

A Man with Acute Abdomen

Naychi Kyaw Kyaw^{1*}, Mustapha Abubakar, Kalyan Mansukhbhai Shekhda, Ramy Tageldeen, Waleed Afifi, Fatima Muhammad Halliru and Yakub Wahab Ibrahim

Department of Medicine, Southend University Hospital NHS trust, Southend-On-Sea, Essex, UK,

Received: 27 April 2021

Accepted: 25 September 2021

***Corresponding author:** *dr.naychistar@gmail.com*

DOI 10.5001/omj.2023.09

A 70-year-old gentleman presented to the emergency department with a five-day history of diarrhoea, vomiting, abdominal pain and per rectal bleeding. He was diagnosed to have locally advanced oesophageal carcinoma without metastasis seven months ago. Ten days before this presentation, he has had his second chemotherapy cycle containing docetaxel, 5-fluorouracil and oxaliplatin. The following figures show coronal sections of his abdominal computed tomography with intravenous contrast.



Figure 1. Computed Tomography of abdomen and pelvis showing air in the small and large intestine

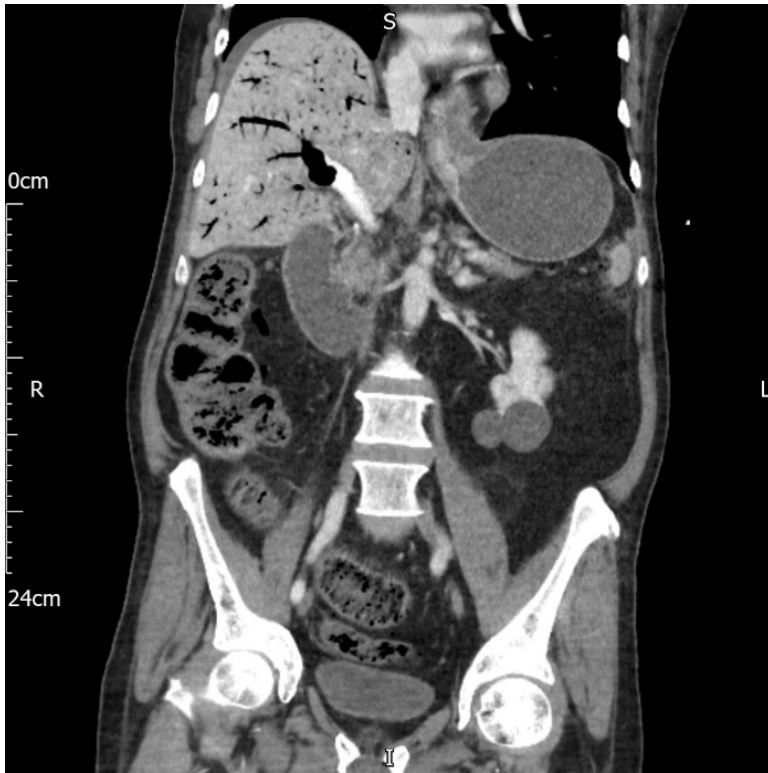


Figure 2: Computed Tomography of the abdomen and pelvis showing Hepatic-Porto-Venous Gas (HPVG), and air in small and large intestine.

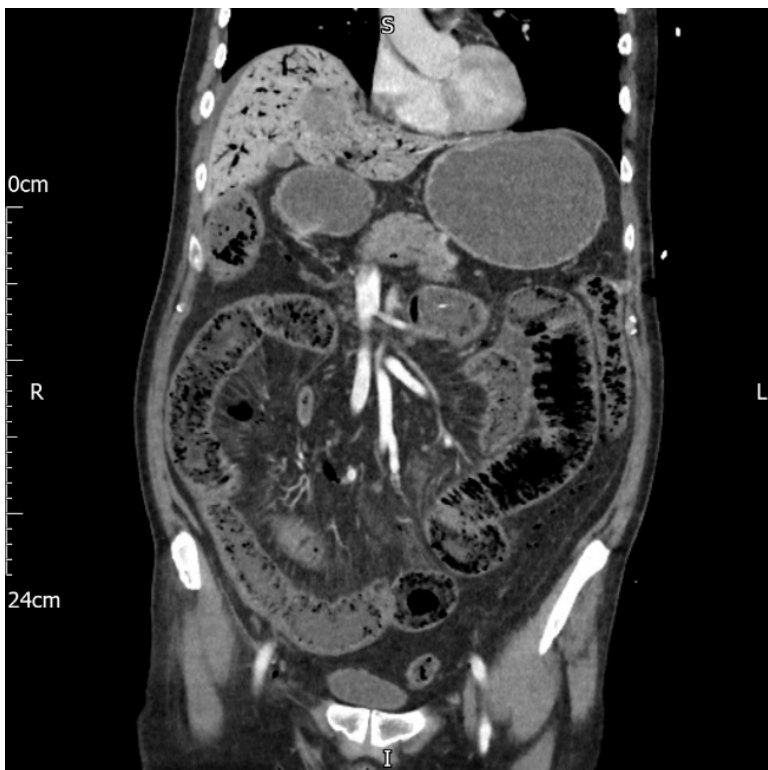


Figure 3: Computed Tomography with intravenous contrast of abdomen and pelvis showing Hepatic-Porto-Venous Gas (HPVG), and air in small and large intestine.

Question

- 1) What is this condition called?
- 2) What are the causes of this condition?
- 3) What is the possible cause for this case?

Answer

- 1) This condition is called “Pneumatosis Intestinalis”, a radiological diagnosis characterised by a cystic collection of air adjacent to the bowel’s lumen that runs parallel with the bowel wall or linear collections without air-contrast or air-fluid levels. Sometimes, it may be associated with Hepatic Portal Venous Gas (HPVG) (1).
- 2) It is caused by either gastrointestinal causes such as inflammatory bowel disease, ischaemic bowel disease, intestinal obstruction or non-gastrointestinal causes such as medication-induced (chemotherapy or other immunosuppressive medications), pulmonary diseases, iatrogenic (post endoscopy procedure) or idiopathic (2).
- 3) The possible cause in our case was chemotherapy-induced Pneumatosis Intestinalis because there was no pattern to suggest the involvement of any vascular territory or large vessel occlusion in the mesentery, making chemotherapy the most likely cause.

Discussion

Pneumatosis Intestinalis (PI) is a rare condition defined as the presence of extraluminal bowel gas confined within the bowel wall existing in any part of the gastrointestinal tract distal to the stomach. There are two types of PI; idiopathic or primary PI (15%) and secondary PI (85%), due to various gastrointestinal and non-gastrointestinal illnesses (2). The exact pathogenesis of PI is not fully understood, and it is proposed to be multifactorial (1, 2). When seen in combination with HPVG, it is most frequently associated with bowel ischemia. However, HPVG can also be seen in PI due to other aetiologies such as chemotherapy induced PI (2, 3).

PI can occur due to several chemotherapeutic agents, including 5-fluorouracil, docetaxel and cisplatin. PI cases have also been reported due to molecular targeted therapy such as bevacizumab and sunitinib (2). Though these drugs related PI have not been described previously, the cytotoxic effect of chemotherapy on the epithelial bowel can play a role in the pathogenesis of PI (2). Damage to the highly proliferated intestinal mucosa can occur rapidly during chemotherapy, and also, its interference with mucosal integrity can result in intramural air deposition. Depletion of sub-mucosal lymphoid tissue or leukemic infiltrates; denuded Peyer’s patches producing mucosal defects after chemotherapy can also lead to gas entry into the bowel wall. Neutropenia also plays a vital role in the development of PI in patients receiving chemotherapy (2).

The clinical symptoms vary from asymptomatic presentation to abdominal pain and distension, vomiting, diarrhoea, rectal blood loss (4), and radiological appearance of intramural gas confirms the diagnosis. Though management is mainly conservative such as a nasogastric tube placement, bowel rest, and broad-spectrum antibiotics, a few patients (less than 3%) who develop complications such as bowel perforation or bowel necrosis may require surgical intervention (3,5). Most patients recover in five days to one week. The

recurrence of PI is not uncommon; therefore, treating the underlying cause is a cornerstone in managing patients with PI (5).

Acknowledgement

Consent has been obtained from the patient.

Conflict of Interest

Noting to declare.

References

1. Khalil P, Huber-Wagner S, Ladurner R, et al. Natural history, clinical pattern, and surgical considerations of pneumatosis intestinalis. *European Journal of Medical Research* 2009; 14(6): p.231.
2. Kouzu K, Tsujimoto H, Hiraki S, et al. A case of pneumatosis intestinalis during neoadjuvant chemotherapy with cisplatin and 5-fluorouracil for esophageal cancer, *Journal of Surgical Case Reports* 2017; 11: rjx227.
3. Mallappa S, Warren OJ, Kantor R, Mohsen Y, Harris S. Pneumatosis intestinalis and hepatic portal venous gas on computed tomography - a non-lethal outcome. *JRSM Short Rep.* 2011; 2(11):88.
4. Candelaria M, Bourlon-Cuellar R, Zubieta JLG, Noel-Ettiene LM, Sánchez-Sánchez JM. Gastrointestinal Pneumatosis After Docetaxel Chemotherapy. *Journal of Clinical Gastroenterology* 2002; 34:444-445.
5. Zhang H, Jun S, Brennan T. Pneumatosis Intestinalis: Not Always a Surgical Indication. *Case Reports in Surgery* 2012; pp.1-3.