THE IMPORTANCE OF EARLY DIAGNOSIS IN TRAUMATIC PATIENTS - CASE PRESENTATION

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Abstract

Introduction. Injuries arising from car accidents are problems that require a quick and accurate diagnosis, and when they occur in pediatric patients it becomes more difficult. This is often because children are unable to show the exact location of pain and lack precise communication, but working hard in these situations, formulating a diagnosis will be a critical step to determine the evolution (outcome?) of the patient**.** *Case report.* This paper presents the clinical observation of a patient involved in a car accident resulting in loss of consciousness and a series of complex trauma. After stabilizing the patient in the Emergency Room, he was transfered to our clinic with the suspicion of splenic rupture. After an emergency splenectomy followed, in another phase by the resolution of the orthopedic problem, the patient was discharged, about after a month of hospitalization, when the general condition improved. *In conclusion*, accidents are, regardless of their seriousness, an emergency where the exact diagnosis is mandatory and decisive.

Key words: accident, splenic rupture, femoral fracture, child

Introduction

Injuries are the leading cause of death in pediatric age. In England, the percentage of these deaths is around 20-40% for 1 to 15 years old age category. The spleen is the most commonly injured structure in abdominal trauma. Over the last two years, the efforts have been directed to preserve the splenic tissue (1, 2).

Case presentation

M.M., a 4 year, 3 month old boy, was transfered to the Department of Pediatric Surgery, Cluj-Napoca with the diagnosis of splenic rupture, for surgical treatment. The child was involved in a car accident and was projected through the windshield. He was hospitalized in the Emergency Room where he was in a state of coma, grade IV, without responding to auditory, tactile and painful stimuli. The fotomotor pupillary reflex was reduced bilaterally. Because of the general condition, he was intubated and then the doctors continued the assessment to formulate a diagnosis of all injuries.

The abdominal computer tomography revealed a 3,7/1,7 cm hypodense lesion of the spleen which was extended to the lower pole and intraperitoneal liquid in significant quantities. The description of this issue led to the diagnosis of splenic rupture.

Also, the imagistic evaluation highlighted bilateral mandibular fracture, left pleural effusion in small quantity, minor rib fractures and a fracture of the left femural in the metaphysic (Fig. 1). The diagnosis of spleen rupture made necessary the transfer of the patient into our clinic for surgical resolution. Physical examination during the admission to our clinic revealed: swelling on the left side of the face due to a hematoma around the orbita and a left eyebrow wound of about 1,5 cm. The jaw presented abnormal mobility and cracks when we tried to execute simple movements. The medial part of the thigh was deformed due to a hematoma in the lower third and at the same level we could detect bone cracks and the interruption of bone contour. Near the left rib there was a hematoma present measuring approximately 2 cm and the abdomen was relaxed, with a discreet muscular defense.

Laboratory investigation have revealed increased liver enzymes and amylase.

The computer tomography revealed a fracture of the medial and posterior superolateral walls in the left maxillary sinus; a displaced fracture in the lateral and the inferior wall of the left orbit, at the junction with the zygomatic arch; a fracture with the displacement of the mandible, between the two left incisors; a fracture of the mandible's vertical ramus, bilateral, extending on the right side up to the condyle.

We performed the surgial therapy under general anesthesia, practicing the splenectomy, with drainage and lavage of the peritoneal cavity. On the same occasion, we practiced a continued extension of his left leg. Three days after splenectomy was performed, we practiced a reduction of the paramedian fracture of mandible, a monomaxillary rigid immobilization with an acrylic tray and the mandibular fixation. During the same session we performed a manually reduction of the left malaria disjunction. After nine days in our clinic, the patient started to respond to verbal stimuli and on day twelve he was conscious and cooperative. Eighteen days after admission in our clinic, the patient underwent a new intervention regarding the left femorale fracture, during which we performed an intramedullary fixation with a special rod. Discharge was made on the 26th day after splenectomy, the patient being in a good general condition.

The patient returned to the clinic one year after the accident and the radiological examination demonstrated proper healing of the femur (Fig. 2).

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Figure 1. Antero-posterior radiograph of the pelvis and femur bilateral-fracture of the left femur in the upper third.

Figure 2. Antero-posterior radiograph of the pelvis and left femur.

Discussion

Traumatic rupture of the spleen is a medical emergency and the priority in these cases is to save lives and to resolve the other aspects leading to additional clinical improvement of the patient's clinical condition. The pediatric advanced life support guideliness, published in 1993 and revised in 1997, brought the therapeutic protocol of children with abdominal trauma (1).

Though protected by the chest, the spleen remains the most commonly affected organ in abdominal trauma, regardless of group age. Although the liver injuries in some cases are more frequent, the traumatic spleen injury remains the most common primary affected solid organ in the abdomen.

The clinical picture of splenic injury is very variable. Most patients with minor trauma to the spleen show a right lower quadrant tenderness in the upper abdomen. Sometimes there is a minor level of sensitivity in the right shoulder as a result of the subdiafragmatic nerve irritation. But in most cases the clinical picture is dominated by the presence of the hemoperitoneum, diffuse abdominal pain and peritoneal irritation. If the intra-abdominal hemorrhage is more than 5-10% of the patient's blood volume, clinical signs of early shock can be present. These include tachycardia, tachypnea and anxiety. Sometimes patients present pallor and the physical examination can detect a drop of pulse and time of recoloration. The increase in the amount of intraperitoneal blood leads to abdominal distension and peritoneal signs. Hypotension is another clinical manifestation that must be closely monitored.

The presence of a patient in the Emergency Room with splenic trauma involves two situations: the necessary and urgent splenectomy or the delay of this intervention, with a chance of preserving splenic tissue.

When the splenectomy is timed, it is recommended in the first stage to achieve a hemodynamic stability, by replacing no more than 40 ml per kg body-weight from the intravenously space. Most of these cases are associated with major bleeding, and careful observation of the evolution in this patient and frequent and accurate monitoring of fluids is essential (1, 2).

Patients which, despite appropriate therapy to rebalance, continue to present abdominal bleeding will be assessed by exploratory laparotomy, who will then decide whether a full or partial splenectomy is necessary (3).

A certain diagnosis of splenic injury is made using imaging methods. Computer tomography is the imaging investigation of choice, in cases of major abdominal trauma in children hemodynamically stable. This investigation is a method of a high sensitivity in detection of abdominal solid organs trauma (1, 2, 3, 5, 6).

Another imaging investigation is ultrasonography. This is a rapid diagnostic method, accessible and not exposed to radiation. Ultrasonography may be useful in patients who do not require surgery in the first stage an outcome which was initially assessed by computed tomography.

Despite an appropriate assessment of imaging, in one third of abdominal trauma, solid organ damage may not be diagnosed (7).

The decision of the therapeutic conduct in traumatic spleen rupture in a child, should be made based on the general condition of the patient's and the severity of the spleen injury. The situations in which we may preserv the splenic tissue are encouraging, but should not be overlooked as there are cases in which a splenectomy is essential.

Facial bone fractures are a rare pathology in pediatric age, particularly in children under 5 years, due to their increased resistance. This resistance is due to a high elasticity of the bone, a low pneumatisation, the fat tisue around bones, but also because of the stability of the mandible and maxilla.

More than a third of children who have facial fractures shows fractures of the mandible. This type of fracture can lead to airway compression because of the trauma itself and indirectly because of the hematomas or swelling.

Diagnosis is often difficult to formulate, and most times it can be suggested by the presence of an asymmetry of the face, facial bruising and swelling especially in the preauricular area. Opening and closing movements of the mouth are often limited and because of the muscle spasm and pain the patient may develop trismus (8).

Treatment of mandible fractures depends on factors such as location and type of fracture, the type of child's dentition, occlusal status. Time to immobilize the fracture is lower in children because of rapidity of healing and remodeling process. Most studies recommend immobilization for a period of 2-3 weeks (9, 10).

Fractures of the femur in children are common. The mechanism of injury varies from low-energy twisting type injuries to high-velocity injuries in vehicular accidents.

When suspecting a femural fracture, it is very important the physical examination in order to detect other injuries and to establish the neurovascular status. After clinical examination, the imaging is necessary to complete the diagnosis. Anteroposterior and lateral radiographs of the femure will show the fracture's path.

The treatment varies with age, from spica cast, tractions and spica cast to intramedullary rod, external fixator in open fractures and screw or plat.

This article highlights how trauma patients should be treated. The particularity of this case was represented first by the ruptured spleen which was a medical emergency, but also by the associated diseases-the femoral and jaw fractures and all its possible complications involved.

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