Prevalence and meaning of "Small Bowel Feces Sign" in small bowel obstruction

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Learning objectives

To recognize the small bowel feces sign (SBFS) in the CT evaluation of small bowel obstruction, to evaluate its prevalence in this clinical context and to appreciate its usefulness in the current era of multi-detector CT technology.

Background

The presence of feces in small bowel loops (SBFS) is a well-known CT sign of small bowel obstruction first described in 1995 [1] and thought to be due to the progressive absorption of liquids leading to hardening of intra-luminal contents which show a fecaloid appearance [2]. This usually occurs in one or more loops located near the site of obstruction pinpointing to the so-called transition zone whose identification may be difficult even on multi-planar reformatted images obtained by isotropic data sets [3].

Imaging findings OR Procedure details

The SBFS was retrospectively observed in 14 (41%) out of 34 patients (22M;12F; mean age 60 ± 18 yrs) with small bowel obstruction due to the following etiologies: adhesions (n = 23), IBD (n= 3), external hernia (n= 2), internal hernia (n =1), volvulus (n = 2), intussusception (n= 2) and mesenteric cyst (n= 1). All patients underwent contrast-enhanced multi-detector CT which was performed with either 4 (n = 10) or 64 rows ( n= 24) after i.v. injection of 120-150cc of non iodinated contrast media. A caudo-cranial monophasic acquisition was performed during the portal-venous phase with scan parameters varying according to the type of equipment. In particular, with a 4-rows MDCT, a detector configuration of 3 x4 mm with a table feed of 30 mm/sec, and a gantry rotation time of 0.5 sec (pitch factor = 1.25) were used with 250-300 mAs, 120 kVp and scan delay of 70 sec; with a 64-MDCT a detector configuration of 1 x32 mm with a table feed of 36 mm/sec and a gantry rotation time of 0.75 (pitch factor = 0.844) were used with 120 kVp, automatic dose modulation and scan delay of 90 sec. For both 4- and 64-rows MDCT section thickness of reconstructed images was3 mm. No patient received an oral contrast agent.

Twenty-two out of 34 patients were submitted to surgery within 12-72 hours from CT examination. The remaining 12 patients, all with adhesions, were treated conservatively by naso-gastric aspiration.
In all patients with a positive SBFS the involved loops appeared ectasic with a fecaloid content (Figs. 1-2). Moreover, they were located near the site of obstruction. However, the prevalence of the SBFS was strikingly different among the various etiologies. In particular, the SBFS was observed in 2/3 (66%) patients with IBD, in 8/23 (34.7%) patients with adhesions, in 2/2 (100%) patients with external hernia, in 1/2 (50%) patients with volvulus and in 1/2 (50%) patients with intussusception. The duration rather than the degree of the bowel obstruction appear to be correlated with the presence of the SBFS. This was mostly observed in low-grade obstructions and in patients with long standing disease as it was typically the case of inflammatory bowel disease (Fig. 3).

Images for this section:

**Fig. 3:** 64-rows contrast-enhanced multi-detector CT in SBO. Transverse pelvic images (A,B) and a coronal reformatted image of a 26 yrs old female with Crohn's disease are shown. In the transverse images two contiguous and enlarged ileal loops are depicted, both with a fecaloid appearance of intra-luminal content (SBFS). In A an undigested pill is also evident. Distal small bowel loops appear collapsed. On the coronal reformatted image (C) the inflammatory stricture is well depicted with thickening of the bowel wall and pathologic enhancement of the inner layer.
Conclusion

The prevalence of the SBFS (41%) observed in the present study and its predilection for low-grade rather than high-grade obstructions are in keeping with previous observations [4,5]. However, in our experience the SBFS was also extremely useful in facilitating the identification of the transition zone even in patients submitted to 64-rows contrast-enhanced multi-detector CT.

Personal Information

References