JBR–BTR, 2012, 95: 130-131.

SMALL BOWEL INFARCTION DUE TO MESENTERIC VENOUS THROMBOSIS

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Key-word: Veins, mesenteric

Background: A 47-year-old male consulted the emergency department in our hospital with a history of short standing but aggravating peri-umbilical pain. In the past week he had no stools, a loss of appetite combined with episodes of nausea and vomitus. Clinical investigation showed diffuse abdominal tenderness and a distended abdomen. A contrast-enhanced CT scan of the abdomen was performed. During the further clinical work-up an intra-abdominal E. coli sepsis was diagnosed.

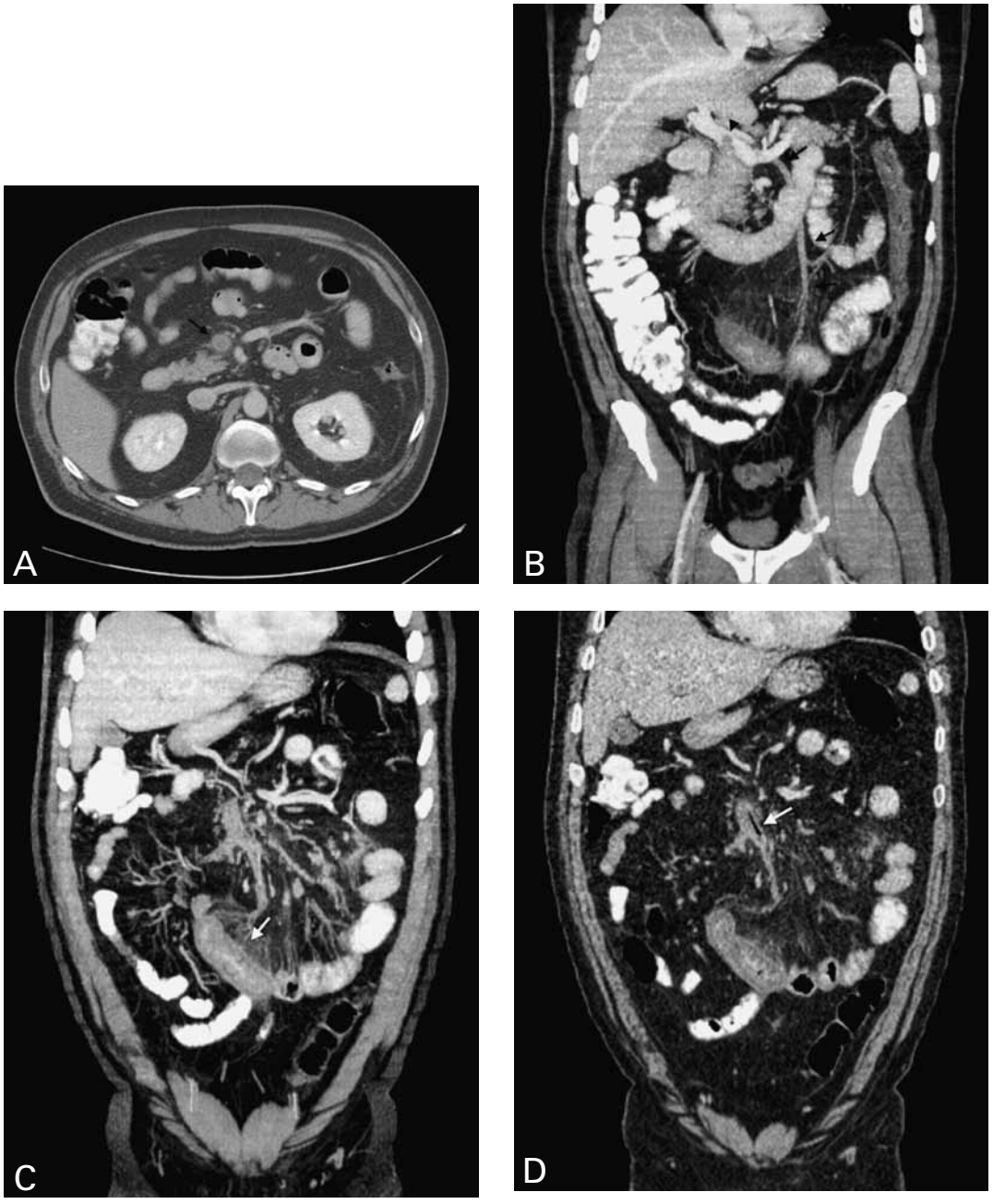

Fig. 1A | 1B / 1C | 1D

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Work-up

Contrast-enhanced CT scan of the abdomen (Fig. 1) shows on axial image of the abdomen at the level of the superior mesenteric vein (A) engorgement of the mesenteric vein with a central endoluminal filling defect (black arrow). Mesenteric edema is present. Rim enhancing of the wall of the vein is noted. Coronal Maximum Intensity Projection image (MIP) (B) demonstrates a filling defect in the portal vein (black arrowhead). No contrast filling of the superior mesenteric vein (black arrows) is observed. Mesenteric edema is present. Coronal MIP image (C) visualizes a bowel wall thickening of more than 3 mm (white arrow) with poor enhancement of the bowel wall. On the coronal MIP image (D), gas is seen in the mesenteric vein (white arrow).

Radiological diagnosis

Based on the imaging findings the diagnosis of *thrombosis of the superior mesenteric vein* and *partial thrombosis of the portal vein*, with subsequent venous infarction of the adjacent small bowel was made.

Discussion

Mesenteric venous thrombosis is an uncommon but potentially lethal cause of bowel ischemia. In comparison with arterial occlusive disease, which is much more frequent, venous occlusive disease makes up a much smaller percentage (10-15%) of mesenteric ischemia. Venous ischemia is more frequent in younger patients, whereas arterial ischemia is more frequent in the elderly. The non-specific clinical signs and symptoms of mesenteric vascular disease delay the diagnosis and contribute to the high mortality and morbidity rates. Because of these high rates and the high sensitivity of contrast-enhanced CT investigations, there is an important role for the radiologist in the diagnosis of this entity. The risk of acute mesenteric venous thrombosis increases in patients with hypercoagulable states. Other pre-existing conditions or risk factors include; visceral infection, portal hypertension, perforated viscus, blunt abdominal trauma, previous abdominal surgery, pancreatitis, smoking and/or use oral contraceptives. Malignancy may cause thrombosis because of a hypercoagulable state or by direct extension of the tumor. One of the most frequent causes, well illustrated in our case, is intra-abdominal sepsis. No underlying cause is found in 25-50% of patients diagnosed with mesenteric venous thrombosis. Contrast-enhanced CT scan is the preferred examination technique in case of suspected mesenteric thrombosis, because it permits the combined evaluation of the vascular structures, the bowel wall as well as the adjacent mesentery. Sensitivity rates for contrast-enhanced CT reach at least 90%. CT findings of mesenteric venous thrombosis include, well-defined endoluminal filling defects of low attenuation in contrast with well-defined, rim enhancing venous walls. Collateral circulation, engorgement of the mesenteric veins and mesenteric edema may be present. Associated symptoms of bowel ischemia may be present and include a bowel wall thickening (> 3 mm) as a result of submucosal edema. The thickened wall may appear hyperattenuating due to the venous engorgement. In an advanced stadium of bowel ischemia intestinal pneumatosis may be present. Less commonly in the advanced stadia mesenterial or portal gas can be seen. Management starts with the treatment of the underlying cause and systemic administration of thrombolytic drugs. Acute venous thrombosis has a mortality rate of 30% and a recurrence risk of 25% without a proper anticoagulant therapy.

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