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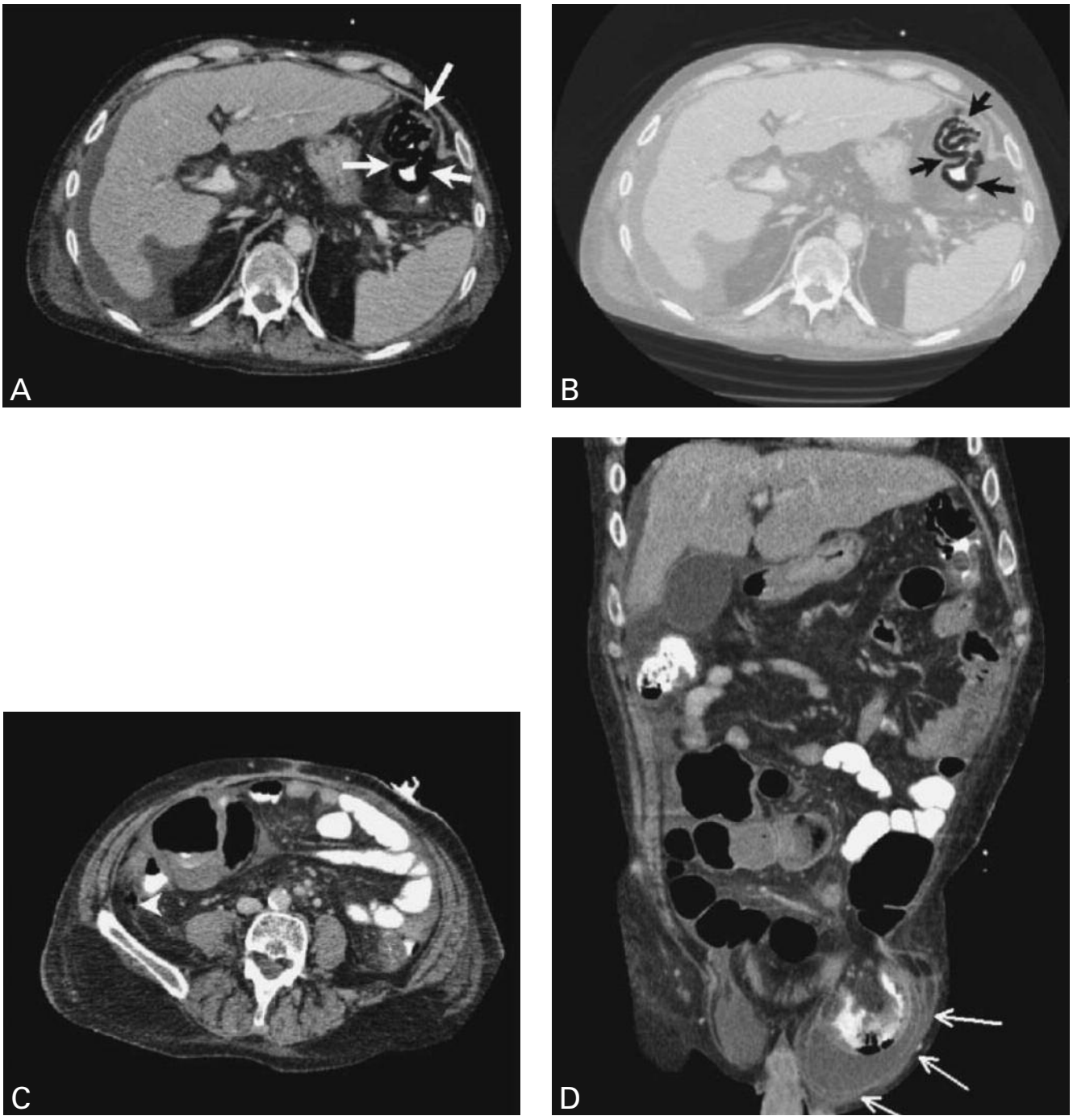
PNEUMATOSIS COLI AND INCARCERATED INGUINAL HERNIA

A. Van Landeghem, B. Arys, N. Peters, K. Verstraete[1]

Key-word: Intestines, cysts

Background: A 53-year-old man was in follow-up for metastasized head and neck cancer. He was in a poor overall condition.



1. Department of Medical Imaging, University Hospital Ghent, Ghent, Belgium

Fig. 1A | 1B / 1C | 1D

Work-up

On contrast-enhanced CT scan of the abdomen (Fig. 1), transverse section at the level of the upper abdomen (soft-tissue window) (A), linear to serpiginous air collections within the colonic wall at the splenic flexure are seen (white arrows). On the transverse section (lung window setting at the same level as in A) (B), pneumatosis intestinalis is best observed (black arrows). Transverse section at mid-abdominal level (soft-tissue window) (C) shows retroperitoneal air inclusions in the vicinity of the ascending colon (white arrowheads) suggesting perforation. Multiplanar reconstructed image (MPR) in the coronal plane (D) demonstrates massive incarcerated inguinal herniation with thickening of the wall of the herniated colon (arrows).

Radiological diagnosis

Based on the CT findings the diagnosis *of pneumatosis coli* caused by an incarcerated inguinal herniation was made.

Discussion

Pneumatosis intestinalis (PI) is defined as the presence of gas in the bowel wall. PI is a sign, not a disease, and it must be interpreted relative to the patient's overall clinical condition.

The cause of PI appears to be multifactorial, the exact mechanism is not known. Several theories have been proposed. A bacterial theory proposes that the gas produced in pneumatosis is of bacterial origin.

A mechanical theory suggests that gas enters the bowel wall because of direct trauma or increased pressure. Mechanical disruption is the predisposing cause in pneumatosis associated with obstruction.

A third theory, the mucosal damage theory suggests that some type of mucosal disruption must occur so that gas or bacteria can enter the bowel wall. Mucosal disruption is the primary causative factor of pneumatosis associated with inflammation or ischemia and is also considered a major factor in pneumatosis associated with Crohn's disease.

CT is the most sensitive imaging technique for identification of PI. On CT PI usually appears as a linear or bubbly pattern of gas accumulation within the bowel wall. Viewing CT images with lung windows may facilitate the detection of PI, especially in the colon.

There is a spectrum of diseases that produce this abnormality, ranging from benign to life-threatening. Cystic fibrosis, asthma and COPD are benign pulmonary causes of PI. Systemic diseases and intestinal disorders make up a large number of causes of PI. These include collagen vascular disease such as scleroderma and IBD. Corticosteroid administration is the common cause of medication-induced PI. Mesenteric ischemia is the most common life-threatening cause of PI. Other life-threatening causes include bowel obstruction, cecal ileus, toxic megacolon.

In PI due to benign causes, the bowel wall is usually normal. The presence of additional findings, such as bowel wall thickening, absent or intense mucosal enhancement, dilated bowel loops, arterial or venous occlusion, ascites and hepatic portal or portomesenteric venous gas increases the possibility of PI due to a life-threatening cause.

Correlation with clinical, physical examination and laboratory test results is the best indicator of whether PI is due to a benign or life-threatening cause.

Bibliography

1. Connor R., Jones B., Fishman E.K., et al.: Pneumatosis intestinalis: role of computed tomography in diagnosis and management. *J Comput Assist Tomogr*, 1984, 8: 269-275.
2. Galandiuk S., Fazio V.W.: Pneumatosis cystoides intestinalis: a review of the literature. *Dis Colon Rectum*, 1986, 29: 358-363.
3. Ho L.M., Paulson E.K., Thompson W.M.: Pneumatosis intestinalis in the adult: benign to life-threatening causes. *AJR*, 2007, 188: 1604-1613.
4. Schindera S.T., Triller J., Vock P., et al.: Detection of hepatic portal venous gas: its clinical impact and outcome. *Emerg Radiol*, 2006, 12: 164-170.