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CLINICAL QUIZ

Intramural Gas: Would it be Life-threatening?

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ANSWER

The CECT scan of the abdomen at axial and coronal views show gas bubbles tracking along the inner wall of the ascending colon and hepatic flexure, which is separated from the intraluminal gas within the bowel. These intramural gas bubbles appear to be outlining the bowel wall circumferentially. The bowel wall appears to be thickened however the inner mucosa is not enhanced. There are no ascites in the images provided. The colon of the hepatic flexure and transverse colon appears dilated. No significant atherosclerotic plaque in the visualised arteries. Based on the clinical presentations and CECT features in Figure 1 and Figure 2, the best diagnosis for him is benign pneumatosis intestinalis (PI) secondary to obstructed low rectal cancer. He was subjected for a trephine transverse colostomy to relieve the obstruction with simultaneous transanal rectal mass biopsy. Once the histology is available, he subsequently will be referred for concurrent chemo-radiotherapy as neoadjuvant treatment and later for a low anterior resection, provided that it is a localized disease.

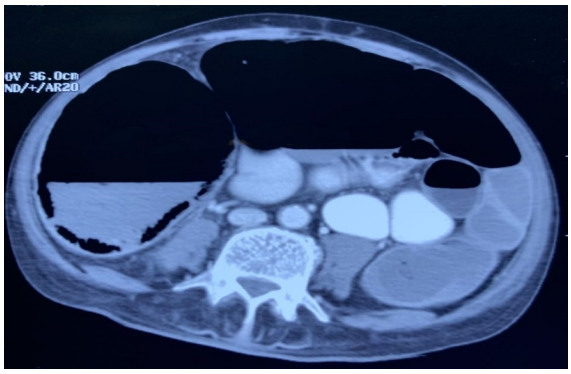

Figure 1 Axial image of CECT of the abdomen

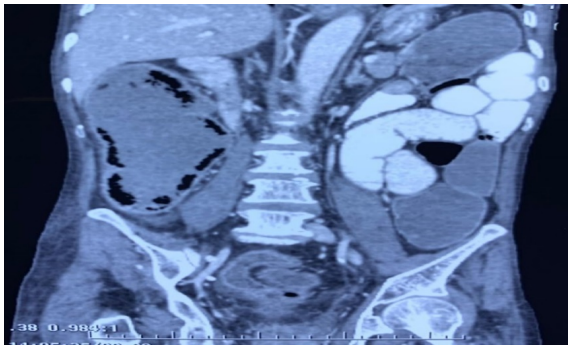

Figure 2 Coronal image of CECT of the abdomen

PI is defined as a presence of gas in the bowel wall[1, 2]. Two main theories have been postulated namely mechanical and bacterial theories. The first theory is suggested after gas dissection into the bowel wall from either the intestines or lungs via the mediastinum. Meanwhile, the latter occurs after gas-forming bacilli entering the submucosa through mucosal rents or increasing the mucosal permeability and producing gas within the bowel wall. CECT is the most sensitive imaging modality for identification of PI[2].

PI can be categorised into two, either benign or life-threatening causes[2]. It is always a diagnostic dilemma to differentiate between those two in a radiological perspective. Worrisome CT imaging features for PI includes soft tissue bowel wall thickening of more than 2 mm, peri-intestinal soft tissue fat stranding, free peritoneal fluid, abnormal bowel wall enhancement, presence of atherosclerosis and vascular occlusion[3, 4]. However, imaging features which include the greater extent of pneumatosis, normal bowel wall and pneumomediastinum favour to benign causes of PI[3]. Essentially it is important to determine benign against life-threatening PI, particularly colonic perforation because the treatment is significantly different. The correlation with clinical history, physical examination, and laboratory test results are the best indicator for subsequent management as well as to avoid unnecessary intervention.

REFERENCES

1. Galandiuk S, Fazio VW. (1986). Pneumatosis cystoides intestinalis: A review of the literature. Dis Colon Rectum 29: 358 – 363.
2. Ho LM, Paulson EK, Thompson WM. (2007). Pneumatosis intestinalis in the adult: Benign to life-threatening causes. AJR Am J Roentgenol 188 (6): 1604 – 1613.
3. Olson DE, Kim YW, Ying J, Donnelly LF. (2009). CT predictors for differentiating benign and clinically worrisome pneumatosis intestinalis in children beyond the neonatal period. Radiology 253 (2): 513 – 519.
4. Hsueh KC, Tsou SS, Tan KT. (2011). Pneumatosis intestinalis and pneumoperitoneum on computed tomography: Beware of non-therapeutic laparotomy. World J Gastrointest Surg 3 (6): 86 – 88.