

Contributors: TB: analyzed data and drafted the manuscript, reviewed literature; GE: helped in data analysis; TFK: analyzed data and reviewed the manuscript.

Funding: None; *Competing interest:* None stated.

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REFERENCES

1. World Health Organization, United Nations High Commissioner for Refugees. Thiamine deficiency and its prevention and control in major emergencies. 1999. Available at URL: https://www.who.int/nutrition/publications/emergencies/WHO_NHD_99.13/en/. Accessed on 12 Dec, 2019.
2. Shiozawa T, Shiota H, Shikata E, Kamei S, Mizutani T. Development of Wernicke's encephalopathy during the period of oral food intake after subtotal colectomy for ulcerative colitis [translation]. *Rinsho Shinkeigaku*. 1995;35:169-74.
3. Zuccoli, G. and N. Pipitone, Neuroimaging findings in acute Wernicke's encephalopathy: Review of the literature. *AJR Am J Roentgenol*. 2009; 192:501-8.
4. Zhong C, Jin L, Fei G. MR Imaging of nonalcoholic Wernicke encephalopathy: A follow-up study. *AJNR Am J Neuroradiol*. 2005; 26: 2301-5.
5. Centers for Disease Control and Prevention. Lactic acidosis traced to thiamine deficiency related to nationwide shortage of multivitamins for total parenteral nutrition—United States, 1997. *MMWR*. 1997; 46: 523-8.

Post-traumatic Pseudoaneurysm of Hepatic Artery: An Unusual Cause of Upper Gastrointestinal Bleeding

Pseudoaneurysm of hepatic artery with upper gastrointestinal bleeding is a rare but life-threatening complication of blunt trauma to the abdomen. An 8-year-old child with this condition was treated successfully with percutaneous coil embolization of the pseudoaneurysm.

Keywords: *Arterial injury, Management, Trauma.*

Pseudoaneurysm of any artery develops due to collection of blood between its two outer layers, the tunica media and the tunica adventitia. It is in contrast with the true aneurysm which involves all three layers of the wall of an artery. Among children sustaining traumatic injuries, 21% have abdominal injuries [1,2]. Rarely, the blunt trauma of the abdomen may be complicated by development of pseudoaneurysm of hepatic artery, which may rupture inside biliary tract, leading to life-threatening complication of hemobilia. Classical signs of hemobilia consist of upper abdominal pain, upper gastrointestinal hemorrhage and jaundice, called Quincke triad. All these three signs are present in only 22% of cases, whereas only upper gastrointestinal bleeding is present in 42% of cases [3].

An 8-year-old child presented in our emergency department with complaint of pain abdomen for 15 days and hematemesis and melena for 10 days. The pain abdomen started when he was punched in his abdomen

by one of his schoolmates. He took analgesics for his pain abdomen. There was no history of fever, rash or any bleeding diathesis. He was pale and had tachycardia at admission. There was no history of fever, rashes or any bleeding diathesis. Blood pressure was 113/70 mmHg and there was no petechial/purpuric rash. He was given normal saline bolus and intravenous pantoprazole followed by whole blood transfusion. Blood investigations revealed low hemoglobin (4.8 g/100 mL) with normal leucocyte counts, liver enzymes and renal function tests; International normalized ratio was 0.95. Ultrasonography abdomen done outside had revealed a 9 mm calculus in gall bladder neck. Upper gastrointestinal endoscopy, which had been done prior to coming to our hospital, had documented erosion of mucosa of antrum and pylorus with blood and blood clot inside stomach. Blood was also seen coming out from ampulla of Vater and an impression of erosive gastritis and hemobilia had been reported. The child continued to have hematemesis after admission. A computed tomography (CT) angiography of the abdomen was done which revealed a pseudoaneurysm of the right hepatic artery (**Fig. 1a**). Percutaneous coil occlusion of the right hepatic artery was done through the ipsilateral femoral artery (**Fig. 1b**), and the hematemesis stopped thereafter. He continued to have intermittent colicky pain abdomen post procedure also, which persisted along with melena, till sixth day of admission. The child became completely asymptomatic on seventh day of admission, when he was discharged. He was asymptomatic, without any pallor, and with normal liver function test on follow up after one month.

Approximately 1.7% of children sustaining blunt

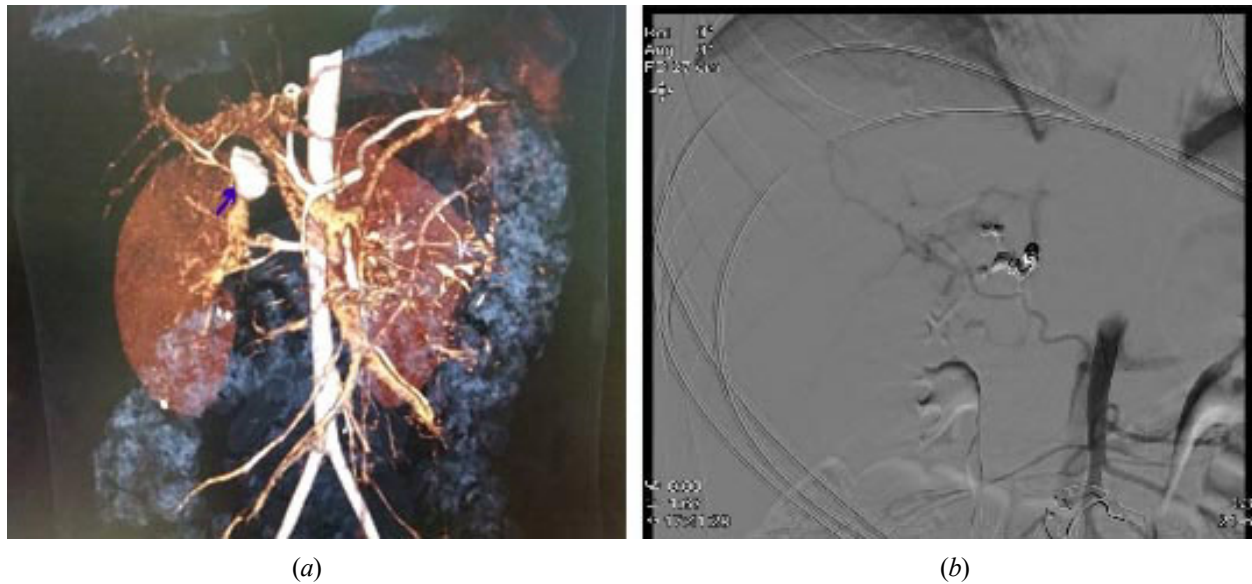


FIG. 1 (a) Pseudoaneurysm of right hepatic artery in CT-angiography (arrow), (b) Coil embolization of the pseudoaneurysm of right hepatic artery.

trauma to the abdomen develop pseudoaneurysm of hepatic artery and most of the pseudoaneurysm of the hepatic artery are associated with the higher grades of liver injury [4]. Other causes of pseudoaneurysm of hepatic artery include surgical procedures like cholecystectomy or percutaneous procedures and endoscopic procedures like cholangiopancreatography, liver biopsy and drainage of liver abscess [5]. Pseudoaneurysm may produce mass symptoms and local pain or the situation may be further complicated by rupture of the pseudoaneurysm. Rupture of the pseudoaneurysm occurs within days to weeks after the injury. When the pseudoaneurysm ruptures inside the biliary system, it leads to haemobilia and life threatening upper gastrointestinal bleeding. Ultrasonography may demonstrate pseudoaneurysm as a sac like structure with blood flow within it, but its sensitivity is low (37%) although it has a high specificity (100%). Contrast enhanced ultrasonography has been shown to have high sensitivity (75%) and specificity (100%) [6]. Endoscopy may also detect hemobilia resulting from rupture of pseudoaneurysm by demonstrating blood coming out from papilla of Vater, but it also carries a low sensitivity. CT angiography is investigation of choice for pseudoaneurysm of hepatic artery. It provides a precise location of the pseudoaneurysm and delineates the involved blood vessel.

Percutaneous arterial embolization is highly effective in controlling arterial bleeding in hemobilia [7]. Success of endovascular management at experienced centres

approaches 100% [8]. In a series of 176 children sustaining liver injury, 3 (1.7%) had developed pseudoaneurysm of hepatic artery [4]. Two of them experienced life-threatening bleeding, both at 10 days after injury. This was controlled by angiographic embolization in one and by laparotomy in other. One asymptomatic patient underwent successful embolization of a large pseudoaneurysm, seven days after injury [4]. Hepatic necrosis, gall bladder ischemia, biliary fistula and hepatic abscess are known complications of this procedure. Surgical intervention is rarely necessary, and it is usually reserved for failed percutaneous embolization. However, it is first line of management if pseudoaneurysm is infected or if it is compressing other vascular structures. On follow-up of such children with coil embolization of hepatic artery, clinical jaundice and liver function test derangement should be looked for.

In conclusion, an upper gastrointestinal bleeding associated with abdominal trauma could be due to hemobilia due to ruptured pseudoaneurysm of hepatic artery. It may lead to life threatening hematemesis, hence prompt recognition of this condition by CT angiography and its management is important.

Contributors: AP: drafted the manuscript, collected clinical details; SK: was involved in doing percutaneous coil occlusion of pseudoaneurysm of the patient in case report; Abhiranjana P: did the literature search related to the topic; PK: reviewed the article and suggested editing. All authors reviewed article before final submission.

Funding: None; *Competing interest:* None stated.

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REFERENCES

1. Sharma M, Lakhoti BK, Khandelwal G, Mathur RK, Sharma SS, *et al.* Epidemiological trends of pediatric trauma: A single centre study of 791 Patients. *J Indian Assoc of Pediatr Surg.* 2011;16:88-92.
2. Kundal V, Debnath P, Sen A. Epidemiology of pediatric trauma and its pattern in urban India: A tertiary care hospital-based experience. *J Indian Assoc Pediatr Surg.* 2016;22:33.
3. Green MHA, Duell RM, Johnson CD, Jamieson NV. Haemobilia. *British J Surg.* 2001;88:773-86.
4. Safavi A, Beaudry P, Jamieson D, Murphy JJ. Traumatic pseudoaneurysms of the liver and spleen in children: Is routine screening warranted? *J Pediatr Surg.* 2011;46:938-41.
5. Berry R, Han J, Kardashian Ani, LaRusso NF, Tabibian JH. Hemobilia: etiology, diagnosis and treatment. *Liver Research.* 2018;2:200-8.
6. Ren X, Luo Y, Gao N, Niu H, Tang J. Common ultrasound and contrast-enhanced ultrasonography in the diagnosis of hepatic artery pseudoaneurysm after liver transplantation. *Exp Ther Med.* 2016;12:1029-33.
7. Saad WE, Davies MG, Darcy MD. Management of bleeding after percutaneous transhepatic cholangiography or transhepatic biliary drain placement. *Tech Vasc Interv Radiol.* 2008;11:60-71.
8. Fidelman N, Bloom AI, Kerlan RK Jr, Laberge JM, Wilson MW, Ring EJ, *et al.* Hepatic arterial injuries after percutaneous biliary interventions in the era of laparoscopic surgery and liver transplantation: Experience with 930 patients. *Radiology.* 2008;247:880-6.

Congenital Linkage of Lacrimation with Micturition: A Wiring Defect or Just a Spillover?

Association of lacrimation and micturition is rarely reported in the medical literature. It has been hypothesized that abnormal parasympathetic connections occur between the lacrimal nucleus and the pontine micturition center, which give rise to this finding. Here we report a 5-year-old girl who presented with tearing from both eyes whenever she passed urine.

Keywords: *Lacrimal apparatus, Parasympathetic Nervous system, Pons reflex.*

Lacrimation and the act of micturition are both under the control of the parasympathetic nervous system. Despite being so similar in their control they never go together except if emotion is attached, like pain. Lacrimation associated with painless act of micturition has been earlier mentioned in few case reports [1-3]. Here we report a young girl with this finding.

A 5-year-old girl visited the outpatient pediatric clinic in June, 2019 with complaint of tearing from both eyes during micturition, without any associated pain or discomfort. This phenomenon was witnessed by the treating doctors also. The child was delivered at full term and had achieved all milestones at appropriate age including bowel-bladder control. There was no history of a similar phenomenon occurring in near or distant family

members. The examination of the external genitalia and eyes was normal. Urine analysis and ultrasound of the urinary tract were also normal. This abnormal lacrimation got resolved with injection atropine (0.25 mg intravenous bolus just before the act of micturition).

The child was advised to pass urine frequently without the urge of micturition. Lesser amount of bladder stimulation decreased the parasympathetic activity and tearing. With this bladder regime, she reported a decrease in the tearing. The parents were counseled about the benign nature of this phenomenon as it probably represented an abnormal neural connection.

Tears relate to emotions as disparate as pain, sadness, anger, frustration, happiness, and religious aspiration. Tears may be rarely attributed to a neurological disorder or disease like the syndrome of crocodile tears. In the index case, tears were linked to urination without any emotional connection.

The central nervous control of micturition is a complex arrangement between the higher centers, the pons and the spinal cord [4]. The Pontine micturition center (PMC) acts as a switch in the micturition reflex pathway and coordinates the activity of the bladder and the urethral sphincter [5]. This center receives input from a higher center situated in the medial pre-frontal cortex (mPFC). The supra-spinal control of bladder and orchestration of micturition is also done by the central-autonomic-network (CAN) [6]. Like the PMC, the function of the lacrimal nuclei