Case 16602

Pneumatosis Cystoides coli with asymptomatic pneumoperitoneum: Clinical and Radiological Correlation.
Published on 12.02.2020

DOI: 10.35100/eurorad/case.16602
ISSN: 1563-4086
Section: Abdominal imaging
Area of Interest: Abdomen CNS Musculoskeletal system
Procedure: Education
Procedure: Radiation safety
Imaging Technique: CT
Imaging Technique: Mammography
Imaging Technique: MR
Special Focus: Image verification Case Type: Clinical Cases
Authors: Wael Hamza Kamr.MD1, Mohannad Saeed Almalki. MD, EBNR2, Ayman Eltahan. FRCR2, Amr Saadawy.MD3
Patient: 63 years, female

Clinical History:

A 63-year-old female patient came to ER complaining of chronic cough with whitish sputum followed by bilateral shoulder pain for 1 month. No fever, no chest pain, shortness of breath or sweating. No abdominal symptoms. Clinical examination and laboratory assessment were unremarkable.

Imaging Findings:

In this case, the key point was the plain chest radiography showing pneumoperitoneum. Then plain abdominal radiography was acquired, showing distended colonic loops with radiolucent cystic collections of gas located along the colon. Contrast enhanced CT scan was acquired showing pneumoperitoneum and multiple mural air cysts/pockets of gases within bowel wall (grape-like intramural gas of the sigmoid colon using the lung window setting) involving the sigmoid colon with no associated colonic wall thickening or mass formation. No evidence of mesenteric vascular occlusion or ischaemic changes.

Discussion:

Pneumatosis cystoides intestinalis (PCI) is a rare disease characterised by gas-filled cysts in the intestinal submucosa and subserosa [1]. It is a usually benign disorder and can be divided into primary-or idiopathic (15%) type and secondary type (85%) caused by various predisposing factors [2,3]. The exact aetiology of the disease is still unknown, it may appear in association with ileal surgery, colonoscopy, chronic pulmonary disease, connective tissue disorders and ingestion of sorbitol or lactulose [4]. The pathogenesis of PCI remains unclear;
however, six pathophysiologic mechanisms have been proposed including inflammation, physical damage of intestinal mucosa, nutritional imbalance and dysbacteriosis, gastrointestinal dysmotility, and immune dysfunction [5]. Clinical presentation of pneumatosis has no special criteria; patients may be asymptomatic or complain of pain and abdominal distension, diarrhoea, rectal blood loss and even life-threatening illnesses including bowel necrosis and perforation [6] with a mortality rate that may reach 75% [7,8]. Clinical assessment of PCI cases plays a significant role in management plan of the patient [9]. Diagnosis of PCI cases is based on colonoscopy and imaging [10]. The clinical data in correlation with endoscopic and imaging findings guide the physician for the proper management decision [11]. The main endoscopic findings are multiple white small cysts coupled to a sub-atrophic mucosa or larger cysts (up to 3 cm) with a reddened overlying mucosa. Medical imaging plays an important role in diagnosis of PCI, especially CT [1,2]. Abdominal plain radiography may show segmental bowel distension with lucent cysts related to its wall, pneumoperitoneum, or may be negative [2,12]. CT is more sensitive than plain radiography in distinguishing PCI from intraluminal air or submucosal fat. In addition, it allows the potential detection of the underlying cause or the associated complications [13]. Management of PCI varies according to the clinical evaluation, presence of complications, and is not only based on the radiological findings. Management varies from conservative measures to oxygen therapy or surgery [14].

Take Home Message / Teaching Points
PCI may be totally asymptomatic or may have variable symptoms, such as perforation, or even life-threatening symptoms. CT is the modality of choice in diagnosis of PCI and assessment of its complication. Management decision may be conservative, surgical or oxygen therapy. It should be based on the clinical assessment, colonoscopy and imaging findings, all together.
Written informed patient consent for publication has been obtained.

Differential Diagnosis List:
Pneumatosis cystoides coli with asymptomatic pneumoperitoneum, Bowel ischaemia and infarction, Gas trapped between bowel wall and luminal contents (pseudopneumatosis), Gas trapped by opposing mucosal folds (pseudopneumatosis), Gas bubbles adherent to the bowel wall (pseudopneumatosis)

Final Diagnosis: Pneumatosis cystoides coli with asymptomatic pneumoperitoneum

References:
Yong juan Wang, Yu ming Wang, Yan min Zheng, Hui qing Jiang & Jie Zhang (2018) : Pneumatosis cystoides intestinalis: six case reports and a review of the literature; BMC Gastroenterology volume 18, Article number: 100 (Google Scholar )


AKIRA HOKAMA, FUKUNORI KINJO, and JIRO FUJITA (2009) : Pneumatosis Cystoides Intestinalis: Radiographic and Endoscopic Features; CLINICAL GASTROENTEROLOGY AND HEPATOLOGY ;7. (Google Scholar )

Description: Showing free air under the right hemidiaphragm (white arrow); pneumoperitoneum with suspected perforated viscus

Origin: Medical Imaging Department, Security Forces Hospital, Makkah, KSA. 2019
Description: Showing air under diaphragm (white arrow). Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
**Description:** Air density related to the inferior border of the liver (white arrow), distended colonic loops with radiolucent cystic collections of gas located along the colon (arrow heads). **Origin:** Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
Description: Axial image showing mild diffuse pneumoperitoneum detected with small amount of free intra-peritoneal air and multiple air locules (white arrows). Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
**Description:** Axial image in abdominal window.  
**Origin:** Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019

**Description:** Axial images in lung window showing the sigmoid colon with multiple mural air cysts/pockets of gases within bowel wall (grape-like intramural gas of the sigmoid colon). (black arrows) The difference is clear when using lung window. **Origin:** Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
Description: Axial images in lung window showing the sigmoid colon with multiple mural air cysts/pockets of gases within bowel wall (grape-like intramural gas of the sigmoid colon). (black arrows) The difference is clear when using lung window. Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
Description: Axial images in lung window showing the sigmoid colon with multiple mural air cysts/pockets of gases within bowel wall (grape-like intramural gas of the sigmoid colon). (black arrows) The difference is clear when using lung window. Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
Description: Coronal image
Origin: Medical Imaging Department, Security Forces Hospital, Makkah.
KSA. 2019
Description: Coronal image Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019
Description: Sagittal image showing the distribution of the cysts along the walls of the sigmoid colon (black arrows) with no colonic wall thickening or masses. Origin: Medical Imaging Department, Security Forces Hospital, Makkah. KSA. 2019