Acta chir belg, 2005, **105**, 82-88

Traumatic Lesions of the Diaphragm Our Experience in 33 Cases and Review of the Literature

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Key words. Diaphragmatic rupture ; thoracicoabdominal trauma ; diaphragm ; trauma.

Abstract. We reviewed 33 consecutive patients with diaphragmatic injuries. Twenty-nine were admitted in emergency conditions after blunt (22 patients) or penetrating injury, presenting shock, dyspnoea, coma or acute abdomen in 21 cases ; major associated lesions were found in 23 patients. Four patients presented acute complications of visceral herniation 2, 4, 84 and 216 months after the trauma. The diagnosis was preoperative in 23 cases, intraoperative in 9 ; in one case it was missed at laparotomy, becoming evident the day after. The sensibility of preoperative chest x-ray and CT was 86% and 100% in presence of visceral herniation, 14% and 0% in absence of visceral hernia.
The diaphragmatic repair was always obtained by direct suture, following 20 haemostatic procedures (liver, spleen, mesenterium) and two bowel resections. The mortality rate was 24.4% ; the morbidity rate was 48%.
Traumatic lesions of the diaphragm are generally expression of particularly severe trauma whose outcome is mainly influenced by the associated lesions. They are also correlated to specific morbidity and mortality, so the surgical exploration is mandatory whenever this injury is suspected, considering that the preoperative diagnosis relies on visceral dislocation. Associated lesions influence the surgical strategy but a direct suture is usually effective in preventing specific complications.

Introduction

In western countries, the traumatic rupture of the diaphragm is a rare observation generally consequent to severe traffic or working accidents.

When dealing with patients with severe thoracic and/or abdominal trauma, special attention should be given to the possibility of diaphragmatic rupture, owing to the important sequels of a missed diagnosis. The recognition of these lesions may present some difficulties and it needs a specific attention both during the clinical and instrumental work-up : Shah *et al* (1), in a multicentric review including 980 patients, showed that a preoperative diagnosis was made only in 44% of cases, while 14.6% of the ruptured diaphragms were missed at first.

Furthermore, when treating a diaphragmatic injury, several technical options should be considered, concerning both the surgical approach and the reparation technique itself.

The aim of this retrospective work is to contribute in focusing the critical diagnostic and therapeutic points of diaphragmatic rupture through the analysis of our experience and a wide review of the literature.

Material and methods

Patients

This is a rètrospective chart review of 33 patients affected by diaphragmatic injuries and operated on in the period 1988-2003. Thirty were males and 3 females ; the mean age was 41 years (range 18-72). Twenty-six patients had a blunt trauma due to motor vehicle (22 cases) or working (4 cases) accidents ; 7 patients sustained penetrating injuries (3 stab wounds, 2 gunshot wounds and 2 vehicle accidents). Twenty-nine patients were admitted immediately after the traumatic event ; 4 had a late presentation of a traumatic diaphragm laceration 2 and 4 months, 7 and 18 years after a blunt abdominal trauma : these patients had been initially observed in other institutions and discharged without any clinical and radiological suspicion of diaphragmatic injury.

Clinical presentation and diagnosis

Shock, respiratory failure, coma and acute abdomen were the most common clinical features in acute post-traumatic patients (Table I) ; among these only 8 patients