



LETTER / Contrast material

Small bowel angioedema due to intravenous administration of gadobenate dimeglumine



Keywords Gadolinium-based contrast agent; Adverse event; Bowel angioedema; Anaphylaxis; Gadobenate dimeglumine

Dear Editor,

Adverse allergic reactions to intravenous gadolinium-based contrast agents (GBCA) are rare with clinical manifestations ranging from minor cutaneous reaction to severe anaphylaxis. Non-specific gastrointestinal symptoms are rarely reported and considered as mild adverse events. We describe herein a patient who developed small-bowel angioedema after intravenous administration of GBCA evidenced by magnetic resonance imaging (MRI).

A 34-year-old man underwent MRI examination of the liver for suspicious focal liver lesion. Immediately after intravenous injection of 10 mL of gadobenate dimeglumine (MultiHance[®], Bracco Imaging) the patient reported abdominal cramps. Despite abdominal pain, contrast-enhanced images could be acquired. Upper and middle-left abdominal discomfort gradually resolved in 15 minutes. The patient had no hemodynamic instability and physical examination revealed no cutaneous rash or mucosa swelling. No drug administration was needed. MR images obtained during portal and delayed phases showed a circumferential wall thickening of the jejunum, which was not visible on unenhanced and arterial phase images (Fig. 1). After pain cessation subsequent abdominal MR images showed persisting, moderate, duodenal and jejunal wall thickening with intraluminal fluid that was not present before injection. Dynamic T2-weighted cine-images demonstrated a marked increase in peristalsis of the intestinal segments involved (Supplementary data, Video 1). Delayed images two hours later showed a decrease in small-bowel edema.

Segmental bowel wall thickening is a non-specific imaging finding observed in patients with inflammatory, infectious, vascular bowel diseases or neoplasia. In our patient, clinical and radiological features were consistent with anaphylactic small-bowel angioedema. Indeed, clinical symptoms and abnormal MRI findings appeared a few seconds after intravenous administration of gadobenate dimeglumine. Small-bowel angioedema is a rare side effect of some angiotensin-converting enzyme inhibitors [1]. Acute small-bowel angioedema is also an extremely rare adverse event of intravenous administration of iodinated contrast agent

with only 8 reported observations with different molecules involved [2]. To our knowledge there are no reported cases of small-bowel angioedema secondary to intravenous administration of GBCA. Similar to our observation, patients with iodinated contrast agent-induced angioedema presented with mild severity abdominal symptoms (*i. e.*, abdominal discomfort, nausea or vomiting) without other anaphylactic manifestations [2]. In most patients CT images showed duodenal and jejunal wall thickening, sparing the ileum, self-resolving without medical intervention [2]. Safety profile of gadobenate dimeglumine was assessed by a multicenter registry reporting an adverse reaction rate of 0.76% among 23,553 injections [3]. Nausea and vomiting were the most frequent symptoms without description of abdominal pain. However, manufacturer's leaflet of gadobenate dimeglumine indicates that abdominal pain is an uncommon side effect, with an incidence between 0.1 and 1%. Clinical manifestations of small bowel angioedema are non-specific. With regard to iodinated contrast agent or GBCA, it is likely that small bowel angioedema is underdiagnosed because of mild severity symptoms and spontaneous favorable evolution. Physicians should be aware of the possibility of an adverse allergic reaction in patient complaining of abdominal pain and intestinal wall thickening on imaging following intravenous administration of GBCA.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.diii.2019.03.006>.

Disclosure of interests

The authors declare that they have no competing interest.

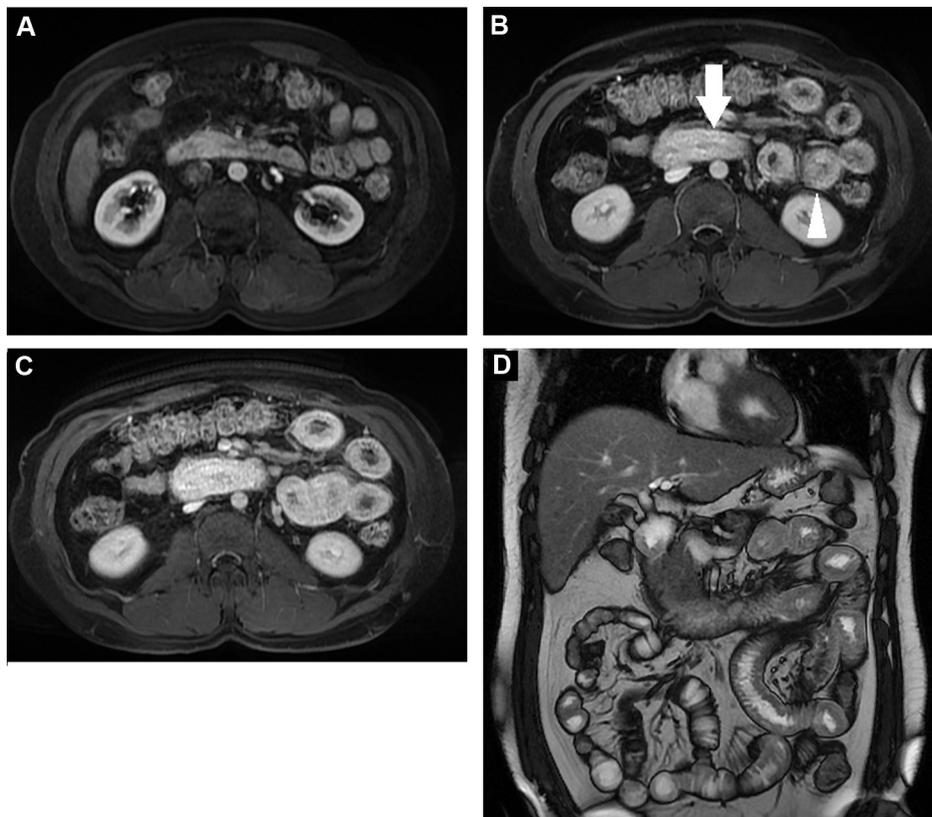


Figure 1. MR images of the abdomen in a 34-year-old man with angioedema of the small bowel after intravenous administration (IV) of gadobenate dimeglumine. A. T1-weighted MR image in the axial plane obtained during the arterial phase (30 sec after IV) shows normal duodenum and jejunum. B. T1-weighted MR image in the axial plane obtained during the portal phase (70 sec after IV) reveals slight circumferential duodenal (arrow) and jejunal (arrowhead) wall thickening. C. T1-weighted MR image in the axial plane obtained during 3 minutes after IV shows a more marked thickening of the duodenal and jejunal wall. D. T2-weighted MR image in the coronal plane 20 minutes after IV shows persistent bowel wall thickening, sparring the ileum, with intraluminal fluid that was not present on pre-injection images.

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