Intussusception in adults: a reality to know

Poster No.: C-1579
Congress: ECR 2013
Type: Educational Exhibit
Authors: G. Nieves Perdomo, C. A. Marichal Hernández, J. L. Conchuela Fumero, J. A. Hernandez Ponce, M. Pastor Santoveña; La Laguna/ES
Keywords: Abdomen, Gastrointestinal tract, Small bowel, CT, Ultrasound
DOI: 10.1594/ecr2013/C-1579

Any information contained in this pdf file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is strictly prohibited.

You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

www.myESR.org
Learning objectives

Remember to the General Radiologist the existence of this entity in the adult patient.

Review the main features of intussusception in the different imaging techniques.

Illustrate the intussusception using clinical cases from our institution, revising the main imaging features and the different clinical presentations. Finally, a radio-pathological correlation be made.

Background

Most intussusceptions (95%) occur in children, while only 5% occur in adults. Intussusception in adults represent 1% of all cases of intestinal obstruction. Intussusception in adults is often caused by a severe underlying disease, taking a demonstrable etiology in 70-90% of cases.

Intussusception is the invagination of a bowel loop with its mesentery fold (intussusceptum) into the lumen of a contiguous portion of intestine (intussuscipiens) as a result of peristalsis.

Intraluminal polypoid lesions have a greater tendency to cause invagination of the bowel as peristalsis drags the lesion forward. Although the mechanism precipitating intussusception is not well understood, especially those that are not associated with mass, this condition has been attributed to dysrhythmic contractions.

Classification:

Intussusceptions are classified according to location (enteroenteric, ileocolic, ileocecal, or colocolic) and the cause (benign, malignant or idiopathic).

The most common causes of benign small bowel intussusception include: lipomas, adenomatous polyps, Meckel's diverticulum; while malignant causes are: metastases, lymphoma and adenocarcinoma. However, the most frequent idiopathic causes affecting the small intestine are: postsurgical adhesions and motility disorders.
The most common etiologies of benign colonic intussusceptions are equally lipoma and adenomatous polyp, and malignant etiologies are adenocarcinoma, followed by lymphoma and metastases. Idiopathic causes are the same that in the small intestine.

The transitory small bowel intussusception has been reported in adults with celiac disease and Crohn's disease, but is more frequently detected incidentally and is presumed to be innocuous. Rarely, transient tumor-related colocolic intussusception can occur.

Intussusception without a lead point may manifest as vague abdominal pain, however; most cases are discovered incidentally at CT performed for other reasons. An intussusception without a lead point usually does not cause proximal bowel obstruction. It usually appears as a targetlike (see Figure 3) or sausage-shaped mass, depending on the axial projection.

Intestinal invaginations with a lead point can manifest with atypical clinical findings, but often there is a history of episodic abdominal pain, nausea and vomiting, symptoms that suggest partial intestinal obstruction. Intussusception with a lead point may also manifest with symptoms related to a neoplastic process, including constipation, weight loss, melena, or a palpable abdominal mass, rather than specific symptoms related to intussusception itself. The diagnosis of intussusception with a lead point may be difficult by the variety of clinical manifestations. The presence of a lead point, the configuration of the lead mass, the degree of bowel wall edema, and the amount of invaginated mesenteric fat all affect the appearance of an intussusception.

**Small Bowel Intussusception**

Small bowel intussusception without a lead point is more common than intussusception with a lead point. Intussusception without a lead point is known to appear as a nonobstructing segment, usually smaller in diameter and shorter than an intussusception with a lead point.

A lead point intussusception involving the small bowel is generally due to a benign condition and less often to a neoplasm, which, when it occurs, is usually a metastatic lesion. If there are findings suggestive of a lead point intussusception and a probable identifiable lead mass, surgical treatment should be recommended.

Meckel diverticulum is the most common congenital anomaly of the gastrointestinal tract, occurring in 2-3% of the population. Common complications include hemorrhage, small
bowel obstruction, and diverticulitis. A Meckel diverticulum may invaginate or invert into the lumen of the small intestine. Once inverted, the diverticulum may serve as a lead point for an ileoileal or ileocolic intussusception. Typically, an inverted Meckel diverticulum appears at CT as a central core of fat attenuation surrounded by a collar of soft-tissue attenuation.

Primary lymphoma of the gastrointestinal tract accounts for approximately 20-40% of all malignant tumors in the small bowel. Common presenting symptoms include abdominal pain, weight loss, small bowel obstruction, and acute abdomen. Most T-cell lymphomas manifest as ulcerated plaques or strictures in the proximal small bowel, whereas B-cell lymphomas tend to manifest as annular or polypoid masses in the distal and terminal ileum. CT is increasingly being used for the evaluation of patients with known or suspected gastrointestinal lymphoma, since it allows evaluation of both the mural and extramural components of the disease. CT findings of regional or mesenteric lymphadenopathy associated with a bowel wall mass can help distinguish lymphoma from other bowel diseases. When CT demonstrates mild bowel wall thickening with small lymph nodes, the detection of the underlying cause of intussusception may be difficult because differentiation from bowel wall edema may not be possible.

Other etiologies of intussusception are: Venous Malformations (the cecum is the most common site of venous malformations, followed by the right colon and the jejunum); the Inflammatory Fibroid Polyp that occurs most commonly in the stomach, followed by the small bowel, but it can be seen throughout the gastrointestinal tract; and metastatic malignant fibrous histiocytoma can be an unusual cause of small bowel intussusception when it manifests as a polypoid mass.

Large Bowel Intussusception

More than one-half of large bowel intussusceptions are associated with malignant lesions, including primary tumors (adenocarcinoma, lymphoma) and metastatic disease. Associated benign lesions include neoplasms such as lipoma and adenomatous polyp.

Colonic intussusception often manifests with abdominal pain due to a recurring intussusception that causes intestinal obstruction.

Identification of a lead mass at CT is often possible, although determination of an underlying cause is not easy except in the case of a lipoma, which manifests as a well-marginated mass with fat attenuation.
Lipomas are the most common benign cause of colocolic intussusception in adults. Next to adenomatous polyps, these mesenchymal tumors are the most common benign tumors of the colon. Lipomas of the colon are within the submucosa in 90% of cases, are usually solitary, and may be sessile or pedunculated. Lipomas are often discovered incidentally at endoscopic or radiologic examination and can easily be diagnosed with CT due to their typical fat attenuation.

Images for this section:

Fig. 3: US scans of the abdomen demonstrate the classic appearance of a targetlike mass, finding that is pathognomonic for intussusception
Imaging findings OR Procedure details

**Imaging:**

CT is the best imaging technique to visualize Intussusception in adults, and is especially useful in screening for underlying disease, so although abdominal radiography (obstructive pattern) or ultrasound may suggest or confirm the diagnosis respectively, CT is the preferred technique by many authors.

The typical appearance on CT is a targetlike or sausage-shaped soft tissue mass, depending on the axial projection. The presence of a bowel-within-bowel configuration with or without mesenteric fat and mesenteric vessels is pathognomonic for intussusception. Addition, the CT can rule out potential masses were causing intussusception.

The image on the MR may also contribute to the radiological diagnosis of intussusception.

Clinical cases: see figures 1-13.

**Images for this section:**
A 28 years old male with abdominal pain for 48 hours

- No drug allergies
- Hiatus hernia
- Smoking cannabis (daily)
- Tonsillectomy and adenoidectomy

Treatment: omeprazol

Analysis: WBC 18,200 mm3 (N: 83.3%); Hb: 17.9 mg/dL, C-reactive Protein: 27.9

Fig. 1: Medical History
Fig. 2: Plain abdominal X-ray study (supine and standing)
**Fig. 3:** US scans of the abdomen demonstrate the classic appearance of a targetlike mass, finding that is pathognomonic for intussusception.
At surgery there were no signs of intussusception or mass: transient intussusception

Fig. 4
53 year old woman with abdominal distension and flatulences for 4 days, with narrowing of the stool, which have blood

Today, right lower quadrant pain

No fever or other symptoms

Personal History: neurofibromatosis

Fig. 5: Medical History
**Fig. 6:** Detail of left upper quadrant ultrasound: intussusception with lead point (high echogenicity mass, similar to meso)
Fig. 7: CT images in axial projection: colo-colonic intussusception Image 1 shows bowel within bowel loop and the invagination of the mesocolon. Image 3 shows a fat mass within a double colon intestinal walls. Image 4 shows mural thickening of the colon. NOTE: numbering from left to right and top to bottom
Colo-colonic intussusception in the transverse colon
In surgery was partially reduced

Fig. 8
42 year old male with right abdomen pain of 3 days duration

Loss of 20 kg in the last month

Nausea and vomiting, a bloody deposition

Leukocytes: 16,000 (N: 89.8%)

Fig. 9: Clinical History
Fig. 10: Abdominal x-ray
Fig. 11: Detail of right flank ultrasound: fat image inside the colon (invaginated meso) as well as lymphatic nodules
**Fig. 12:** CT images in axial projection: ileo-colonic intussusception (terminal ileum into the ascending colon), see meso inside the bowel with engorged vessels.
Surgery: ileocecal intussusception, lymphadenopathys greater than 1 cm

Pathology: parietal reparative fibrosis, reactive mesothelial inclusions, vascular proliferation. Findings consistent with ileocecal intussusception

Fig. 13
Conclusion

Intussusception is an entity often overlooked by the General Radiologist in the differential diagnosis of acute intestinal obstructions.

Imaging techniques are an essential tool in the diagnosis of this entity, also are helpful in characterizing its etiologies.

References

See Figure 14

Images for this section:

References


Fig. 14: References