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CASE REPORTS

Traumatic Asphyxia due to Automobile Accident. A Case Report

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Abstract

Introduction: Traumatic Asphyxia is probably much more common than the surgical literature shows and should always be kept in mind as a possible complication of injuries of the thorax and /or upper abdomen. Traumatic Asphyxia or Perthe's syndrome is a result of a sudden and severe trauma of the thorax and /or upper abdomen. We report a case of traumatic Asphyxia due to an automobilistic accident.

Our patient is a 62-year-old male who was brought to the emergency room due to thorax trauma related to a bicycle accident. He got under a van from one side, and while the shaft of the van rotated, it pulled and crushed the patient between the body of the van and the shaft. There was no direct trauma history on the face and neck area of the patient. In our case, we found associated injuries such as a fracture of the right 7th rib, displaced fracture of the right tibia, and bilateral pulmonary contusion.

In our case, supportive therapy and specific treatment for the right tibial fracture were performed.

Conclusion: Perthes syndrome should be considered in patients presenting with the associated ecchymoses mask with cutaneous petechial hemorrhages and subconjunctival bleeding as a complication of compression of the thorax. The outcome is variable depending on the severity and duration of compression. When characteristic findings of traumatic Asphyxia are detected in traumatic patients, other organ pathologies should be quickly eliminated, and supportive therapy should be initiated. If any other organ pathology is detected, treatment for the detected pathology should be administered because the prognosis of patients with timely and effective treatment is considerably good.

Keywords: Trauma, Traumatic Asphyxia, Injury

Introduction

Traumatic Asphyxia is characterized by cyanosis, subconjunctival hemorrhage, and petechiae triad on the head–neck area, so-called Perthes syndrome. Approximately 170 years ago, Oliver reported the first clinical cases diagnosed as traumatic Asphyxia. [1] A sudden and severe trauma of the thorax and /or upper abdomen was typically the cause of this syndrome. Mainly, Perthes syndrome is caused by a motorcycle accident. The most common injuries that accompany Perthes syndrome are pulmonary contusion, hemothorax, and pneumothorax. [2] In this case report, a male patient with traumatic Asphyxia due to a bicycle accident was discussed.

Case Report

In this case report, a 62-year-old male patient who was brought to the emergency room due to thorax trauma related to a bicycle accident was discussed. From the anamnesis of the patient, it was concluded that he got under a van from one side, and while the shaft of the van rotated, it pulled and crushed the patient between the body of the van and the shaft. The patient fainted soon afterward. There was no direct trauma history on the face and neck area of the patient. The patient was treated for hypertension, and he was stable under medication. Pulses were 80 /min, and tension arterial was 123/75 mm/Hg in the patient's physical examination. Except for these, cardiovascular system examination was

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regular. The electrocardiogram was monitored as usual. Glasgow's Coma Score was 15. Distinct cyanotic, edematous, and multiple petechiae were present on the patient's face, neck, and upper thorax areas. Bilateral subconjunctival hemorrhage was detected. Subconjunctival hemorrhage of the patient is presented in Figure 1

Figure 1. Subconjunctival hemorrhage

Distinct cyanotic, edematous, and multiple petechiae, which were present on the face, neck, and upper thorax of the patient, are presented in Figure 2.

Figure 2. Shows distinct cyanotic, edematous, and multiple petechiae present on the face, neck, and upper thorax,

Pupillary isochoric and bilateral light reflexes were reactive during the patient's neurological examination. Respiratory movements were present in both hemithorax. Distal pulses of both upper extremities were palpable. There was a 20x40 cm dermabrasion area in the right tibial region, and findings like deformation and pathological movement in the right tibia were found in the upper 1/3. Hemoglobin count was normal, WBC count was 10,5K/uL, and platelet count was normal.CK count was 1040 U/L, CK-MB bioch count was 100.0 U/L, and Troponin-I count was 19.3 ng/L. Arterial blood gas analysis was compatible with respiratory acidosis. The hemoglobin value of the patient dropped inexplicably to 12.4 g/dl during the patient's followup. Minimally changed coagulation parameters were recorded PT 124%, INR 0.88, and aPTT 21.3 ne sec.

The patient was quickly evaluated with a full-body CT Scan, thyrocervical CT angiography, and direct graphics. In direct graphics, a displaced fracture was monitored in the right tibia upper 1/3. In thorax CT, on the left, a more apparent and widespread bilateral pulmonary contusion and a fracture of the right 7th rib were detected. Thorax CT image of the patient is presented in Figure 3.

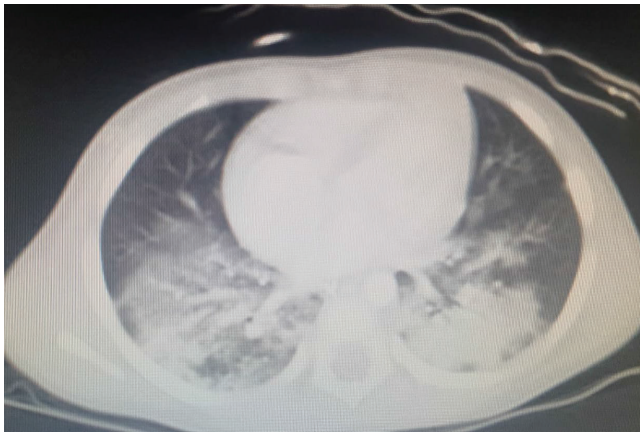


Figure 3. Bilateral pulmonary contusion on CT –Scan

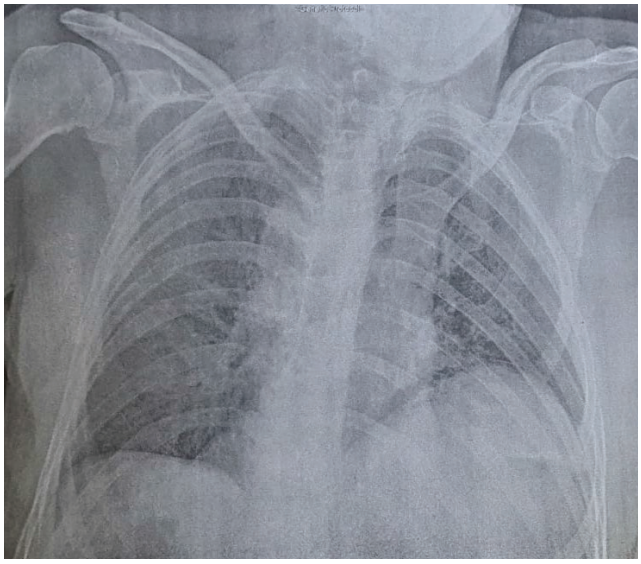


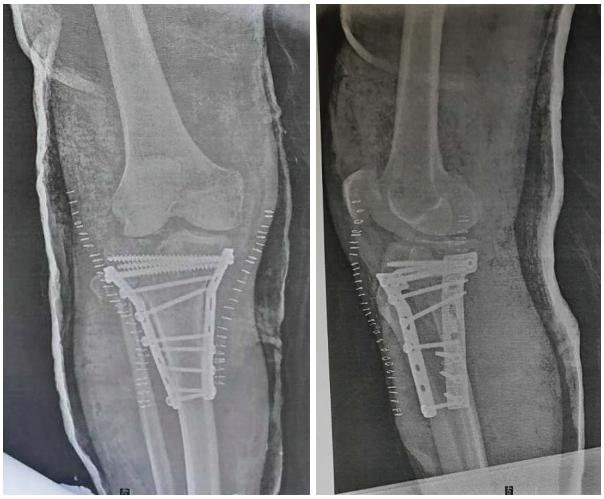
Figure 4 Geography of the thorax

Edema and hemorrhage were not detected in brain and spinal tomography. Vascular lesions were not monitored in thoracic-cervical CT angiography. The Abdomen CT image was standard.

No abnormal findings were encountered funduscopically during an eye examination. The patient was followed in the intensive care unit. Blood gas values in the intensive care unit (5L/min, under oxygen with 100%mask)were PaCo2 40,50 mmHg, PaO2 149.90 Ph 7,36 intravenous bolus of methylprednisolone (30mg/kg) methylprednisolone infusion of 5.4 mg/kg per hour for 24 hours. Fluid and electrolyte replacement and oxygen support with a mask were performed on the patient. Surgery was performed for the fracture in the right tibia (Figure 5, 6a, 6b). Mechanical

ventilation was not necessary during the followup. No complications arose during treatment. The length of the hospital stay was 16 days.

Figure 5. Right tibial fracture.



Figures 6a and 6b show A-P and L-L radiography after surgery.

At the control, after 1 month from discharge from the hospital, the patient presented with no more signs of subconjunctival hemorrhage, as in Figure 7

Figure 7. Shows no signs of subconjunctival hemorrhages after one month of discharge from the hospital.

Discussion

D'Angers was the first to describe Perthes syndrome in 1837. A clinical trial involving cervicofacial cyanosis, cutaneous petechiae, and subconjunctival hemorrhage following thoracoabdominal compression. [3]

In France's and Germany's literature were reported findings in autopsied people and similar cases related to traumatic Asphyxia, but no definition was made. [4]

In 1900, Perthes proposed a physiopathological mechanism including an abrupt rise in superior vena cava pressure during compressive chest trauma, and he observed cases diagnosed with mental confusion, hyperpyrexia, hemoptysis, tachypnea, and contusion pneumonia and cases diagnosed subsequently with progressing petechial bleeding in mucosal membranes, epistaxis, hematemesis and rectal bleeding, esophageal hematoma, albuminuria, microscopic hematuria, paraplegia, peripheral nerve damage, amnesia, and convulsion were monitored and for the first time it was described with the presently known term 'Traumatic Asphyxia '[5]

Traumatic Asphyxia is a rare condition presenting with cervicofacial cyanosis and edema, petechial and subconjunctival hemorrhages of the face, neck, and upper chest that usually occurs due to a compressive force to the thoracoabdominal region but has also been associated with asthma paroxysmal coughing, protracted vomiting and jugular venous occlusion [1, 6].

Factors implicated in developing these striking physical characteristics include thoracoabdominal compression after deep inspiration against a closed glottis, which results in venous hypertension in the valveless cervicofacial venous system [7].

Alternatively, increased airway pressure may cause the compressor to obliterate the inferior vena cava to protect the body's lower part. In the literature, it is reported that traumatic Asphyxia might develop during a 2-5 min (average) compression period [9]. Although most cases are seen as a result of motorcycle accidents, other causes include heavy machines /furniture crashes and, rarely, deep-sea diving, epileptic seizures, difficult delivery, and asthmatic attacks [10].

Senoglu et al. [8] presented a 4-year-old child developing traumatic Asphyxia associated with intramedullary spinal cord hemorrhage followed by thoracal compression. They said that it is essential for clinicians to be aware of the spinal cord hemorrhage that can be accompanied by traumatic Asphyxia and treated with steroids immediately after the trauma without radiological evidence.

Problems relating to other organ injuries can clinically be accompanied in patients with traumatic Asphyxia.[11] In our case, a generalized bilateral pulmonary contusion that is more distinct in the left and a fracture of the 7th rib were detected.

Although Perthes syndrome is seen rarely in the clinics, only 205 cases are reported; in the paper by Olusina et al. [10], they stated that as a result of an autopsy performed

on 10 out of 14 people who died during a social event, in 60% traumatic Asphyxia was detected.

The prognosis of Perthes syndrome is variable. Jobe et al. show that if Chest compression is more significant than 10 min, associated injuries are associated with poor prognosis. [3]

In other cases, traumatic Asphyxia has a good prognosis, and the management of these patients was done by giving oxygen and elevating the head to 30^0, which is called supportive treatment and is usually sufficient. [11]

However, specific treatment may be necessary to address associated injuries. In our case, supportive therapy was administered, and specific treatment was provided for the right tibial fracture. Furthermore, no additional surgical interventions were required to manage other organ pathologies, and no complications were encountered during follow-up appointments.

In conclusion, Perthes syndrome should be considered in patients presenting with the associated ecchymotic mask with cutaneous petechial hemorrhages and subconjunctival bleeding as a complication of compression of the thorax. The outcome is variable depending on the severity and duration of compression. When characteristic findings of traumatic Asphyxia are detected in traumatic patients, other organ pathologies should be quickly eliminated, and supportive therapy should be initiated. If any other organ pathology is detected, treatment for the detected pathology should be administered because the prognosis of patients with timely and effective treatment is considerably good.

COI Statement: This paper has yet to be submitted in parallel, presented fully or partially at a meeting, podium, or congress, published, or submitted for consideration beforehand.

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Patient consent: The patient's consent was obtained for the publication of the case.

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