Non-invasive diagnosis of acute ischemic bowel disease detected as hepatic portal venous gas during intra-aortic balloon percutaneous counterpulsation

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The authors report a very unusual case of non-invasive diagnosis of acute ischemic bowel disease detected as hepatic portal venous gas during intra-aortic balloon percutaneous counterpulsation. A 64-year-old man with acute ST-elevation myocardial infarction complicated by cardiogenic shock was treated with percutaneous angioplasty and intra-aortic balloon percutaneous counterpulsation. The post-procedural period was complicated by severe abdominal pain. Abdominal computed tomography revealed hepatic portal venous gas. Multiple kidney and splenic ischemic areas were also identified. Colonoscopy showed signs referring to acute ischemic colitis. Computed tomography detection of hepatic portal venous gas has permitted the non-invasive diagnosis of bowel necrosis.

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gas is usually found within the central portion of the liver more than 2 cm from the liver capsule. Gas in the portal venous system is likely transported to the small peripheral branches in the liver by the centrifugal flow of portal venous blood, whereas gas in the biliary tree is prevented from migrating peripherally by the centripetal flow of bile. CT has a higher sensitivity for the detection of HPVG than plain radiography and ultrasonography. Furthermore, signs of pneumatosis intestinalis are more specific on CT scan than with ultrasonography. However, HPVG occurred in different clinical scenarios and does not allow a clear-cut diagnosis. The pathogenesis is not fully understood. Two sources of its origin have been proposed: an escape of gas from an increased pressure in the bowel lumen and then circulation into the liver or the presence of gas-forming bacteria in the portal venous system and passage of gas into the circulation.

From our case with conservative management, it appeared that survival is dependent on prompt and adequate treatment of the underlying disease associated with HPVG. HPVG is not predictive of its severity when caused by intestinal ischemia and has even been observed with reversible ischemia. However, the mortality is still high (75%) without any statistical difference between the operated and non-operated cases in previous cumulative reviews.

In conclusion, CT has permitted a rapid and non-invasive diagnosis of acute ischemic bowel disease during IABP, without emergency laparotomy. This finding may have important clinical implications in patients with hemodynamic instability.

References