CASE REPORT OPEN ACCESS

Isolated Cardiac Tamponade After Blunt Trauma in A Child: A Case Report

Muniba Mehmood [1*]

ABSTRACT

Hemopericardium secondary to blunt trauma can lead to cardiac tamponade which is a rare life-threatening condition. A 6-year-old girl presented with upper abdominal pain secondary to a fall of bricks on her. In ER on arrival, she had respiratory rate of 33 breaths per minute, and air entry was decreased in right lower zone of chest. Her heart rate was 145 beats per minute, and blood pressure 72/52 mmHg. The eFAST was positive for fluid present around the heart. An echocardiogram showed moderate pericardial effusion with no compression on ventricles. As the child remained hemodynamically stable so conservative treatment with closed monitoring in ICU continued. Repeat echocardiograms were done and the volume of effusion markedly decreased. Child was later discharged in stable condition.

Key words *Cardiac tamponade, Hemopericardium, Blunt trauma, Child.*

INTRODUCTION:

Blunt cardiac injury refers to an insult resulting from significant force to the anterior chest wall.[1] In pediatric age group the incidence of the great vessel and cardiac injuries is low and is infrequently reported. A study showed the incidence of cardiac injury in children as 0.8 % which is low compared to adults.[2] However in another study, at post-mortem examination 155 of the children had hemopericardium.[3] Pericardial effusion should be considered secondary to hemorrhage with the history of trauma.[4] Hemopericardium secondary to blunt trauma can lead to cardiac tamponade which is a rare life-threatening condition.[5]

In the pediatric population, an unexpected scenario of blunt trauma and cardiac tamponade can have varied presentation. These injuries can be difficult to diagnose and failure of timely recognition can lead to significant morbidity and mortality.[6] Here we report a patient who was brought to ER with history of blunt upper abdominal injury.

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CASE REPORT:

A 6-year old female weighing 18 kg was brought the emergency room with complaint of upper abdominal pain secondary to fall of bricks over the lower chest and upper abdomen four hours back. On arrival she had a patent airway, talking normally, and maintaining oxygen saturation of 98% in room air. The child had pallor with respiratory rate of 33 breaths per minute. On auscultation, decreased air entry in right lower zone of the chest was found. Her heart rate was 145 beats per minute, and blood pressure 72/52 mm of Hg. Capillary refill time was <2 seconds with cold periphery. Low volume peripheral pulses were palpable. Supplemental oxygen via a non-rebreather mask was provided, an intravenous line was maintained and bolus of warm normal saline started. A blood sample was drawn for cross matching and the patient was catheterized for monitoring urine output. Her Glasgow coma scale score was 15/15 and pupils were bilaterally equally reactive to light with no lateralizing signs. On head to toe examination mild abrasions were noted in the epigastric region.

In the emergency room, a portable X-ray chest and Extended Focused Assessment using Sonography in Trauma (eFAST) were done. X-ray chest was unremarkable. The eFAST was positive for fluid present around the heart with no intra-abdominal fluid collection. After saline bolus and pack cell transfusion, the child's perfusion and hemodynamic status improved. ECG showed ST-elevation. An echocardiogram was done that showed moderate effusion around the right atrium and ventricle, with a trace amount of fluid around the left ventricle.

No compression was seen on both ventricles. At that time, she was transferred for a computed tomography scan chest and abdomen with oral and intravenous contrast. CT scan is shown in figure I.

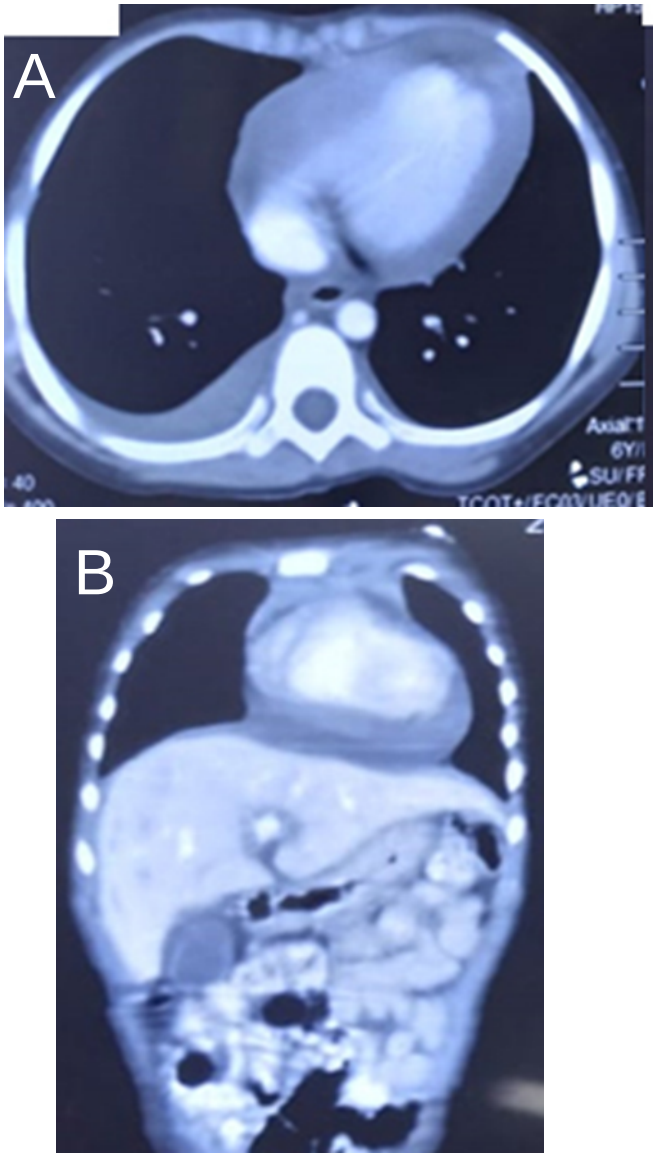

Figure I: A, Axial view of computed tomography scan of the chest showing mild right sided pleural effusion with pericardial effusion; B: Coronal view of computed tomography showing moderate pericardial effusion with compression effect over the heart.

Since the child had no respiratory distress, her heart rate and blood pressure improved, so no surgical intervention was done. The child responded to conservative management provided in Surgical ICU. Repeat echocardiograms showed gradual reduction in the volume of effusion. She was later discharged in satisfactory condition with advise to follow up in outpatient clinic.

DISCUSSION:

Patients with cardiac injury usually present with acute symptoms. The injuries are usually associated with chest wall trauma.[7] The presentation of such injuries may vary and it is difficult to detect them early in the course of treatment because of the associated life threatening conditions.[8] In our case, the child suffered from blunt chest and abdomen injury and presented with tachycardia and upper abdominal pain with no obvious signs of cardiac tamponade. She was initially suspected of having solid visceral injuries. However, eFAST showed presence of hemopericardium.

Blunt cardiac injury often occurs due to high-speed impacts such as motor vehicle collisions, blast injuries, bicycle crashes, and falls.[9] In our case, the child was playing when suddenly heavy bricks fell over her. For the diagnosis of cardiac injuries, elevated cardiac enzymes, echocardiogram (ECG) changes, and echocardiography are useful.[10] ECG is an important tool for screening blunt cardiac injuries. In our case, ECG showed ST-elevation with serial echocardiography showing a subsequent decrease in the amount of pericardial effusion.

Patients with elevated cardiac markers and ECG changes need intensive care unit admission and 24 hours to 48 hours of monitoring because life-threatening events can occur at this time.[11] ST-elevation can be due to contusions in the heart or myocardial infarction that may require angiography.[12] For cardiac tamponade which is symptomatic with hemodynamic instability, rapid decompression is required via pericardiocentesis in ER which can lead to marked improvement.[13] In our case, the child was admitted in surgical ICU and vigilantly monitored. Serial echocardiograms were done and the child clinically improved.

CONCLUSION:

The child had an unusual presentation of cardiac tamponade that was caused by blunt trauma. Child was resuscitated and eFAST demonstrated presence of hemopericardium which was treated conservatively.

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Author's Contributions:

Muniba Mehmood. Author managed patient, wrote report, searched literature and is responsible for all aspects of the case report.

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Competing interest:

The author declares that she has no competing interest.

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