Free air comes from

Case 428

5. Sigmoid colon (diverticulum)

【Progress】

He received endoscopically surgery that revealed perforation from sigmoid colon diverticulum. He had temporary artificial stoma using ileum.

【Discussion】

In a clinical reality, free air in abdomen is feared because free air from digestive organs induces peritonitis, sepsis and finally multiple organ failure. It is well known that free air from gastric ulcers or duodenal ulcers in young adults cause life threatening events that require the speedy response for lifesavings (1, 2).

Free air, in other words, pneumoperitoneum in abdomen is categorized into two types: from insides of digestive organs and from outsides of digestive organs. Free air inside from digestive organs induce infection, leading to life- threatening events: it occurs from gastroduodenal ulcers, diverticulitis, appendicitis, fecal impaction, Crohn disease, ulcerative colitis, digestive organ necrosis due to obstructive atherosclerosis coming from renal failure, often chronic renal dialysis, embolism, non-occlusive mesenteric ischemia (3-8).

Meanwhile, free air arising from outsides of digestive organs induces no life-threatening: rupture of pneumatosis cystoides intestinalis, iatrogenic of post-laparostomy or post-endoscopically surgery, inflammatory process of uterus and/or Fallopian tube, trauma, and pneumomediastinum via esophageal hiatus hernia (1, 6-8).

In our case, the patient with free air was transported by ambulance car from a local hospital with suspicious diagnosis of perforated duodenal ulcer. Relatively much free air was present in spaces of subphrenic, subhepatic and Morrison pouch on abdomen CT. Further, ascites in the pelvic spaces of Duglas pouch and supra urinary bladder. This ascites includes gas bubbles. Then, the free air origins from gastroduodenal ulcers could be excluded. The origin and proximal part of appendix is intact, but the distal part was embedded in ascites with air bubbles. Then, the CT images of ascites with air bubbles were interpreted as free air origin coming from the perforation of appendix distal parts. However, the presence of air bubbles in Douglas pouch is contradictory from appendix simply because Duglas pouch is situated more upward than appendix. The origin of air bubbles should be lower than the position of appendix. Colon diverticulosis with barium contents were scattered in whole colon. Although air bubbles were acknowledged surrounding diverticulum, these findings were, at first, artifacts coming from metal attenuation.

Laparoscopy revealed air bubbles coming from rupture of sigmoid colon diverticulosis. From this patient, when you encounter the case with free air from insides of digestive organs, we should learn as follows: first, accumulation of much air bubbles is investigated, and then, the site of the lowest air bubbles irrespective of much or less are found out. It leads to the exact sites where air bubbles arise.

【Summary】

We presented a forty-eight-year-old male with epigastric pain. He was transported by ambulance, suspicious diagnosis of gastro-duodenal ulcer based on subphrenic free air. Free air was found out in spaces of subphrenic, sub hepatic, Morrison pouch, mesenteric and Duglas pouch. Ascites with air bubbles was found out in mesenteric and Duglas peritoneal space. Laparoscopy revealed perforation arising from sigmoid colon diverticulum. It is borne in mind that when free air in abdomen is encountered, it is crucial to investigate, first, the site of much air bubbles, and then, to find out the site of the lowest air bubbles irrespective of much or less. This interpretation process leads to the exact sites where air bubbles arise.

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