discharged and surprisingly has remained healthy on follow up.

Discussion

Diaphragmatic injury is rare [1,2,7] and was reported to be about 1,7 % and 3 % of all the patients who underwent an operation for thoraco-abdominal trauma respectively in the studies by Sacco [1] and Azorin [5]. Konan KJ and al.[6] reported 4 cases during an eight year period. Most patients present long after the injury with a previously undiagnosed injury [2]. According to Hoang AD and colleagues [7], 50 % and 33 % of diaphragmatic rupture are undiagnosed .

flexure was herniated into the dome of the left respectively on the right and the left diaphragm. In Shah's serial [2], delayed diagnosis of diaphragm rupture was 57 % compared to 43 % for early diagnosis. A meticulous clinical examination and routine chest and/or CT scan X-ray may help in the early diagnosis of diaphragmatic injury following chest trauma. Missed diagnosis commonly presents later with gut strangulation, dyspnea and haemorrhage [1,2,3,4,7.] Once diagnosed it is usually recommended that the patient be treated as a surgical emergency to relief strangulation, impending gangrene, drain abscesses if any and so doing so prevent sepsis. X-ray studies are not very sensitive [9,10] and may sometimes miss the ruptured diaphragm in a large number of cases as reported by Khan MH and al. [8] Central injuries have been reported to duplicate the liver locating one lobe in the chest and the other in the abdominal cavity[8]. Drouot and al. [10] found CT scan and the MRI useful in both early and late diagnosis of diaphragmatic ruptures. Following early diagnosis, the treatment is easy consisting of suturing the torn edges of the diaphragm. In delayed diagnosis however the treatment may be very difficult due to adhesions and some complications from the compound herniated viscus. When diagnosis is late and the orifice is large some authors [11] prefer to use prosthesis. Technically, this option may be difficult due to the several changes that may follow rupture. Prosthesis is difficult in the emergency setting and in the presence of chest complications like abscesses. The prognosis of this ruptured diaphragm is severe. The incidence of late presentation of diaphragmatic trauma is 14 % [9] and the prognosis is consistently serious and patients often die from severe infection. One of our patients (30%) died from shock and multiple lung abscesses. Mortality following early presentation is often quoted as, 1 % and 30 % for late presentation[611,12]. Though our study is a small series, the mortality looks too large to compare to larger series.

Conclusion

Although rare, diaphragmatic rupture must be diagnosed and treated urgently if not the outcomes are various and grave. Only an early Intervention will avoid the dreadful complications encountered including death.

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