

Case Report

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## Misdiagnosed case of liver sub-capsular hematoma in a child managed with percutaneous pigtail catheter drainage

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### Abstract

Hepatic hematoma sometimes has a non-specific presentation with non-specific history especially in pediatric age group. Clinical signs and symptoms may vary & sometimes misleading results in delays in diagnosis and higher morbidity. We present a case of a 9-year old male child with a liver subcapsular hematoma with Perihepatic collection, initially misdiagnosed as liver abscess.

### Introduction

The liver is one of the most frequently injured organs after trauma [1, 2]. The anterior location in the abdominal cavity and fragile parenchyma with easily disrupted Glisson's capsule make this organ vulnerable to injury, especially in pediatric population [3, 4]. Symptoms associated with hepatic hematomas include abdominal discomfort and pain or may be associated with fever. Because of the proximity to the stomach pressure symptoms including nausea and vomiting may occur. In the absence of proper history and vague symptomatology it can easily be confused with other entities like liver abscess.

Most hemodynamically stable blunt hepatic trauma (BHT) patients are treated non-operatively with a reported successful rate exceeding 80% [5]. It is current clinical consensus that hemodynamic stability is the only determinant for a patient to be managed non-operatively. However, conversion to operative treatment was found in around 10% of these patients. After an initial Ultrasonography scan, Abdominal CT scan is an appropriate modality for the accurate diagnosis and grading of liver injuries in hemodynamically stable patients and is considered useful to guiding the management approach [6].

### Case Report

A 9-year-old male child presented to our ED with diffuse upper abdominal pain, high grade fever and non-bilious vomiting, with no other relevant medical history. On further questioning child gives vague history of developing symptoms 2 days after he fell down from bicycle. After about 3 days when the symptoms started, child was taken to local hospital where USG was done that showed 3x5cms of hepatic abscess cavity. Child was being managed for liver abscess but there was no clinical improvement. Child later referred to us for non-improvement of clinical condition. At presentation

his vital signs included a blood pressure of 109/70 mmHg, a heart rate of 119 beats per minute, and a respiratory rate of 23 breaths per minute. His temperature in the ED was 101.2°F. Oxygen (O<sub>2</sub>) saturation was 97% on room air. The child was conscious, and alert with no signs of respiratory distress. Pertinent physical findings revealed right upper abdominal fullness with tenderness, liver was palpable 2 finger breadth below costal margin, and rest of abdomen was soft and non-tender. Emergency USG abdomen was done that suggested heterogenous hypoechoic area with multiple septations 13x6cms in segment VI & VII suggestive of liquefied hematoma. After initial stabilisation contrast enhanced CT scan was done that suggested Grade III liver injury with 14x7cms of subcapsular liver hematoma with minimal Perihepatic collection without any contrast extravasation or blushing and no evidence of any aneurysm & hemoperitoneum (Figure-1).

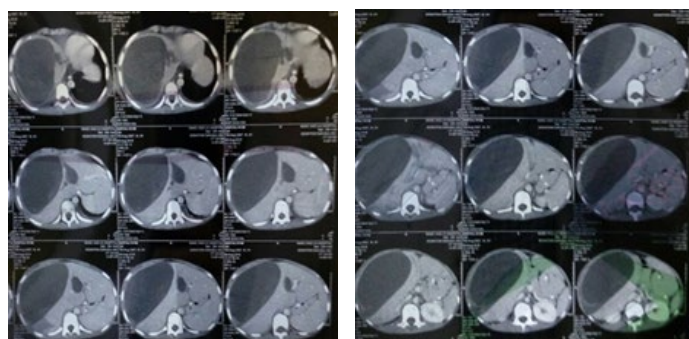


Figure-1

Haematological investigations revealed Hb 9.3g/dl, TLC 12,600/dl, Plt count 2.8L/mm<sup>3</sup>, Hct 33%, T. Bilirubin 1.1mg/dl, D.Bilirubin 0.6mg/dl, AST/ALT 46/53 U/L and normal coagulation profile (PT 12s, INR 1.1). Child was put on conservative non operative management (NOM) including bed rest, Intravenous fluids, broad spectrum antibiotics and analgesic cover. Child had persistent pain

and high grade fever despite on treatment. Repeat USG suggested septated collection of similar dimensions. Decision was taken for USG guided pigtail catheter insertion in view of possibility of infected hematoma. Upon insertion of catheter 600ml of collected blood drained without any evidence of bile on Day 1 and 335ml on Day2. Repeat blood investigations suggested Hb 7.2g/dl and Hct 28%, which was then followed by PRBC transfusion. Child had persistent pigtail catheter output ranges from 100ml to 150ml till day 7 of catheter insertion. Blood culture was reported sterile and pigtail catheter fluid culture revealed klebsiella species with sensitivity to ceftriaxone which was being received by child. Child was constantly monitored with repeated Hb and Hematocrit levels. By the Day 8, child showed decreased in pigtail catheter output and became symptoms free. Pigtail catheter output was 50ml on Day 8 to 10 ml on Day 12. There was no output on Day 13 and catheter was removed on Day 14. Follow up USG showed collapsed hematoma cavity with no residual collection and no free fluid in peritoneal cavity.

### Outcome and follow-up

Child was discharged from hospital on day 25 with a plan for outpatient follow-up. He attended for routine review 2 weeks later and was found to be fully recovered with normal blood investigation and no residual haematoma on USS. He has now been under routine follow-up.

### Discussion

Non-operative management of blunt hepatic trauma is the preferred treatment for hemodynamically stable patients [5]. Abdominal CT scan is an appropriate modality for the accurate diagnosis and grading of liver injuries in hemodynamically stable patients and is considered useful to guiding the management approach [6]. Beside injury grading, CT scan detects active bleeding (i.e., blush, contrast extravasation and venous phase), pseudoaneurysm which is a common cause of failure to NOM, and associated intraperitoneal injuries and also it quantifies the associated hemoperitoneum. CT scan is particularly useful in differentiating liver hematoma from other conditions like liver abscess with greater sensitivity. On Contrast enhanced CT scan abscesses can manifest as well-defined, low-attenuation, round mass with an enhancing peripheral rim. or may just show a single non-loculated/multi-loculated fluid collection or a solid (phlegmonous) process, and “double target sign” is a characteristic feature [7, 8]. While, CECT shows lacerations which may appear as irregular linear/branching areas of hypoattenuation and hematomas appear as a hypodensity between the liver and its capsule (and can be differentiated from intra-peritoneal hematoma as these distort the liver architecture) or can be intraparenchymal acute hematomas/hemorrhage are typically hyperdense (40-60HU) compared to normal liver parenchyma [9].

This non operative management has several potential benefits in terms of early hospital discharge, cost-effectiveness, and minimization of nontherapeutic celiotomies. Selective NOM of blunt hepatic injury is associated with less mortality when compared to operative

therapy [10]. The current literature supports NOM for all grades of blunt liver injury in hemodynamically stable patients, but inconsistency still exists in terms of the efficacy, patient selection, and management of high-grade injury [11]. Operative management is usually considered immediately for the hemodynamically unstable patients with extensive injuries or selectively to treat liver injury-associated complications.

In our case scenario, we managed the child with selective NOM. After the child kept initially on strict conservative management, when the symptoms including high grade fever weren't responding despite hemodynamic stability, we opted for USG guided pigtail catheter insertion in view of possibility of infected hematoma. Catheter was draining collected blood for about 8-10 days. Child was hemodynamically stable throughout the course and monitored closely with repeated Hb and Hematocrit value. We can infer that there might be small vascular injury that wasn't picked on contrast CT scan and managed conservatively.

### Conclusion

Percutaneous drainage may play a role in the management of these patients especially when patient has persistence of symptoms or hematoma/collection super infection is in doubt.

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