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CASE REPORT

Hemopneumothorax caused by river stingray accident in the amazon region

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Abstract

Thoracic trauma in children is a serious event, and is potentially deadly. This way, the present article aims to report a case of hemopneumothorax caused by a river stingray in the Amazon region and to briefly review the literature. This way it was concluded that river stingray accidents are common in the Amazon, however, are rarely associated to thoracic trauma.

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INTRODUCTION

Accidents involving stings by freshwater stingrays are common in the rivers of the Amazon basin[1]. The feet and distal third of the legs are most frequently involved, as the victim treads on the stingray, whose habitat is the riverbed[2]. Thoracic or abdominal perforations that lead to severe complications or death are rare[3].

Thoracic trauma in children represents 4%-12% of all cases of pediatric hospitalization, and although mortality rate is low,[4] complications such as pneumothorax are common (approximately 30%)[5]. Therefore, early diagnosis and treatment are crucial to prevent death caused by thoracic trauma in children[6].

Here we report a case of hemopneumothorax caused by a sting from a freshwater stingray.

CASE REPORT

On May 20, 2017, a 5-year-old school girl A.M.P. was admitted to the emergency room with a perforating wound in the thorax. She was taken to the hospital by her grandmother, who informed that the child was playing with friends on the riverbank near their home in Abaetetuba, state of Pará, Brazil, and dove into the river. When she returned to the surface, a stingray (phylum Chondrichthyes, family Potamotrygonidae) was adhered to her right thorax, close to the clavicle, between the sternum and the nipple.

One of her friends noticed that the animal was adhered to the thoracic wall and removed it with a wood stick. The victim sought her grandmother and was promptly taken to the local municipal hospital, where the wound was sutured. The grandmother reported that the physician on duty at that hospital determined that the child had a "pulmonary perforation" (sic). The patient was then referred to an emergency hospital in the state capital, Belém, 124 km (77 miles) from the municipality where the accident happened, to receive appropriate treatment because the local hospital did not have "the material [resources] to perform the procedure" (sic).

Upon physical examination, the child presented with moderate general condition, in pain, and in an irritated mood. She had a Glasgow score of 15, mucocutaneous pallor (1+/4+), mild tachypnea (respiratory rate: 42 bpm), no signs of respiratory distress, 95% O_2 saturation in ambient air, absence of cyanosis, mild tachycardia (110 bpm), full pulse, and good extremity perfusion. Jugular turgescence was not observed, and there were no signs of fever. A Y-shaped skin cut with contusion and irregular edges was observed. The wound was located between the mammillary line and sternum, close to the right clavicle, measuring 4 cm in its greatest length, and was sutured (Figure 1).



Figura 1. Stinger entrance wound.

On cardiac auscultation, normophonetic, rhythmic heart sounds with two clicks were heard; no heart murmur was heard, and heart rate was 110 bpm. On pulmonary auscultation, vesicular murmur could be heard bilaterally but was weaker on the right side and absent in the lower third of the right hemithorax. No adventitious sounds were heard; however, on percussion, a subsolid area was detected in the lower third of the right hemithorax.

On examination, the abdomen was flat, soft, painless, with no palpable masses or visceromegaly, and bowel sounds were present. All limbs had good perfusion, pulses were symmetrical and full, and there were no signs of softness or edema.

Further interrogation revealed no significant personal or familial clinical history. Social anamnesis indicated that the family with six members (mother, father, and four children) lived in a four-room wooden house. The family income was approximately twice the Brazilian minimum wage, corresponding to a low-income. The house had running water and sewers but the supplied water was untreated.

The patient's diet was poor, with a low consumption of vegetables. The patient had a weight of 19 kg and height of

114 cm. She attended preschool and had good neurological, psychomotor, and social development. Vaccination was on schedule.

The patient was diagnosed with a perforating thoracic injury, and the following measures were taken: admission to a high-dependency unit, oxygen support with a Venturi mask (FiO_2 50%), hydration, vital sign monitoring, and analgesia. Laboratory tests and imaging examinations were performed. The latter included a chest X-ray, which showed right-side pleural effusion, and a chest computed tomography (CT) scan, which also showed pleural effusion and non-hypertensive pneumothorax on the right side) (Figure 2). Water-seal chest drainage was then performed in the theater, and air and 300 mL of blood were drained.

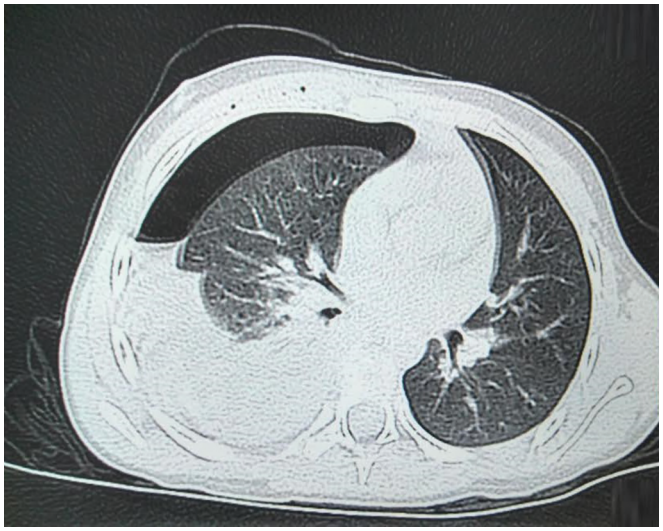


Figura 2. Thorax non-contrast CT scan showing right-side hemopneumothorax.

The patient showed improved respiratory pattern and pain relief after chest drainage and analgesia. Red blood cell concentrate transfusion was necessary because complete blood count on admission indicated that the patient had anemia (Hb, 9.6 g/dL; Ht, 28.6%) due to active hemorrhage. Serosanguinous drainage output persisted on postoperative day 1, but the patient showed no complications. The drainage tube was removed on day 5. Antibiotic prophylaxis regimen with ceftriaxone (100 mg/kg/day), oxacillin (100 mg/kg/day), and metronidazole (30 mg/kg/day) was administered. The patient continued to improve without complications and was discharged on day 10 of hospitalization.

DISCUSSION

Thoracic trauma is an important cause of preventable death. It can be classified into perforating or contusional, depending on the presence or absence of penetrating injury into the thoracic wall. Contusional thoracic trauma is more common in children and is usually caused by automobile accidents. Penetrating injury is rare and is usually associated with situations of violence (firearm and knife injuries). Pneumothorax, hemothorax, and hemopneumothorax are common complications and require water-seal chest drainage in most cases[4,7].

Accidents caused by marine or freshwater fish in humans can be divided into passive and active. Passive accidents occur when an individual ingests toxins present in fish meat, skin, or internal organs. By contrast, active accidents occur when the animal's habitat is invaded or the fish is handled, resulting in bites or stings[8]. Active accidents often involve venomous fish, whose chief representatives are stingrays[9].

Stingrays usually sting in the feet and legs and cause small wounds and disproportionate, persistent pain. Erythema and edema are common in the injured area and may progress to skin ulcers and necrosis. Other symptoms such as fever, weakness, intense sweating, and hypotension may also occur. Sequelae or even death may occur in severe cases, in which the sting affects vital organs or causes secondary bacterial infection[10].

One study reported severe trauma and death due to marine stingray stings, with abdominal, thoracic, and cardiac perforation[11]. In Brazil, stingray stings, whether severe or not, are rarely reported because they happen in remote locations in most cases. For this reason, there are few significant initiatives to decrease the number of cases of stingray stings by generating specific knowledge, producing immunobiologicals to neutralize the venom, treating and caring for victims, and educating the vulnerable population[12].

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