Pneumatosis intestinalis of the cecum mimicking emphysematous cystitis

Jun-Jie Ng, Kon-Voi Tay

ABSTRACT

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CASE REPORT

A 73-year-old diabetic female was presented to the emergency department with lower abdominal pain and distension for five days. Physical examination revealed tenderness over her right iliac fossa and supra-pubic region. An abdominal X-ray (Figure 1) revealed a spherical structure in the pelvis in the expected position of the bladder with presence of intramural gas and a provisional diagnosis of emphysematous cystitis was made by the emergency physicians. Urinary catheterization performed yielded clear urine and urine dipstick did not reveal any evidence of urinary tract infection. The patient's abdominal pain and distension worsened and a surgical consult was made. Further history corroborated with the patient's family revealed that the patient has had associated absolute constipation for last five days. The abdominal X-ray was reviewed which also showed a loop of dilated transverse colon. There was suspicion of colonic intestinal obstruction. Computed tomography (CT) scan of her abdomen and pelvis (Figure 2) showed a massively dilated cecum extending into the pelvis with evidence of pneumatosis intestinalis secondary to a closed loop obstruction from a stenotic splenic flexure colonic tumor. The patient underwent an exploratory laparotomy which revealed a large circumferential and stenotic splenic flexure tumor causing resultant proximal large bowel obstruction. The cecum was massively dilated measuring

Figure 1: Plain supine abdominal X-ray of the patient showing a circular radiolucent rim (as indicated by the arrow) at the expected position of the bladder in the pelvis suggestive of emphysematous cystitis.

Figure 2: (A, B) Coronal views of a contrast-enhanced computed tomography scan of the patient's abdomen and pelvis showing a massive dilated cecum with pneumatosis intestinalis directed towards the pelvis causing an X-ray appearance that mimicked emphysematous cystitis, and (C) The massive cecal dilatation was due to a closed loop intestinal obstruction secondary to a stenotic splenic flexure colonic tumor (indicated by the arrow).

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up to 14 cm in diameter and the cecal wall appeared thinned out and dusky. The ascending and transverse colon were also dilated up to 5 cm in diameter but still appeared healthy. The patient underwent a subtotal colectomy and was discharged well on postoperative day-10. Histopathological examination of the resected colon revealed a moderately differentiated adenocarcinoma of the splenic flexure exhibiting transmural invasion with involvement of the serosa and omental fat. There was no malignancy identified in 28 harvested lymph nodes and resection margins were free of tumor. The cecum demonstrated mural attenuation with mucosal ulceration and a small focal perforation. The histopathological findings corresponded to a provisional tumor node metastasis (TNM) staging of T4No.

DISCUSSION

Emphysematous cystitis is a rare but potentially life-threatening clinical entity where there is presence of gas within the bladder wall and lumen during a urinary tract infection. It usually occurs in elderly women with poorly controlled diabetes mellitus [1–3]. Common causative pathogens are gas forming organisms like *Escherichia coli* and *Klebsiella pneumoniae* [4]. Patients with emphysematous cystitis frequently present with symptoms of abdominal pain, gross hematuria and fever but a significant proportion of patients can be asymptomatic with diagnosis of emphysematous cystitis made incidentally on abdominal imaging [5]. Intra-mural gas can be seen on plain abdominal or pelvic X-rays as curvilinear or circular areas of increased radiolucency in the expected position of the bladder and intra-luminal gas can be seen as an air-fluid level. In our patient, the abdominal X-ray revealed a circular radiolucent rim centrally located within the pelvis which was highly suggestive of emphysematous cystitis. Although she presented with lower abdominal pain, she did not have any other symptoms of cystitis such as hematuria, dysuria, urinary frequency or urgency. Urine dipstick analysis of the urine also did not reveal any evidence of urinary tract infection such as the presence of leucocytes or nitrites. In view of the discordance between her presenting symptoms, urine dipstick analysis and X-ray findings, a CT scan was subsequently performed which revealed that the rim of gas in the pelvis was actually pneumatosis intestinalis of the cecum. The cecum was massively dilated and directed into the pelvis secondary to a closed loop obstruction from a stenotic transverse colon tumor and competent ileocecal valve. We hypothesize that apart from pneumatosis intestinalis of the cecum, pneumatosis intestinalis of the sigmoid colon and rectum could also possibly mimic the X-ray findings of emphysematous cystitis. The subsequent management and disposition of a patient with pneumatosis intestinalis of the colon or rectum will differ significantly with that of emphysematous cystitis.

CONCLUSION

Plain X-ray finding of a curvilinear or circular radiolucent rim at the expected position of the bladder in the pelvis usually represents a diagnosis of emphysematous cystitis. However, it is prudent to investigate with further imaging such as a computed tomography scan if clinical findings are not congruent with emphysematous cystitis as adjacent structures such as the cecum, sigmoid colon or even rectum with pneumatosis intestinalis can mimic the X-ray finding of emphysematous cystitis and if not picked up may lead to delayed diagnosis and disastrous complications.

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The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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