

Bowel angioedema associated with iodinated contrast media

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Section: Abdominal imaging

Area of Interest: Abdomen Gastrointestinal tract

Procedure: Diagnostic procedure

Imaging Technique: CT-Angiography

Imaging Technique: CT

Special Focus: Oedema Case Type: Clinical Cases

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Patient: 45 years, male

Clinical History:

A 45 year-old gentleman presented to the emergency department for acute abdominal pain, hypertension and microscopic hematuria. Patient had a right partial nephrectomy as a past surgical history. He was referred to the radiology department for a multi-phasic enhanced abdomino-pelvis CT examination.

Imaging Findings:

After a conventional plain CT scan to rule out any obstructing urinary calculus, a total of 85 mL non-ionic iodinated contrast media was administered intravenously using an autoinjector at a rate of 3 mL/s. Arterial and venous sequences were obtained, as well. The abdominal discomfort had slightly increased during the portal phase when the patient had an episode of vomiting. No skin rash or any respiratory symptoms were noted.

The bowel wall was normal on the non-enhanced and arterial phase images and the surrounding fat was clear. However, on venous phase sequences, there was a circumferential wall thickening along the proximal small bowel, mainly the duodenum.

No evidence of superior mesenteric artery ischemia or vein thrombosis were noted. No ascites or collection was seen. No enlarged lymph nodes or fat stranding was noted.

Patient's symptoms had resolved by the following day.

Discussion:

Bowel wall thickness is usually well detected on CT scan that help to differentiate the underlying pathology related to several causes[1]. Our patient presented for an acute abdominal pain with hypertension. He had also one episode of vomiting during the CT examination, precisely at the end of the venous protocol. No oral contrast or fluid were administered.

The bowel wall was normal on non-enhanced and on arterial images. However, a circumferential proximal bowel wall thickness was noted on portal phase sequences, thought to be the cause of vomiting at the end of scanning. The patient recovered without special treatment and the edema resolved without any intervention. Follow up examination and the gastroscopy show no intestinal abnormality.

A rapid change in bowel wall thickness may be an exclusive characteristic of an anaphylactic reaction post intravenous iodinated contrast[2, 4]. In our case, the bowel wall thickening appeared only on the venous phase about 1 min after administration of intravenous contrast.

No vascular engorgement, exudation, fat stranding or lymphadenopathy around the thickened bowel segment was

noted, which eliminate other possible underlying abnormalities[2, 3].

The CM-induced bowel anaphylactic angioedema occurred less frequently than pruritus and urticaria[3, 5]. It is underestimated and could be missed on non-portal phase CT-scan[6, 7]. In addition, even without associated CT findings around the bowel wall, it may be misdiagnosed as other pathology specially if only the portal phase protocol is obtained [8, 9].

The underlying etiology and the relationship between the iodine concentration and the anaphylactic angioedema are not fully elucidated[7, 8]. However, according to the literature, several cases of induced bowel wall angioedema were noted at a lower concentration of iodinated CM[2]. The transient anaphylactic small bowel angioedema and the non-allergic CM-induced hypersensitive immediate reactions share allegedly the same underlying process [5-8]. Most reported cases occurred mainly in the small intestine, mainly in its proximal segment.

The greater vessel supply of the small intestine in comparison to the remaining bowel could be the reason [8, 9].

A transient anaphylactic small bowel angioedema is well diagnosed on three-phase CT protocol[7].

A written informed patient consent for publication has been obtained.

Differential Diagnosis List: Duodenal angioedema post iodinated contrast media administration., Duodenal wall inflammation, Duodenal cancer

Final Diagnosis: Duodenal angioedema post iodinated contrast media administration.

References:

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Figure 1

a

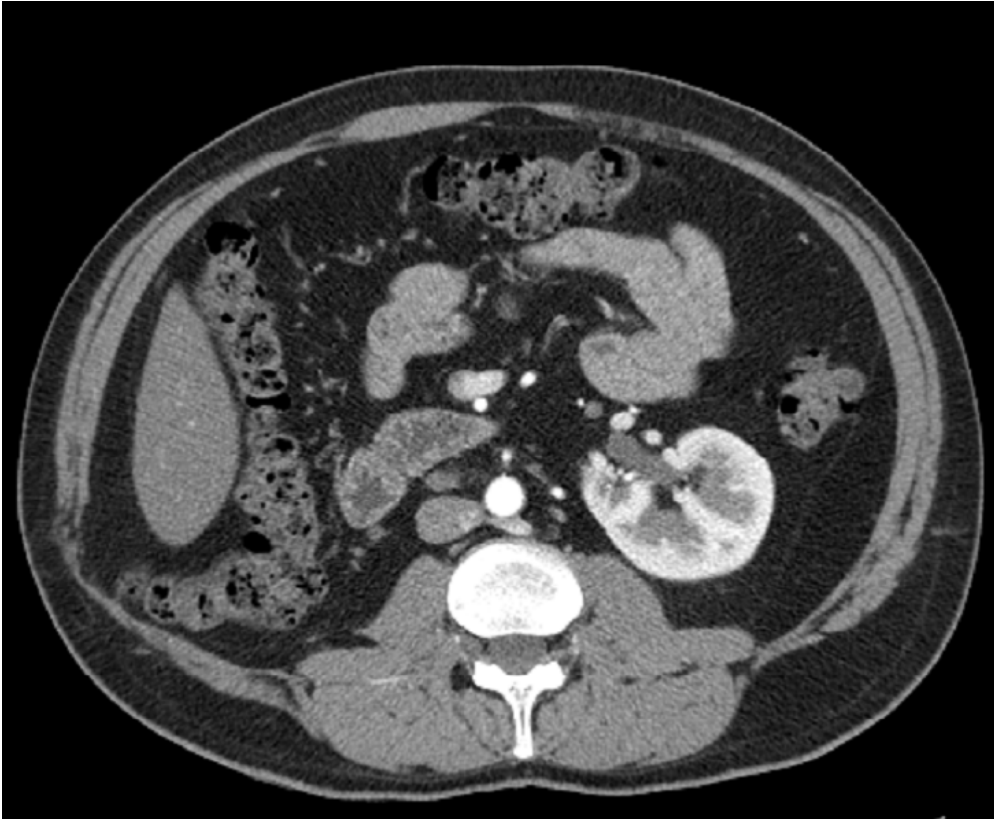


Description: Axial slice of a non-enhanced CT scan of the upper abdomen shows normal bowel wall thickness.

The remaining visualized organs are unremarkable, given the technique. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.

Figure 2

a



Description: Axial slice of the arterial phase of the upper abdomen shows normal bowel wall thickness. The remaining visualized organs are unremarkable. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.

Figure 3

a



Description: Coronal image of the arterial phase of the upper abdomen shows normal bowel wall thickness.

A right renal cyst and a calculus in the left lower collecting are noted. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.

Figure 4

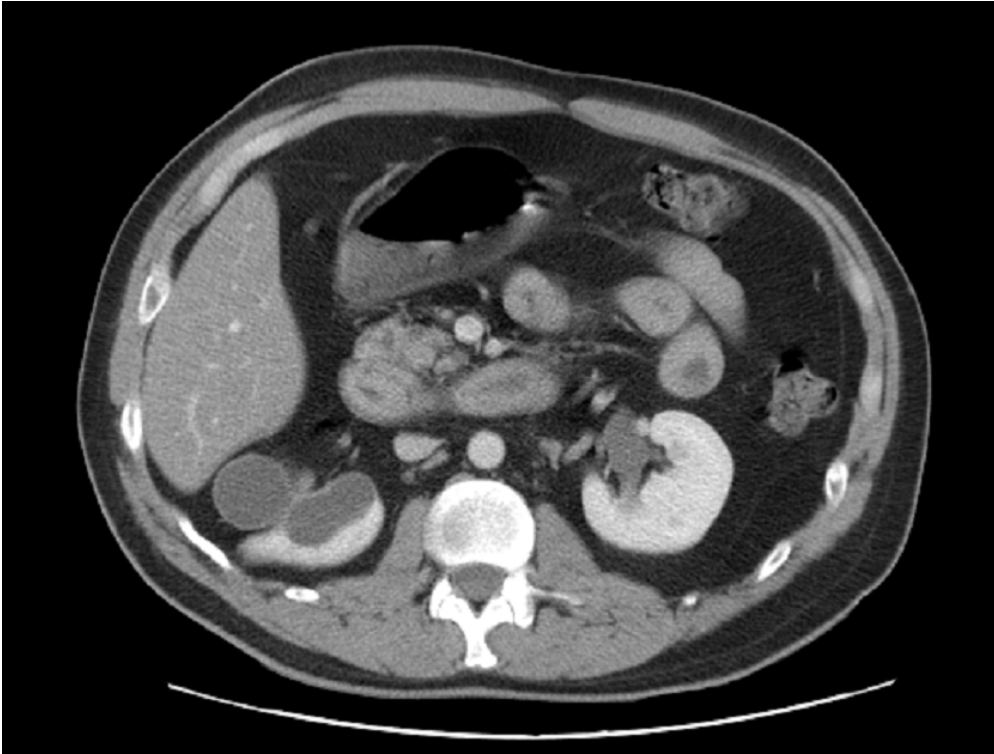
a



Description: Coronal slice of the portal phase shows a thickened duodenal wall with significant narrowing of its lumen. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.

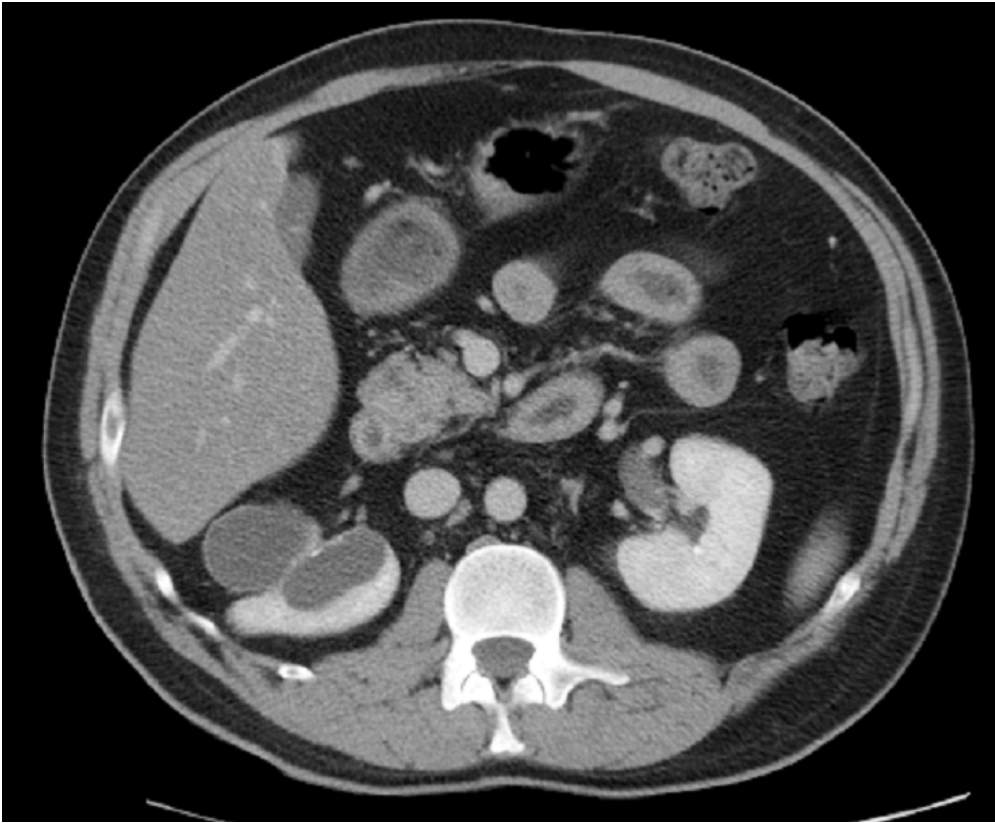
Figure 5

a



Description: Lower image of the portal phase shows a thickened duodenal wall with significant narrowing of the lumen. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.

b



Description: Portal phase axial slice shows a thickened duodenal wall with significant narrowing of the lumen.

A right renal cyst and a calculus in the left lower collecting are noted. **Origin:** Radiology department, Saint George Hospital University Medical Center, Beirut-Lebanon.