Cecal volvulus has great diversities of clinical and laboratory presentations, which often lead to delayed treatment. Due to the drastic increase in mortality from gangrenous bowel, early identification is essential for clinician. We present a case of 32 year-old man in bed-ridden status, with severe vomiting and diffuse abdominal pain. Multiplanar reformatted multidetector computed tomography (MDCT) depicted cecal volvulus’s configuration and strangulation related partial gangrenous wall, thus surgery was soon performed. Ten days later, he was discharged under stable condition. This case showed that MDCT provides a safe, fast and accurate way of early identification of cecal volvulus which may lead to better prognosis and shorter hospital stay.

CASE REPORT

A 32 year-old man was a case of Heroin and Amphetamine addiction. As a result of an unsuccessful suicidal attempt, he suffered from hypoxic encephalopathy which rendered him in a bed-ridden status. Thereafter, he regularly received psychotropic agent (Piracetam) for heroin abstinence.

Prior to this admission, he experienced a sudden onset of severe vomiting, accompanied by diffuse abdominal pain. Physical examination revealed diffuse abdominal tenderness and rebounding pain. On admission, laboratory studies showed signs of infection (white blood cell counts: 17300/μL; normal value: 3900~10600/μL, Segment: 84.1%; normal value: 42~74%, C-reactive protein: 7.7mg/L; normal value: <5 mg/L) and later 4 slice MDCT was arranged for a thorough examination.

The abdomen radiograph showed gaseous distention of a bowel loop at lower abdomen which simulated a ‘coffee bean’ sign (Fig.1). Transverse sections of the MDCT revealed a twisted colon at proximal ascending colon. This colon twisting produced multiple converging beaks (Fig. 2). The cecum proximal to this segment was markedly distended and extended to the pelvis. The cecal wall was ‘paper-thin’ in appearance and the wall enhancement was heterogeneous (Fig. 3). The reduction of cecal wall enhancement could be attributed to a decrease in perfusion. The ileocecal valve was competent, rendered the cecum in a closed-loop obstruction due to colon-twisting; the...
ileocecal junction was located at the lateral aspect of the cecum instead of its usual medial location. A ‘whirl’ sign of the mesenteric vessels was depicted on the coronal reformatted images of the MDCT (Fig. 4). Based on the combined MDCT findings on both transverse and coronal section, a type I axial twisting of cecal volvulus with focal ischemia of cecal wall was diagnosed.

Shortly after the confirmation of the cecal volvulus, surgery was arranged. Open laparotomy revealed a dilated cecum and proximal ascending colon in dark reddish ascites. The cecum was twisted and rotated 270 degrees in clockwise direction. As a result, there was partial gangrenous change of cecal walls. Therefore, a right hemicolectomy with end-to-end ileum-transverse colon anastomosis was performed. The resected right hemicolon was sent for pathology and transmural necrosis was reported, thereby confirmed all the findings of CT. Ten days after the surgery, the patient was discharged under stable condition.

**DISCUSSION**

Cecal volvulus may classify into the following types, according to the planes of the torsion: Type I- Axial twisting, Type II- Loop type, Type III- Cecal bascule [1]. At present, the diagnostic imaging tools
for cecal volvulus are barium enema and CT. Barium enema has a diagnostic accuracy of about 88% and a limited therapeutic value, but it is too time-consuming and is associated with the added potential complication of bowel perforation [2].

In this case, the coffee bean sign, bird beak sign, and whirl sign were depicted on the MDCT. These are the classic images of a bowel volvulus. Among them, the whirl sign is the most specific sign for volvulus and the degree of cecal rotation can even be predicted by the tightness of the whirl [1, 2]. Furthermore, the sensitivity of CT for the diagnosis of acute bowel ischemia (82%) has almost reached the sensitivity of angiography (87.5%). There are several wall changes that may indicate bowel ischemia which include bowel wall thickening, change in bowel wall attenuation, pneumatosis intestinalis coli, fat stranding, and ascites [4, 5]. In our case, the dilated cecum had a diffuse paper-thin wall with a heterogeneous reduction of contrast enhancement as well as regional fat stranding. These CT findings strongly indicated that the cecal volvulus had a compromise of the blood supply and therefore resulted in acute bowel ischemia. Although pneumatosis of bowel wall is very specific for ischemic bowel, it was not present in this case.

The definitive cause for cecal volvulus is still unclear, but there are many hypotheses. Inactivity-related poor intestinal muscle tone (adynamic ileus) is one of the influential factors of cecal volvulus formation [3], and it was evident in this case. Surgical intervention is currently the treatment of choice for cecal volvulus. The most commonly used surgical method is colectomy as is in this case, because it eliminates the leading point and prevents recurrence. As a result, the mortality rate (0-30%) can be reduced [2].

In summary, due to the lack of consistency of the clinical presentations of cecal volvulus, the clinical diagnosis could be difficult. MDCT with multiplanar reformation provides a safe, fast and accurate imaging modality for early identification of cecal volvulus. In addition, the contrast-enhanced CT can predict the viability of the involved bowel and therefore can dispose patients to a timely treatment. Uncomplicated cecal volvulus with an appropriate treatment can lower the mortality rate and shorten hospital stay.

REFERENCE

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長期臥床病患盲腸扭結之多探頭電腦斷層攝影：病例報告

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臨床醫師目前面臨的困境是盲腸扭結並無明確的臨床特徵於是常常延遲治療而導致腸壞死。但早期偵測出盲腸扭結卻可大大降低死亡率。我們報告一位三十二歲長期臥床男性以突發性嘔吐和腹痛為入院的主訴，多探頭電腦斷層顯示盲腸扭轉樣式和扭結導致部分腸壁壞死之嚴重度，病人立即接受手術治療。十日後預後良好出院。由此病例報告我們得知多探頭電腦斷層可以安全，快速並且準確的早期偵測出盲腸扭結而讓病患得到更好的預後以及減少住院天數。