Portal venous gas caused by barium swallow examination: an extremely rare clinical finding

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April 21, 2023

Manuscript prepared for submission to Clinical Case Reports

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Disclosure: Written informed consent was obtained from the patient to publish this report in accordance with the journal’s patient consent policy. The authors declare that they have no current financial arrangement or affiliation with any organization that may have a direct influence on their work. We do not have any conflict of interest.

Acknowledgment: This work was supported by an academic research grant (J22G0211) from the Niigata Medical Association.

Number of Figures, Videos, and Tables: 1 Figure.

Keywords: Portal venous gas; barium complications; barium swallow examination; prednisolone

Key clinical message: We found an extremely rare case of PVG after barium swallow examination. This may be related to vulnerable intestinal mucosa in the patient undergoing prednisolone treatment. Conservative therapy should be considered for patients with PVG without bowel ischemia or perforation. Caution should be exercised during barium examination undergoing prednisolone treatment.
Question

A 79-year-old man with alcoholic cirrhosis was admitted for interstitial pneumonia. After 4 weeks of prednisolone treatment, his condition improved, and he was scheduled for discharge after the start of the meal. A barium swallow examination was performed to assess swallowing function, and repeated vomiting, abdominal pain and bloody stools occurred 10 h later. His vital signs were stable, with no symptoms of peritoneal irritation, and his serum C-reactive protein level was 0.29 mg/dL. Contrast-enhanced computed tomography (CT) showed extensive hepatic portal venous gas (PVG) (Figure 1a) and barium retention in the ileum and colon (Figure 1b), but there was no intestinal pneumatosis or necrosis. What pathologies would you consider, and what is your treatment plan for this patient?

Answer

PVG is a relatively rare pathology caused by severe abdominal disorders including intestinal necrosis.[1] PVG is often assumed to be a sign of poor clinical outcome and require emergency surgery. However, some cases of PVG were reported to have resolved with conservative therapy. In our case, conservative treatment, including a nasogastric tube and antibiotics, quickly resolved the symptoms. Three days later, CT showed PVG to have disappeared, and he had no relapse. Two weeks later, he was discharged from the hospital.

PVG is often associated with intestinal pneumatosis or necrosis in adult patients.[1] While colon obstruction and perforation have been reported as complications of barium,[2] PVG after barium examination is extremely rare. This is the first report of PVG without intestinal pneumatosis or necrosis after a barium swallow examination, and emergency surgery was not required. Bowel distention and mucosal damage can lead to PVG,[3] and prednisolone is thought to make intestinal mucosa vulnerable; therefore, caution should be exercised during barium testing in patients undergoing prednisolone treatment. Surgical interventions should be performed for patients with PVG caused by bowel ischemia and perforation. Alternatively, conservative therapy can be considered for patients with PVG who have no bowel ischemia or perforation.

Figure legend:

Figure. 1 (a) Contrast-enhanced computed tomography showing extensive hepatic portal venous gas (red arrows). (b) Barium retention in the ileum and colon (red arrows).

Authorship: All the authors made substantial contributions to the preparation of this manuscript and approved the final version for submission. TY and KT: drafted the manuscript; KT: corresponding author; AS and ST: clinical support; ST: careful review of the manuscript.

References
