ONOMY SCIENCE

Bowel Ischemia and Vascular Air-Fluid Levels

***Elad Boaz and Petachia Reissman**

Department of General Surgery, Shaare-Zedek Medical Center, The Hebrew University School of Medicine, Israel

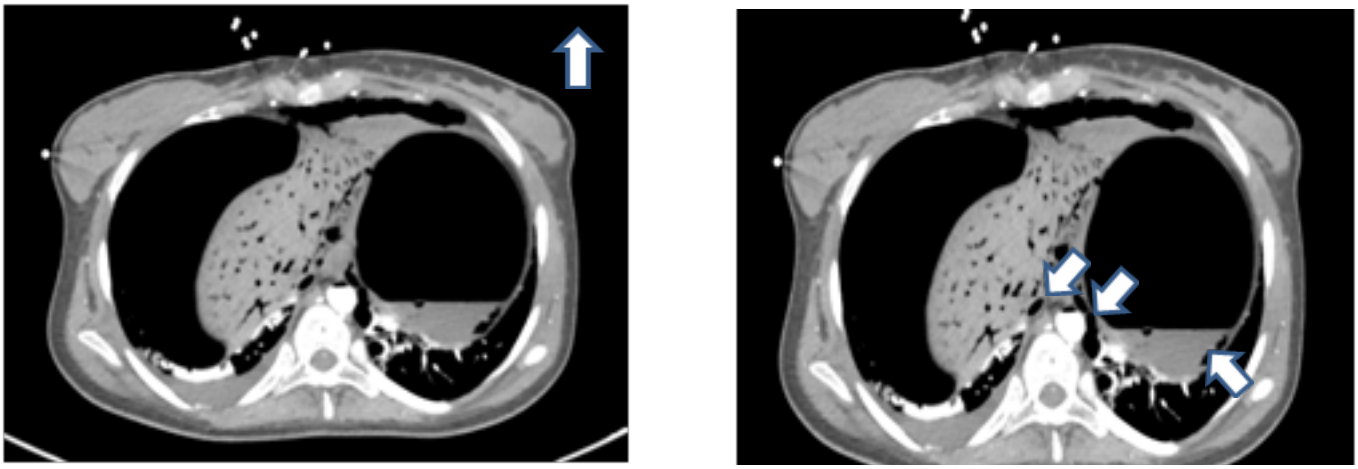
***Corresponding Author:** Elad Boaz, department of General Surgery, Shaare-Zedek Medical Center, The Hebrew University School of Medicine, Jerusalem, Israel, **E-mail:** Eladboaz@gmail.com

Cite this article: Elad Boaz, Bowel Ischemia and Vascular Air-Fluid Levels. Anna Cas Rep and Ima Surg. 2018; 1(1): 001-00.

Submitted: 16 March 2018; **Approved:** 29 March 2018; **Published:** 31 March 2018

INTRODUCTION:

23-year-old woman with history of cerebral palsy, epilepsy and Nissen fundoplication combined with surgical gastrostomy as a baby, presented to the emergency room with a few hours of agitation, and refusal to eat. On examination, she was conscious, stable but tachycardic, without fever. Her abdomen was distended with diffused peritoneal signs and absent bowel sounds. Computed Tomography (CT) of the abdomen showed free air in the abdomen, air within the bowel wall (right arrow) and in the portal system, and air-fluid levels in the Inferior Vena Cava (IVC) and aorta (arrows). She was taken emergently to the operating room for laparotomy which revealed diffused bowel ischemia with perforation and free air in the abdomen and in the mesenteric vessels. A damage control operation was done but the patient has died shortly later in severe septic shock and fulminant cardiac failure secondary to a lethal dose of air that accumulated in her heart. A possible explanation for this extremely unusual finding of gas fluid level within the lumen of the IVC and aorta is diffused intestinal ischemia that results in damage to the mucosal barrier which, in association with over-distension of the bowel loops and gas-forming bacterial proliferation, leads to gas moving from the intestinal lumen to the mesenteric veins and flowing through it to the portal system and hepatic parenchyma and to the IVC. Moreover, a venous air embolism always has the potential to become an arterial embolism if a connection between the two systems exists. If a right to left pressure gradient exists, the gas can then travel from the venous to the arterial circulation. For example, if a patient has a patent foramen ovale, which is present in 30% of the general population, this can result in air traveling from the low pressure right atrium to the arterial system if a pressure gradient occurs. Head CT which could have demonstrated brain air embolism was not obtained.



Original Image, arrow indicates top side, Edited Image. Right arrow shows air in stomach wall. Middle and left arrows show air inside aorta and IVC, respectively

References

1. Gordy S, Rowell S. Vascular air embolism. International Journal of Critical Illness and Injury Science. 2013; 3: 73-76. https://goo.gl/LHMQd4
2. Abboud B, El Hachem J, Yazbeck T, Doumit C. Hepatic portal venous gas: Physiopathology, etiology, prognosis and treatment. World Journal of Gastroenterology. 2009; 15: 3585-3590. https://goo.gl/PG,
3. Mirski MA, Lele AV, Fitzsimmons L, Toung TJ. Diagnosis and treatment of vascular air embolism. Anesthesiology. 2007; 106: 164-177. https://goo.gl/Bqk6df
4. Muth CM, Shank ES. Gas embolism. N Engl J Med. 2000; 342: 476-482. https://goo.gl/pP634a