The imaging diagnosis

Case 388

4. Non-obstructive mesenteric ischemia

[Progress]

She underwent laparotomy instantly after giving consent for surgical operation. It revealed local small bowel necrosis with opacity ascites. Small bowel resection of 70 cm-length in size including necrotic and edematous bowel, was conducted.

[Discussion]

Non-obstructive mesenteric ischemia (NOMI) is a disease that despite no evidence of occlusion of superior mesenteric artery branch, ischemic damage of small bowels occurs, causing discontinuous necrosis of small bowels. It probably arises from lumen stenosis by spastic mechanism of mesenteric branches, inducing edema and/or necrosis of small bowels (1).

NOMI belongs to acute mesenteric ischemia. Of the acute mesenteric ischemia, acute mesenteric artery occlusion occurs most in 60-85%, while NOMI occurs in 15-30%, followed by superior-mesenteric-vein-occlusive mesenteric ischemia in 5-15% (2, 3). To diagnose NOMI, it is important to confirm no evidence of occlusion of mesenteric artery and mesenteric vein. NOMI occurs in ages of 50 or older. Mortality rate is approximately 50%: some cases with NOMI fall in multiple organ failure with progress of massive, small bowel necrosis (2, 3). One of the risk factors is arial fibrillation. Etiology is spasm of mesenteric artery branches and/or circulation insufficiency by decrease of blood pressure. Although NOMI occurs in unknown cause, it occurs in various clinical situations: myocardial infarction, systemic hypotension due to trauma, cardiac/major abdomen surgery and dialysis.

The early symptom of NOMI is subtle and as necrosis of small bowel advances, the symptoms of peritonitis appear such as severe abdominal pain, muscular defense, and least bowel movement sound. Laboratory test reveals elevation of white blood cells, CRP and lactic acids.

Superior mesenteric arteriography used to be a golden standard for diagnosis of NOMI, showing spastic mesenteric branch artery such as string-of-sausages sign (1, 4). At present, the arterial phase of dynamic contrast-enhanced CT is taking place of selective angiography for its high-resolution. Abdomen CT plays a crucial role of depicting images of NOMI: emphysematous small bowel, mesenteric edema, bowel mural edema, mural thinning reflecting necrosis, and non-contrast-enhanced mural (4-6). Bowel mura edema composes of three layers: enhanced-mucosa, non-enhanced-edematous submucosa, and enhanced muscle & subserosa.

The medicines of Vasodilator are used irrespective of venous or arterial approaches. It is reported that arterial infusion of vasodilators via superior mesenteric artery is useful (1,6).

In our case, she experienced repeated diarrhea and abdominal pain. Emphysematous small bowel, mesenteric edema was depicted on non-enhanced CT and no occlusive findings of mesenteric branch arteries on contrast-enhanced CT. She received small bowel resection of 70cm with necrosis and discontinuous edema, with no surgically related complication.

[Summary]

We presented an-eighty-five-year-old female in our hospital for repeated diarrhea and abdominal pain. Small bowel emphysema, mesenteric edema and ascites, and patent superior mesenteric branch arteries were depicted on contrast-enhanced CT, implying local small bowel necrosis without occlusion of vessels, leading diagnosis of non-occlusion mesenteric ischemia (NOMI). It is borne in mind that acute mesenteric ischemia occurs most by arterial occlusive mesenteric ischemia, followed by NOMI, second most, and venous occlusion, third most. The symptoms come from peritonitis with bowel necrosis, laboratory test reveal elevation of white blood cells, CRP, procalcitonin, and lactic acids.

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