

Emergency helical CT scan in acute abdomen: a case of intestinal intussusception

Akut karında spiral BT: Bir intestinal intussusepsiyon olgusu

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Surgeons are familiar to the nosological entity “partial intestinal obstruction”. Intussusception constitutes a rare etiologic factor for this entity but usually remains undiagnosed preoperatively. Several imaging techniques have been proposed as useful in the diagnosis of intussusception but none of these has a remarkable sensitivity and specificity. In the following case of partial intestinal obstruction, we performed an helical CT scan of the abdomen. The method revealed with an excellent accuracy the nature (intussusception) and the location (ascending colon) of the partial intestinal obstruction. Having the extra advantage of the shorter examination time than the classical CT scan, we propose the helical CT as an alternative diagnostic modality for preoperative evaluation of patients with partial intestinal obstruction.

Key Words: Adult; colonic neoplasms/etiology; CT, helical; intussusception/complications/diagnosis/pathology.

Cerrahlar “kısmi intestinal obstrüksiyon” nozolojik antitesine aşınadır. İntussusepsiyon bu antite için ender olarak rastlanan bir etyolojik faktördür, ancak genellikle ameliyat öncesi tanı koyulamamaktadır. İntussusepsiyon tanısına yönelik birçok görüntüleme tekniği önerilmiştir, fakat bunlardan hiçbiri belirgin bir duyarlılık ve özgüllük göstermemiştir. Bu yazıda yer alan kısmi intestinal obstrüksiyon olgusunda, spiral karın BT taraması yapılmıştır. Kullanılan yöntem, kusursuz bir doğrulukla, kısmi intestinal obstrüksiyonun doğasını (intussusepsiyon) ve yerleşimini (çıkan kolon) ortaya koymuştur. Bu yöntemi, klasik BT taramasına göre ekstra avantaj olarak daha kısa bir inceleme süresi olmasına dayanarak, spiral BT'yi kısmi intestinal obstrüksiyonu olan hastaların ameliyat öncesi değerlendirilmesinde alternatif bir tanısal modalite olarak önermekteyiz.

Anahtar Sözcükler: Yetişkin; kolon neoplazileri/etyoloji; BT, helikal; intussusepsiyon/komplikasyonlar/tanı/patoloji.

CASE REPORT

A 61 year-old male patient was examined in the outpatient clinic on an emergency basis. Patient complained for abdominal pain, nausea without vomiting and diarrheas since ten days.

The patient described the abdominal pain as intermittent and cramping starting at the periumbilical region. The pain progressively occupied the whole abdomen without irritation to other areas of trunk or extremities. Coexistence of nausea was mentioned

on the onset of the abdominal pain. The diarrhea gradually became more watery and finally mucous.

The clinical examination revealed a distended but delicate and painless abdomen on superficial examination. On deep examination a mild pain was present all over the abdomen. The abdominal muscles spasm did not allow the palpation of any intraabdominal mass. During auscultation normal and metallic bowel sounds were heard. Per rectum examination did not revealed any pathological finding.

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Laboratory findings: Ht: 32.3%, Hb: 10.7 gr/dL, WBC: 7600/mL, PLT: 225000/mL, PT: 13 sec, INR: 1.21, APTT: 24 sec. The biochemical examination as well as liver function tests did not revealed any pathologic value. Chest X-ray films (F and P) were normal. In abdominal X-ray film (on an upright position), numerous small bowel air-fluid levels were visible and also a mass of distended bowel loops was present in the right-half of the abdominal cavity.

Patient's history revealed weight loss (5 kgr), hematocrit fall (10%) and repeated episodes of abdominal pain during the last six months. There was no evidence of per rectum blood loss in the same period. Finally, family medical history was unremarkable.

A diagnosis of partial intestinal obstruction was made and the patient admitted to the clinic for further work-up and management.

The work-up included: 1) stool test for occult blood loss: positive, 2) ultrasonography of upper and lower abdomen: without pathological findings,

3) colonoscopy: Because of the absence of mechanical bowel preparation, the endoscopic study was feasible up to the splenic flexure without evidence of any intraluminal pathology.

After the subsidence of the acute symptoms, an helical CT scan of the abdomen using per os contrast material was performed. We chose the helical CT scan because of the shorter duration of examination in contrast to the classic CT scan. A finding compatible to intussusception in the area of ascending colon was revealed (Fig. 1). Meanwhile, a palpable mass could be defined in the right-half of the abdomen, corresponding towards the helical CT findings.

After completion of the paraclinical work-up the patient was subjected to a laparotomy. Invagination of the last 10 cm of the distal ileum, the ileocecal valve, the appendix and the caecum into the ascending colon was intraoperatively demonstrated. Without any attempt for reduction of the invaginated organs, a formal right hemicolectomy and an end-to-side ileotransverse anastomosis

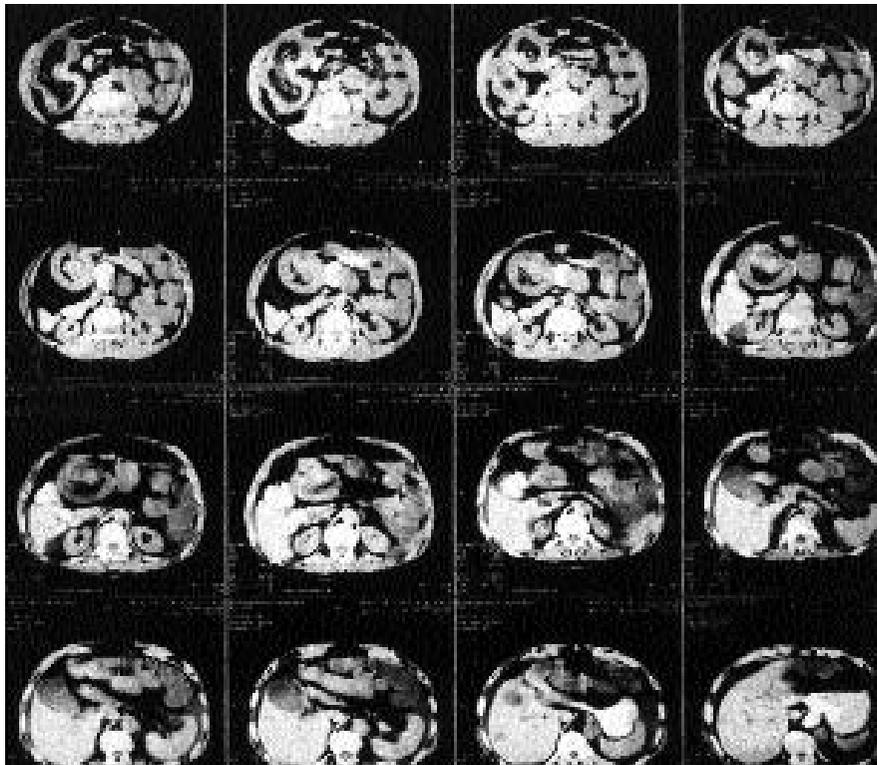


Fig. 1. Intussusception appearance in the helical CT scan of the abdomen. The central mass represents the intussusceptum and the edematous intussusciens forms the external ring.

were performed. The surgically removed specimen was longitudinally opened and an exophytic tumor of the caecum, opposite to the internal opening of the ileocecal valve, was found. The postoperative course of the patient was uneventful and the patient left hospital at the eighth postoperative day.

The pathological examination of the surgically removed specimen revealed: "tubular adenoma of the caecum having locus of moderate and severe dysplasia".

DISCUSSION

Adult intussusception remains a rare condition representing 1-5% of bowel obstructions and 0.003-0.02% of all hospital admissions.^[1] About 90% of the cases in adults occur in the small or large bowel and the remaining 10% involve the stomach and surgically created stomas.^[2] In contrast to childhood, when the etiology is idiopathic in 90% of the cases, adult intussusception is associated with a discrete pathologic process in more than 90% of the cases.^[3]

For adult intussusception involving the large bowel, intraluminal adenomas constitute the second most frequent etiologic factor accounting for 14-25% of all cases.^[4,5] Similarly, in the present case, the intussusception was caused by a tubular adenoma of the caecum.

According to its location, an intussusception is classified as: enteric, ileocecal, ileocolic and colonic.^[6] Studying the surgically removed specimen we defined that the intussusception in our case was not the result of ileum prolapse through the ileocecal valve but the ileocecal valve was itself the lead point of intussusception. For this reason, we classified our case in ileocecal intussusceptions.

In the majority of the cases, the symptoms of adult intussusception are characteristic of partial intestinal obstruction having a subacute or chronic course. According to their frequency, the most often symptoms are: intermittent crampy abdominal pain, nausea, vomiting (more frequent in patients with small bowel intussusceptions), diarrhea (more frequent in patients with colonic intussusception), macroscopic or microscopic blood loss per rectum, weight loss and palpable abdominal mass.^[4-8] The patient of our case presented with a subacute course of partial intestinal obstruction having all the previously mentioned symptoms.

Numerous imaging techniques have been proposed as useful in the diagnosis of intussusception: barium contrast studies, U/S, CT, angiography, scanning and colonoscopy. Recent reviews conclude that an accurate preoperative diagnosis of the condition is demonstrated in only 37.5%^[7] to 40%^[8] of the cases. More than half of the patients are operated because of a preoperative diagnosis of intestinal obstruction and the diagnosis of intussusception is made intraoperatively.^[5] We chose the performance of an helical CT scan of the abdomen for the preoperative evaluation of our patient. The method revealed with excellent diagnostic accuracy the exact nature (intussusception) and location (ascending colon) of the partial intestinal obstruction. Since preoperative diagnosis of adult intussusception remains a challenging issue, helical CT scan seems to be a reliable diagnostic tool with specific findings and shorter examination duration compared to conventional CT.

Optimal treatment of adult intussusception remains a topic of some controversy. Most of the debate centers around the issue of reduction versus primary resection. It is widely proposed that colonic lesions should be resected without reduction.^[2,4,5,8,9] This was based on a high incidence of underlying malignancy that is difficult to be confirmed either preoperatively or intraoperatively. Indeed, malignant neoplasms constitute the most often etiologic factor accounting for 43%^[5] to 80%^[8] of the instances of colonic intussusception. Our patient underwent a right hemicolectomy without any attempt of reduction given the great likelihood of malignancy.

In conclusion, adult intussusception, although rare, usually remains undiagnosed preoperatively. We present a case of accurate preoperative diagnosis of intussusception performing a helical CT scan of the abdomen and we propose this method as an alternative diagnostic modality. Further investigation and more patients are needed in order to estimate the specificity and sensitivity of the method.

REFERENCES

1. Coleman MJ, Hugh TB, May RE, Jensen MJ. Intussusception in the adult. *Aust N Z J Surg* 1981;51:179-80.
2. Felix EL, Cohen MH, Bernstein AD, Schwartz JH. Adult intussusception; case report of recurrent intussusception and review of the literature. *Am J Surg* 1976;131:758-61.
3. Agha FP. Intussusception in adults. *AJR Am J*

- Roentgenol 1986;146:527-31.
4. Nagorney DM, Sarr MG, McIlrath DC. Surgical management of intussusception in the adult. *Ann Surg* 1981;193:230-6.
 5. Azar T, Berger DL. Adult intussusception. *Ann Surg* 1997;226:134-8.
 6. Weilbaecher D, Bolin JA, Hearn D, Ogden W 2nd. Intussusception in adults. Review of 160 cases. *Am J Surg* 1971;121:531-5.
 7. Begos DG, Sandor A, Modlin IM. The diagnosis and management of adult intussusception. *Am J Surg* 1997;173:88-94.
 8. Eisen LK, Cunningham JD, Aufses AH Jr. Intussusception in adults: institutional review. *J Am Coll Surg* 1999;188:390-5.
 9. Takeuchi K, Tsuzuki Y, Ando T, Sekihara M, Hara T, Kori T, et al. The diagnosis and treatment of adult intussusception. *J Clin Gastroenterol* 2003;36:18-21.