Case Report

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Acute Biliary Peritonitis A Rare Case Report of Isolated Gall Bladder Gangrene Secondary to Coeliac Artery Thrombus

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Abstract

Acute thrombosis of the celiac trunk is a very uncommon condition, unless diagnosed early can become a life threatening emergency. The clinical presentation is highly variable depending on the extent of the thrombus. We report a case of biliary peritonitis related to an acute thrombosis of the celiac trunk and isolated gangrene of the gall bladder. This case highlights the role of diagnostic laparoscopy in the diagnosis of acute upper abdominal pain.

Keywords: Pain abdomen, mesenteric ischaemia, laparoscopy, gall bladder

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Introduction:

Atherosclerotic vascular occlusion of abdominal ar¬teries is considered as a dreaded disease with high mortality. In developing countries like ours, the presentation is different from those described in Western Reports.

We are hereby reporting a case of isolated gallbladder gan¬grene secondary to celiac trunk stenosis in a 46year old male patient, who was successfully managed by early surgical intervention.

Case report:

A 46year old patient presented to emergency room with a 3-day history of pain abdomen Tenderness was noted in right subcostal region, suggestive of acute cholecystitis. Other exam¬ination findings were unremarkable.

Emergency CT-abdomen showed Atherosclerotic chang¬es in the abdominal aorta, bilateral common and internal iliac ar¬teries with extensive steno-occlusive disease involving the coeliac trunk, SMA, IMA, infra-renal abdominal aorta (Figures 1 & 2).

Routine hematological reports were within normal limits except for raised total leukocyte count (10.4 mg/dl), LFT was normal, coagulation profile showed prolonged prothrombin time. He was provisionally diagnosed with acute ischemic cho¬lecystitis, and underwent emergency diagnostic

laparoscopy. On diagnostic laparoscopy, (Figures 3 & 4) Omentum was adhered to gall bladder, gall bladder wall was gangrenous, necrosed with peri-cholecystic fluid collection. Rest of the visualised viscera was normal. Cholecystectomy was performed. He was stabilized, cardiology opinion was taken and discharge on post-operative day 3. HPE reports were followed up (Figure 5).

Fig.1: CT image with showing block in the coeliac trunk

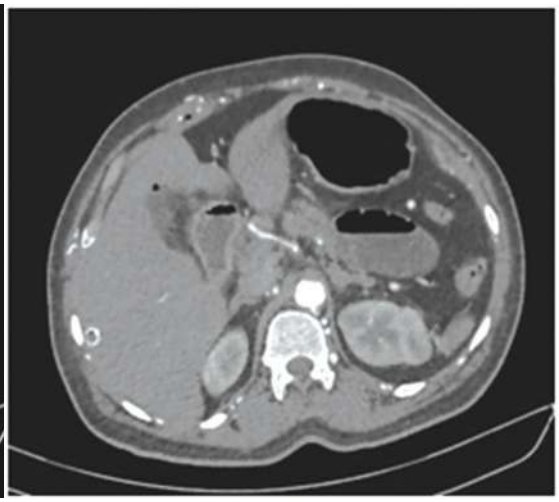


Fig.2: CT image showing gas shadow in the Gall bladder

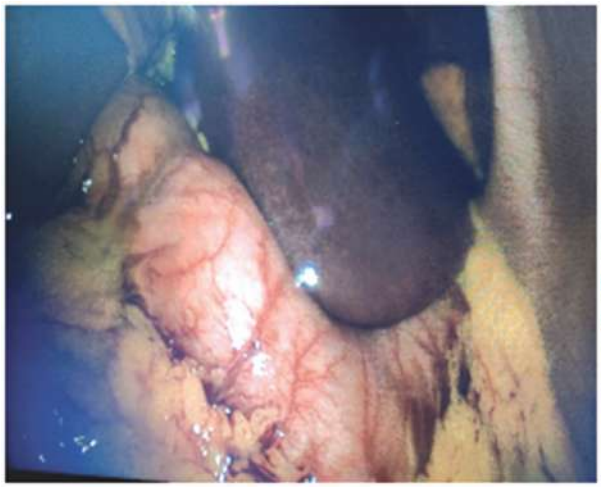


Fig. 3: Laparoscopic view showing normal viscera

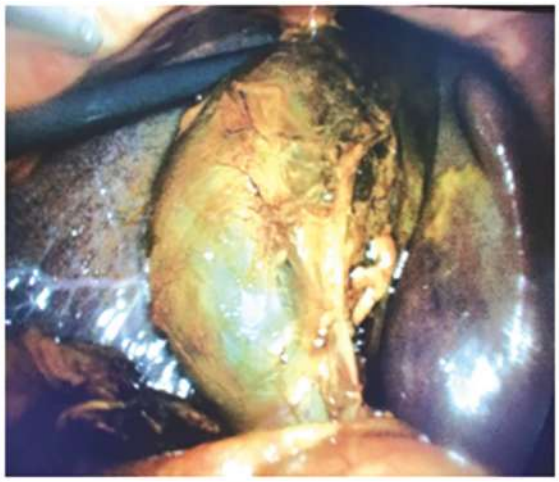


Fig. 4: Laparoscopic view showing gangrenous gall bladder

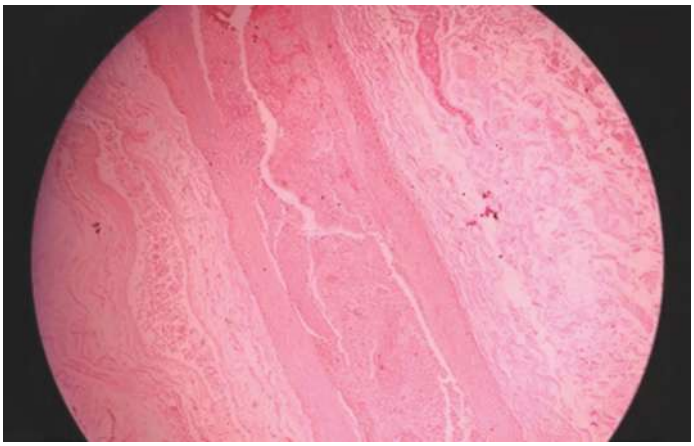


Fig. 5: Microscopic photograph of ischaemic gall bladder wall with thrombosed arteriole wall

Discussion

Vascular abnormalities of the main arteries in the upper abdomen (including the celiac trunk and its axes or the mesen¬teric arteries) have been widely reported. In developing coun¬tries like ours, occlusion of major abdominal arteries the presen¬tation is different from those described in Western Reports. A study published by Raghavendra Nagaraja et all showed that the patients here presented a decade earlier and venous obstruction was a more common cause. Further, the majority, are referred to tertiary medical centers at advanced stages of their disease once the features of peritonitis have developed[1]. However, according western literature mesenteric artery(MAO) occlusion accounts for majority of cases. Schoots et al. found that MAO accounted for 71 % of cases, only 12 % were due to MVT and the remaining 17 % were due to NOMI[2]. Isolated gangrene of gall bladder with sparing of bowel has been reported by Rajiv Jain Et al, however it was thrombosis involving the celiac axis and SMA, with an anomalous origin of Right Hepatic artery [3]. Different etiological forms of Acute mesenteric ischemia are: Arterial em¬bolism (EAMI), Arterial thrombosis (TAMI), Venous thrombo¬sis (VAMI) and Non-occlusive mesenteric ischemia (NOMI). Although they have different clinical and pathophysiological fea¬tures, they do not facilitate in early diagnosis [4]. The origin of celiac trunk ranges between the 11th thoracic and the first lum¬bar vertebra. Most common causes of celiac trunk stenosis are median arcuate ligament syndrome, pancreatitis, malignant local invasion, atherosclerosis and idiopathic [13].

Pathophysiology: An acute complete occlusion of an ar¬tery initially triggers a vascular spasm in the area of the ischemic bowel & results in hyperperistalsis and pain. At cellular level, en¬ergy loss with the formation of oxygen free radicals and the sub¬sequent disintegration of mucosal cells occurs. After 3-6 hours, the intestinal peristalsis ceases and deceptive interval without pain begins, which results from the ischemia of the intramural pain receptors. In the final stage the mucosal damage becomes irreversible. Along with the infiltration of the intestinal wall by inflammatory cells, bacterial translocation takes place, resulting in intestinal gangrene [4,11].

Twenty-five percent of the cardiac output goes to the splanchnic circulation at rest and increases to 35 % in the post¬prandial state. Seventy percent of mesenteric blood flows to the mucosa and submucosa [5]. Therefore, microscopic changes of ischemia can be detected within minutes [6]. The gut can there¬fore survive a 75 % reduction in blood flow for up to twelve hours without significant injury, irreversible bowel changes occurs within six hours of complete vascular occlusion [7].

Diagnosis

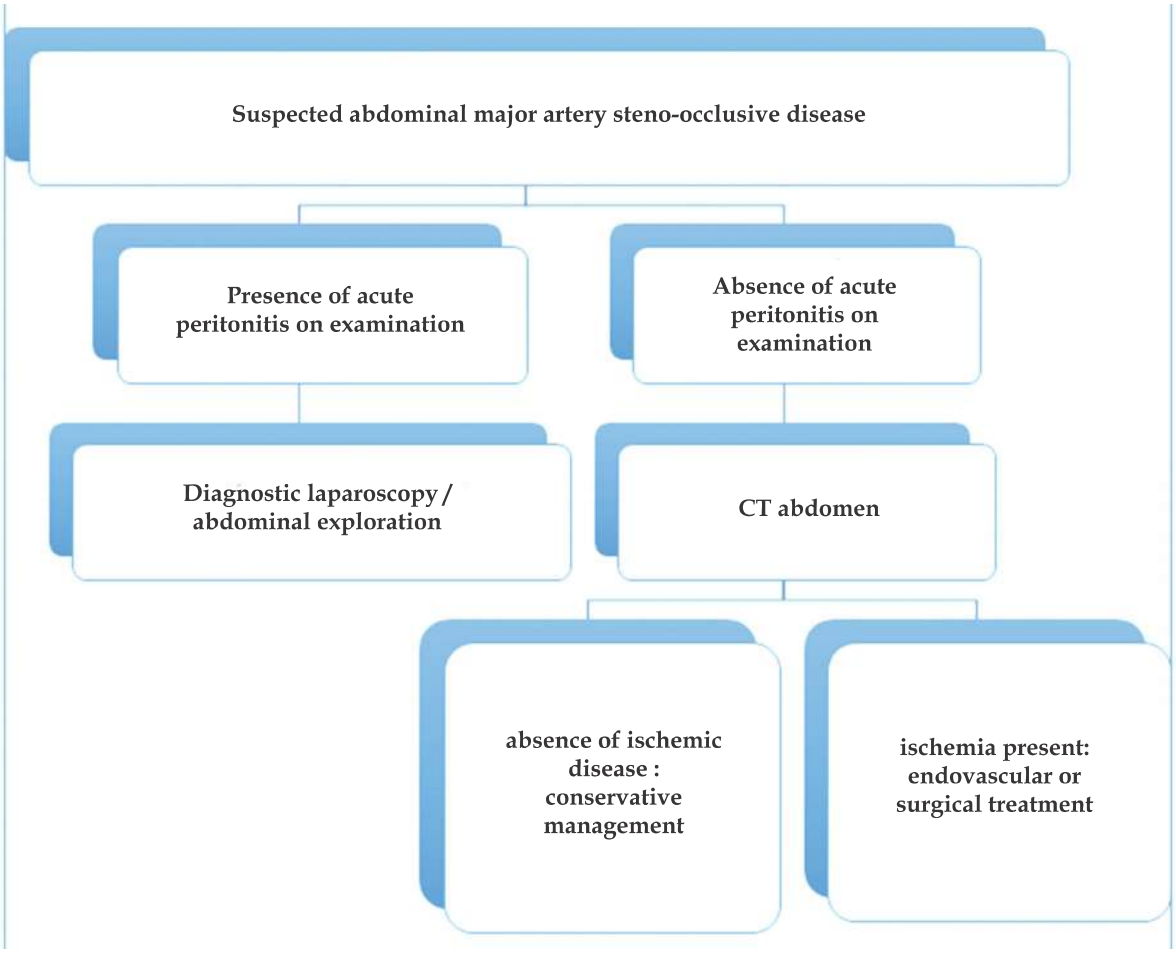
Ischemia secondary to an arterial embolism should be suspected in patients with atrial fibrillation who have a sudden onset of abdominal pain. Ischemia resulting from arterial thrombosis (TAMI) should be suspected in patients with evidence of generalized atherosclerotic disease particularly with a recent his¬tory of post-prandial syndrome. Ischemia due to venous thrombosis (VAMI) should be suspected in patients with hypercoaguable states. Non-occlusive mesenteric ischemia (NOMI) should be suspected in critically ill patients with an unexpected deterioration in their clinical condition [4]. Computed tomography angiography (CTA) should be performed as soon as possible for any patient with suspicion for ab¬dominal artery steno-occlusive disease [8]. The diagnosis of gangre¬nous cholecystitis can be made with reasonable diagnostic accuracy when a markedly distended gallbladder with decreased gallbladder wall enhancement is seen on contrast-enhanced CT [9]. Tests like leukocytosis, elevated amylase level, or the development of high an¬ion gap metabolic acidosis, are suggestive rather than pathognomon¬ic of ischemia. D-dimer assay & time-dependent increase in its value has been found to increase as early as 30 minutes from the onset of intestinal ischemia or after ligation of the superior mesenteric artery in experimental animal models[10]. CT scanning is a diagnostic mo¬dality commonly utilized in patients who present with abdominal pain and has been reported to be sensitive in the diagnosis of abdom¬inal artery occlusion. [10] Comprehensive biphasic CTA includes: a) Pre-contrast scans to detect vascular calcification, hyper-attenuating intravascular thrombus and intra- mural haemorrhage. b) Arterial and venous phases to demonstrate thrombus in the mesenteric ar¬teries and veins, abnormal enhancement of the bowel wall, and the presence of embolism or infarction of other viscera. c) Multi-planar reconstructions (MPR) to assess the origin of the mesenteric arter¬ies [8]. Multi-detector CT Imaging Findings of ischemia Bowel wall thickening caused by oedema, haemorrhage, or associated infection, with target or halo appearance, more prominent in cases with venous

occlusion. A high-attenuating bowel wall at non-contrast CT is due to haemorrhagic infarction, however hyper attenuating bowel wall at contrast-enhanced CT is due to congestion. Filling defects in the mesenteric arteries and veins indicate emboli or thrombi in the ves¬sels. The absence of wall enhancement indicates absence of arterial flow. Mesenteric stranding and ascites are caused by congestive or reperfusion mesenteric oedema. If these manifest in cases without mesenteric congestion or reperfusion, they may indicate bowel per¬foration. Pneumatosis, Porto mesenteric venous gas and free perito¬neal gas indicate trans-mural infarction of the bowel, with or without perforation [12].

Management

Fluid resuscitation immediately to enhance visceral perfusion. Electrolyte abnormalities should be corrected, and nasogastric drainage started. Broad-spectrum antibiotics should be administered immediately. Unless contraindicated, patients should be started on anticoagulation with intravenous unfractionated hep¬arin. Prompt laparotomy should be done for patients with overt peritonitis [8]. The goal of surgical intervention includes re-estab¬lishment blood supply to the ischemic bowel and other abdominal viscera, resection of all non-viable regions, preservation of all viable bowel /viscera. Endovascular revascularization procedures can be at¬tempted in partial arterial occlusion. Damage control surgery (DCS) is an important adjunct for patients who require intestinal resection and margins brought out of abdomen due to the necessity to reassess bowel viability and in patients with refractory sepsis. Diagnostic lap¬aroscopy with planned re-laparotomy is an essential part of manage¬ment [8]. ESTES guidelines recommend endovascular techniques as first line treatment when bowel integrity has not been compromised, the choice of vascular intervention will depend on available resources and expertise [4].

Table 1: Diagnostic and treatment algorithm in patients with suspected acute abdominal steno-occlusive disease



Prompt and goal-oriented diagnosis and consistent treatment within 4–6 h from the onset of symptoms can be decisive for the reduction of mortality[12].

Conclusion

Acute abdominal ischemic disease is a true emergency and in rare cases like this prompt emergencysurgical management in order to reduce morbidity and mortality.

References

1. Raghavendra Nagaraja (2014). Acute Mesenteric Ischaemia—An Indian Perspective. [online] ResearchGate. Available at: https://www.researchgate.net/publication/260056054_Acute_Mesenteric_Ischaemia-An_Indian_Perspective [Accessed 6 Jan. 2021].
2. Schoots, I.G., Koffeman, G.I., Legemate, D.A., Levi, M. and van Gulik, T.M. (2004). Systematic review of survival after acute mesenteric ischaemia according to disease aetiology. British Journal of Surgery, 91(1), pp.17–27.
3. Rajiv Jain, Kiran Somani, Kolla Venkatesh, Abhishek Kansal, Rajesh Sharma. "Rare Case of Celiac Trunk and SMA Thrombosis Presenting as an Isolated Gangrenous Cholecystitis: A Surgical Surprise". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 91, November 12; Page: 15697-15699, DOI: 10.14260/jemds/2015/2260.
4. Tilsed, J.V.T., Casamassima, A., Kurihara, H., Mariani, D., Martinez, I., Pereira, J., Ponchietti, L., Shamiyeh, A., Al-Ayoubi, F., Barco, L. a. B., Ceolin, M., D'Almeida, A.J.G., Hilario, S., Olavarria, A.L., Ozmen, M.M., Pinheiro, L.F., Poeze, M., Triantos, G., Fuentes, F.T., Sierra, S.U., Soreide, K. and Yanar, H. (2016). ESTES guidelines: acute mesenteric ischaemia. European Journal of Trauma and Emergency Surgery: Official Publication of the European Trauma Society, [online] 42(2), pp.253–270. Available at: https://pubmed.ncbi.nlm.nih.gov/26820988/ [Accessed 6 Jan. 2021].
5. Oldenburg, W.A., Lau, L.L., Rodenberg, T.J., Edmonds, H.J. and Burger, C.D. (2004). Acute Mesenteric Ischemia. Archives of Internal Medicine, [online] 164(10), p.1054. Available at:https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/217022.
6. Robinson, J. W., Mirkovitch, V., Winistörfer, B., & Saegesser, F. (1981). Response of the intestinal mucosa to ischaemia. Gut, 22(6), 512–527. https://doi.org/10.1136/gut.22.6.512
7. Chiu C, McArdle AH, Brown R, Scott HJ, Gurd FN. Intestinal Mucosal Lesion in Low-Flow States: I. A Morphological, Hemodynamic, and Metabolic Reappraisal. Arch Surg. 1970;101(4):478–483. doi:10.1001/archsurg.1970.01340280030009
8. Bala, M., Kashuk, J., Moore, E.E. et al. Acute mesenteric ischemia: guidelines of the World Society of Emergency Surgery. World J Emerg Surg 12, 38 (2017). https://doi.org/10.1186/s13017-017-0150-5
9. Wei-Chou Chang, Yuxin Sun, En-Haw Wu, So Yeon Kim, Z. Jane Wang, Guo-Shu Huang, and Benjamin M. YehAmerican Journal of Roentgenology 2016 207:2, 302-309
10. Kougias P, Lau D, El Sayed HF, Zhou W, Huynh TT, Lin PH. Determinants of mortality and treatment outcome following surgical interventions for acute mesenteric ischemia. J Vasc Surg. 2007 Sep;46(3):467-74. doi: 10.1016/j.jvs.2007.04.045. Epub 2007 Jul 30. PMID: 17681712.
11. Luther, B., Mamopoulos, A., Lehmann, C. and Klar, E. (2018). The Ongoing Challenge of Acute Mesenteric Ischemia. Visceral Medicine, [online] 34(3), pp.215–221. Available at: https://www.karger.com/Article/FullText/490318 [Accessed 6 Jan. 2021].
12. Kanasaki, S., Furukawa, A., Fumoto, K., Hamanaka, Y., Ota, S., Hirose, T., Inoue, A., Shirakawa, T., Nguyen, L.D.H. and Tulyeubai, S. (2018). Acute Mesenteric Ischemia: Multidetector CT Findings and Endovascular Management. RadioGraphics, 38(3), pp.945–961.
13. Bacalbasa N, Balescu I, Brasoveanu V. Celiac Trunk Stenosis Treated by Resection and Splenic Patch Reconstruction - A Case Report and Literature Review. In Vivo. 2018 May-Jun;32(3):699-702. doi: 10.21873/invivo.11296. PMID: 29695581; PMCID: PMC6000790.

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