



Post-traumatic acalculous cholecystitis in an adolescent: a case report.

Post-traumatic acute acalculous cholecystitis in an adolescent: a case report

Brígida Thaine Fernandes Cabral - Getúlio Vargas University Hospital,
brigida_thaine@hotmail.com

Eneas Carlos Cavalcante Junior - Getúlio Vargas University Hospital - eneas8@gmail.com

Lucas Rocha da Silva - Getúlio Vargas University Hospital, Mggreprese@gmail.com

Joelma Moreira Belas Torres - Getúlio Vargas University Hospital.
Torress.jt@gmail.com

Larissa Pessoa de Oliveira - Getúlio Vargas University Hospital, larpessoa97@gmail.com

Thiago Taketomi Rodrigues - FAMETRO University Center, Thiago_ttr@hotmail.com

Summary

Introduction: Acute acalculous cholecystitis (AAC) represents a minority of cholecystitis cases, but is associated with higher morbidity and mortality, especially in atypical contexts. Post-traumatic AAC results from ischemia, biliary stasis, and direct injury to the gallbladder wall, and can be easily confused with abdominal pain attributed to trauma.

Material and method: Report

Case report based on medical record review. **Case description:** A healthy 15-year-old adolescent presented with progressive abdominal pain following blunt trauma during a soccer game.

Laboratory tests revealed leukocytosis and imaging consistent with cholecystitis. Given the clinical worsening, exploratory laparotomy was performed, identifying infundibular rupture and bile leakage, followed by cholecystectomy with lavage and drainage, with satisfactory outcome. **Discussion:** The nonspecific clinical presentation of aortic cholecystitis (AAC) hinders early diagnosis, increasing the risk of serious complications such as necrosis and perforation of the gallbladder. Imaging findings are essential for diagnostic suspicion and surgical intervention.

Early detection is crucial in complicated cases. **Conclusion:** Although rare, cholecystitis Alithiasis should be considered in patients with pain.

Persistent abdominal trauma contributes to early recognition and timely management, which are essential to reduce morbidity and mortality.

Keywords: Acalculous Cholecystitis. Abdominal Trauma. Gallbladder. Abdominal Pain. Adolescent.

Abstract

Introduction: Acute acalculous cholecystitis (AAC) accounts for a minority of cholecystitis cases but is associated with higher morbidity and mortality, particularly in atypical contexts.

Post-traumatic AAC results from ischemia, bile stasis, and direct injury to the gallbladder wall, and can easily be mistaken for abdominal pain related to trauma. **Materials and Methods:** Case report based on a review of the patient's medical records. **Case Report:** A previously healthy 15-year-old female presented with progressive abdominal pain following blunt abdominal trauma during a soccer match. Laboratory tests revealed leukocytosis, and imaging findings were consistent with cholecystitis. Due to clinical deterioration, an exploratory laparotomy was performed, revealing rupture of the infundibulum with bile leakage, followed by cholecystectomy with irrigation and drainage. The patient had an uneventful postoperative course. **Discussion:** The nonspecific clinical presentation of AAC makes early diagnosis challenging, increasing the risk of severe complications such as gallbladder necrosis and perforation. Imaging findings are essential to raise diagnostic suspicion, and early surgical



intervention is critical in complicated cases. **Conclusion:** Although rare, acalculous cholecystitis should be considered in patients with persistent abdominal pain after blunt abdominal trauma, even in young and previously healthy individuals. Early recognition and timely management are crucial to reduce morbidity and mortality.

Keywords: Acalculous Cholecystitis. Abdominal Injuries. Gallbladder. Abdominal Pain. Adolescent.

1. Introduction

Acute cholecystitis is defined as an inflammatory process of the gallbladder and This represents one of the most frequent causes of acute inflammatory abdomen. The calculous form answer

in up to 95% of cases, while acute acalculous cholecystitis (AAC) accounts for a smaller proportion (GLENN, 1979; HUFFMAN; SCHENKER, 2010).

CAA occurs predominantly in critically ill patients, such as those with multiple traumas. severely burned, septic, or undergoing major surgery patients, being related to systemic inflammatory response, splanchnic hypoperfusion, and biliary stasis, factors that culminate in gallbladder wall ischemia and a higher risk of complications, including necrosis and drilling (BARIE; EACHEMPATI, 2010; SURGUE; FORSMARK, 2023).

The gallbladder, located under the right lobe of the liver and partially covered by the liver parenchyma and rib cage, presents a low incidence of direct lesions in blunt abdominal trauma (SODERSTROM et al., 1981). Mechanisms such as forces of Deceleration and direct compression can cause microvascular damage, parietal edema, and increased intraluminal pressure, favoring the development of acute inflammation and biliary extravasation (MIRVIS et al., 1987).

Diagnosing post-traumatic aortic atrophy (CAA) is challenging, given the initial symptoms. These findings can be confused with nonspecific abdominal pain resulting from trauma, and the findings Laboratory tests exhibit low specificity (LAURILA et al., 2005).

2. Material and Method

This study consists of a descriptive clinical case report, based on a review of clinical, laboratory, radiological and surgical data of a patient treated by the Service of General surgery at an emergency room in Manaus, Amazonas, Brazil. The information was... obtained from medical records, respecting ethical principles and confidentiality.

3. Case Report

A 15-year-old female patient, previously healthy, was admitted to the service of Surgical emergency following blunt abdominal trauma sustained during a soccer game, approximately five hours before hospital admission. She reported progressive abdominal pain, initially diffuse, later localizing to the right hypochondrium. Denied loss of consciousness and signs or symptoms suggestive of head or chest trauma.

On initial physical examination, she was hemodynamically stable and had normal skin color. Afebrile, with a Glasgow Coma Scale score of 15. The abdomen was flat, flaccid, with heart sounds. Fluid present, diffuse pain on palpation, without signs of peritoneal irritation. A bedside abdominal ultrasound revealed a gallbladder with thickened wall. Anechoic content and positive ultrasound Murphy's sign, without free fluid in the cavity. Laboratory tests showed leukocytosis of $21,640 \text{ cells/mm}^3$, with predominance of segmented neutrophils at 95%. Abdominal computed tomography revealed a distended gallbladder, with thickening of the wall and absence of gallstones (Figures 1 and 2).

Figure 1. Non-contrast computed tomography scan of the upper abdomen, axial view.

Personal collection

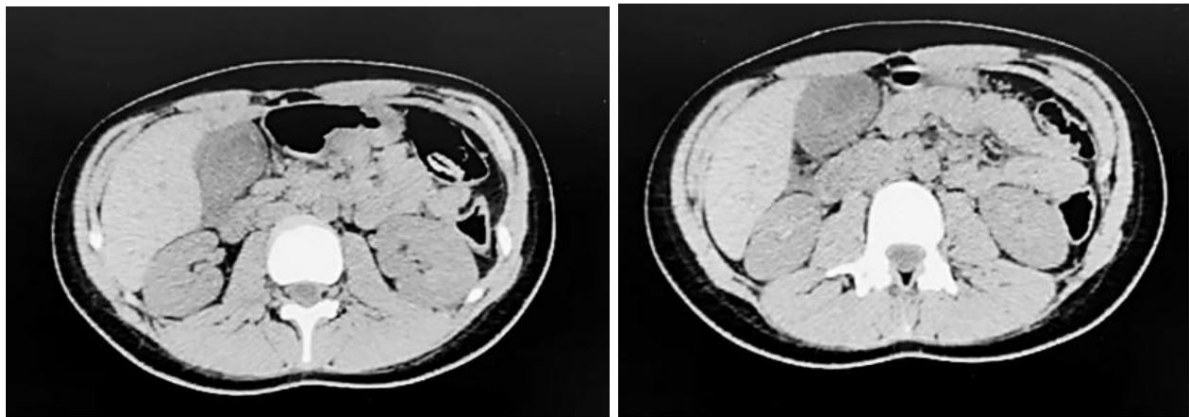
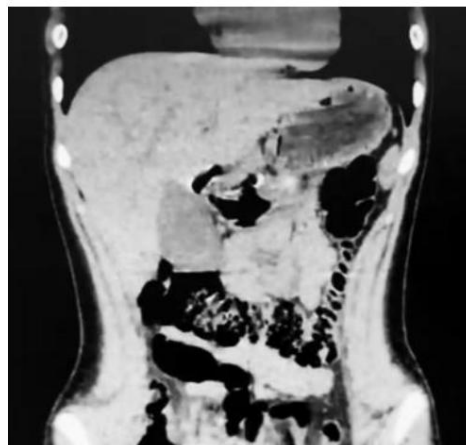


Figure 2. Non-contrast computed tomography scan of the upper abdomen, coronal view.

Personal collection



Given the clinical evolution and imaging findings, laparotomy was indicated. exploratory. During the intraoperative period, free bilious-looking fluid was observed in the cavity and infiltrating the retrocavity of the omentum down to the transverse mesocolon. The gallbladder was distended, with thickened and friable walls, without palpable calculi. After the peritoneal decomposition of the gallbladder, rupture of the infundibulum was identified, with extravasation. Active bile production. No traumatic injuries were observed in the liver, duodenum, or other viscera. A cholecystectomy, thorough lavage of the cavity, and drainage were performed.

The patient had a favorable postoperative course and was discharged from the hospital after... Drain removal, without complications.

3. Discussion

The case presented differs from the classic profile of CAA because it occurred after trauma. Closed abdominal wound in a young, previously healthy patient, not in a critical illness context. In the literature, this condition is predominantly described in severely ill patients. (LAURILA et al., 2005; SAVOCA et al., 1990; SCHENKER, 2010), which makes its occurrence in this particularly unusual and potentially underdiagnosed clinical scenario.

In the context of trauma, the initial clinical assessment can be challenging, since... Persistent abdominal pain tends to be attributed to bruising of the abdominal wall. (CORNWELL et al., 1989). Inflammatory laboratory changes, such as leukocytosis, are frequently observed, but they have low specificity, not allowing for distinction. reliable correlation between systemic inflammatory response to trauma and intra-abdominal changes specific diseases, such as cholecystitis (BARIE; EACHEMPATI, 2010; MORGAN et al., 2025).

In this scenario, imaging methods play a central role in diagnostic suspicion. Ultrasound and CT scan findings, such as gallbladder wall thickening and distension. The presence of gallbladder, pericholecystic fluid, and absence of gallstones have been described as Relevant criteria for the diagnosis of AAC (SHUMAN et al., 1982; MORGAN et al., 2025).

The rapid progression towards drilling observed in this case reinforces the potential. Aggressive behavior of the CAA in the post-traumatic context. The presence of free fluid in Abdominal cavity indicates exploratory laparotomy, since choleperitoneum may



trigger chemical peritonitis, with progressive irritation of the abdominal viscera and There is a risk of clinical deterioration when treatment is delayed. Although cholecystostomy percutaneous surgery is described as a therapeutic alternative in critically ill patients and In complicated cases with high surgical risk, cholecystectomy remains the definitive treatment. due to necrosis or perforation, as presented (RIZOLI et al., 1994; ZHAO; DANG, 2025).

Thus, this report highlights the importance of considering AAC in the diagnosis. differential diagnosis of persistent abdominal pain after blunt abdominal trauma, even in patients young people without pre-existing comorbidities, highlighting the need for clinical monitoring and Careful interpretation of imaging findings is necessary given the risk of serious complications.

4. Conclusion

Post-traumatic acalculous cholecystitis is a rare but potentially serious condition. serious, which should be considered in patients with persistent pain in the right hypochondrium after blunt abdominal trauma. Early recognition and timely surgical intervention are determinants for preventing adverse outcomes.

5. References

ABID, Mustafa; AN, Selena J.; SCHNEIDER, Andrew; GALLAHER, Jared; CHARLES, Anthony. Traumatic gallbladder injury and its treatment: changing management of a rare injury. *Injury*, 2025.

BARIE, PS; EACHEMPATI, SR Acute acalculous cholecystitis. *Gastroenterology Clinics of North America*, Philadelphia, vol. 39, no. 2, p. 343–357, 2010.

CORNWELL, E. E. 3rd; RODRIGUEZ, A.; MIRVIS, SE; SHORR, RM Acute acalculous cholecystitis in critically injured patients: preoperative diagnostic imaging. *Annals of Surgery*, vol. 210, no. 1, p. 52–55, 1989.

GLENN, F. Acute acalculous cholecystitis. *Annals of Surgery*, Philadelphia, vol. 189, n. 4, p. 458–465, 1979.

HERLIN, P.; ERICSSON, M.; HOLMIN, T.; JÖNSSON, PE Acute acalculous cholecystitis following trauma. *British Journal of Surgery*, vol. 69, no. 8, p. 475–476, 1982.

HONG, CH et al. Hemorrhagic cholecystitis from isolated gallbladder injury following blunt abdominal trauma: an unusual case report. *International Journal of Surgery Case Reports*, 2021.

HUFFMAN, JL; SCHENKER, S. Acute acalculous cholecystitis: a review. *Clinical*



Gastroenterology and Hepatology, Philadelphia, vol. 8, no. 1, p. 15–22, 2010.

LAURILA, JJ et al. Acute acalculous cholecystitis in critically ill patients. *Acta Anaesthesiologica Scandinavica*, Oxford, v. 49, no. 6, p. 849–857, 2005.

LIMA, MI de; FONSECA NETO, OCL da. Acute acalculous cholecystitis in patients in intensive care: an integrative review. *Revista de Medicina*, v. 102, n. 5, 2023.

MANDELBAUM, I.; PALMER, RM Posttraumatic acalculous cholecystitis. *JAMA Surgery*, vol. 97, no. 4, p. 601–604, 1968.

MIRVIS, SE et al. CT diagnosis of traumatic injury of the gallbladder. *American Journal of Roentgenology*, Reston, vol. 149, no. 3, p. 567–570, 1987.

MORGAN, MA; DEPIETRO, DM; WHORMS, DS et al. Acalculous cholecystitis: an imaging and therapeutic update. *Abdominal Radiology*, vol. 50, p. 2881–2891, 2025.

REITZ, MM et al. Choleperitoneum secondary to isolated subserosal gallbladder injury due to blunt abdominal trauma: a case report. *Trauma Case Reports*, vol. 41, p. 100674, 2022.

RIZOLI, SB et al. Diagnosis and management of biliary tract injuries in blunt abdominal trauma. *Journal of Trauma*, Philadelphia, vol. 36, no. 2, p. 191–197, 1994.

SAVOCA, PE et al. The increasing prevalence of acalculous cholecystitis in surgical patients. *The American Surgeon*, Chicago, vol. 56, n. 4, p. 208–212, 1990.

SHUMAN, WP et al. Ultrasonographic findings in traumatic rupture of the gallbladder. *American Journal of Roentgenology*, Reston, vol. 139, no. 2, p. 321–323, 1982.

SODERSTROM, CA et al. Gallbladder injuries resulting from blunt abdominal trauma: an experience and review. *Annals of Surgery*, Philadelphia, vol. 193, no. 1, p. 60–66, 1981.

THOMAIDOU, E.; KARLAFTI, E.; DIDAGELOS, M.; SAVOPOULOS, C. Acalculous cholecystitis in COVID-19 patients: a narrative review. *Viruses*, vol. 16, no. 3, p. 455, 2024.

ZHAO, J.; DANG, YL Blunt gallbladder trauma: a rare and easily overlooked case report. *Journal of Surgical Case Reports*, vol. 2025, no. 5, rjaf276, 2025.