

^{18}F -FDG uptake in small bowel intussusception in a patient of Langerhans cell histiocytosis and its resolution following successful conservative medical management

To the Editor: In this report, a 7 years old male child with recently diagnosed by biopsy Langerhans Cell Histiocytosis of the upper end of the right femur with pain in the right hip of 1 month duration referred to us for who-

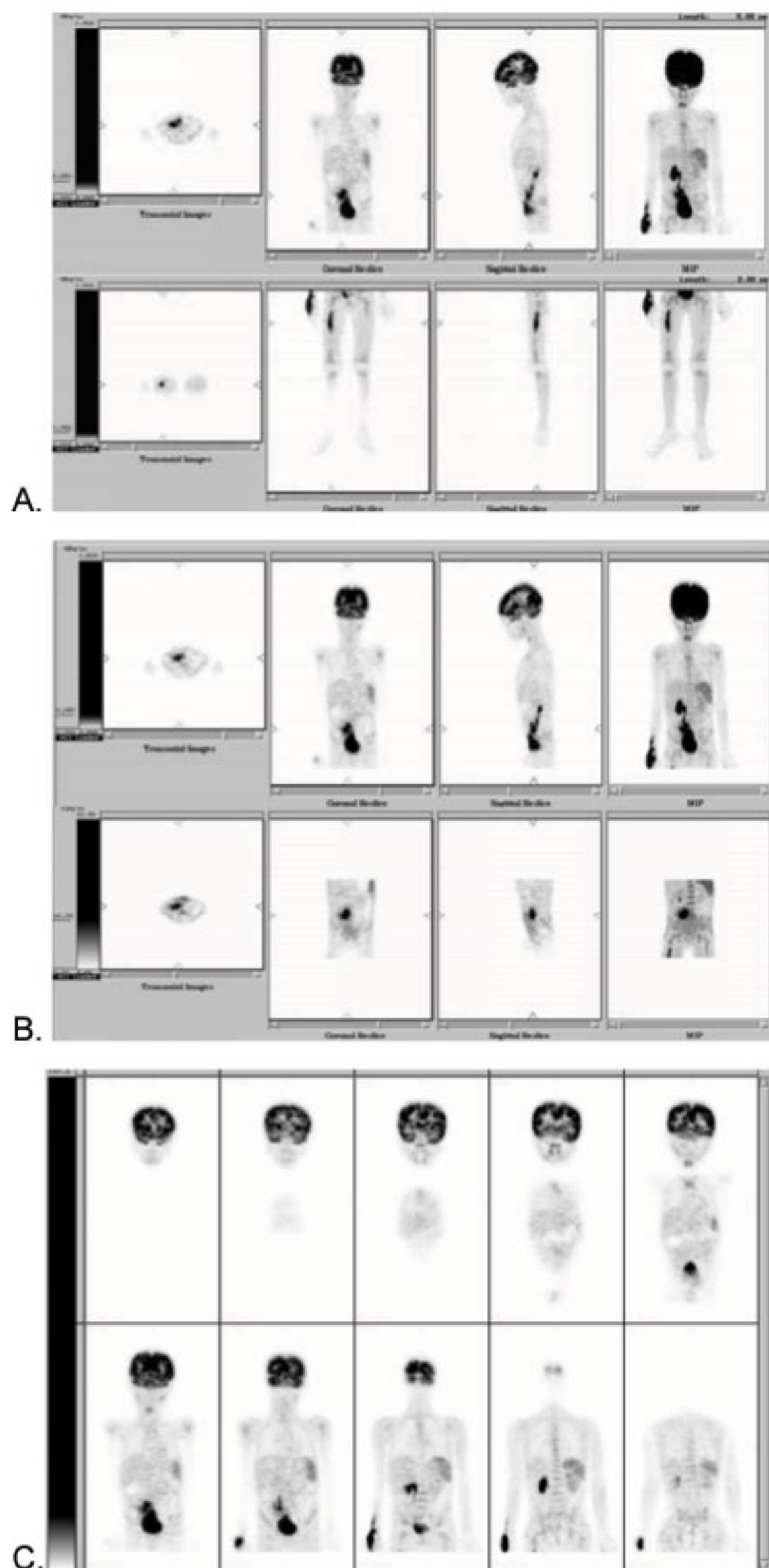


Figure 1. A. Baseline whole body ^{18}F -FDG-PET scan, done 60min after the intravenous injection of 300MBq of ^{18}F -FDG, shows focal intense tracer uptake in the upper end of the right femur corresponding to the primary site. A fair-sized area of intense tracer uptake is noted in the right iliac fossa supero-lateral to the urinary bladder. Tracer uptake was also observed in the urinary bladder, right ureter and right PC system. Tracer extravasation is seen in the right hand at the injection site. **B.** The regional scan repeated after diuretic administration shows washout of tracer activity from the right PC system, the right ureter and emptied urinary bladder. **C.** The coronal slices demonstrate the focal tracer uptake right iliac fossa region (arrow) which is supero-lateral to the urinary bladder in close approximation causing pressure effect on the right ureter and right PC system

le body survey with fluorine-18 fluorodeoxyglucose-positron emission tomography (^{18}F -FDG-PET). The whole body ^{18}F -FDG-PET demonstrated intense tracer uptake in the upper end of the right femur and a relatively large area in the right lumbar region and also retention of tracer in the right renal pelvicalyceal system and right ureter. Repeat regional scan on the same day after diuretic intervention showed washout of tracer from the right pelvicalyceal system (PCS), the ureter and the urinary bladder but persistent tracer uptake in the right lumbar region (Fig. 1a, 1b and 1c).

Previous to the scan, the patient also had pain in the past 4-5 day's in the peri-umbilical region that was non-radiating and was associated with occasional non-bilious vomiting. On examination in the pediatric unit, he was found to have distended abdomen, tenderness in the right iliac fossa with localized guarding. The ultrasound examination of the (USG) abdomen showed bowel in the right lower abdomen with minimal fluid collection characteristic of small bowel intussusception (Fig. 2).

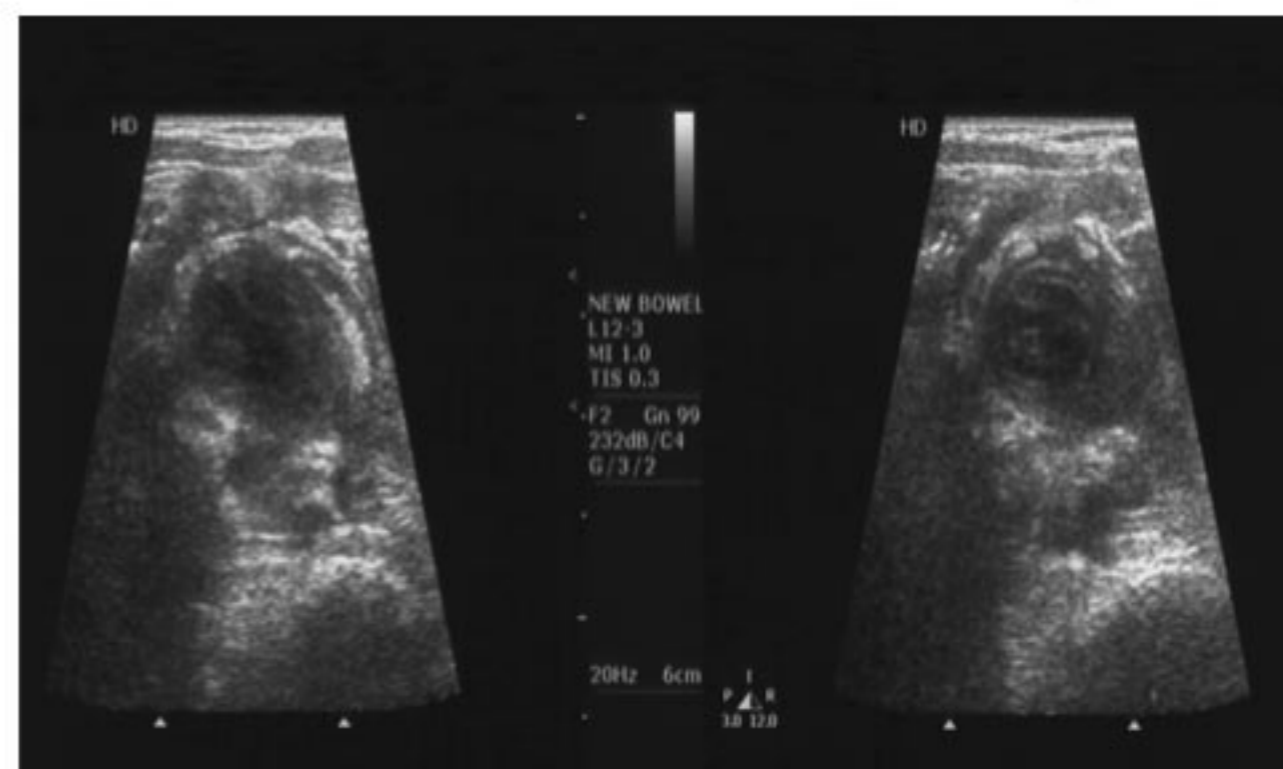


Figure 2. The USG abdomen demonstrates classical pattern of small bowel intussusception showing bowel-in-bowel appearance in the right lower abdomen with minimal fluid collection characteristic of small bowel intussusception.

He was treated conservatively in the pediatric ward with glycerin rectal suppository and enema in view of no obvious fluid levels in the X-rays. A repeat ^{18}F -FDG-PET study (Fig. 3a and 3b) 10 days after the initial scan demonstrated complete resolution of ^{18}F -FDG uptake in the bowel loops. Also there was no retention of tracer activity in the right pelvicalyceal system and the right ureter which was there in earlier scan due to the obstruction caused by the intussuscepted bowel loops. Repeat USG of the abdomen at this time showed resolution of the previous findings (Fig. 4) after the conservative approach that was in agreement with the ^{18}F -FDG-PET findings.

Intussusception is the telescoping or prolapse of one portion of the bowel into an immediately adjacent segment [1-3]. Contrast enema can reduce the intussusception in approximately 75% of cases. Intussusception most commonly occurs at the terminal ileum (i.e. ileocolic). It is the predominant cause of intestinal obstruction in persons aged 3 months to 6 years. The estimated incidence is 1-4 per 1000 live

births, being most common in infants aged 3-12 months, with an average age of 7-8 months.

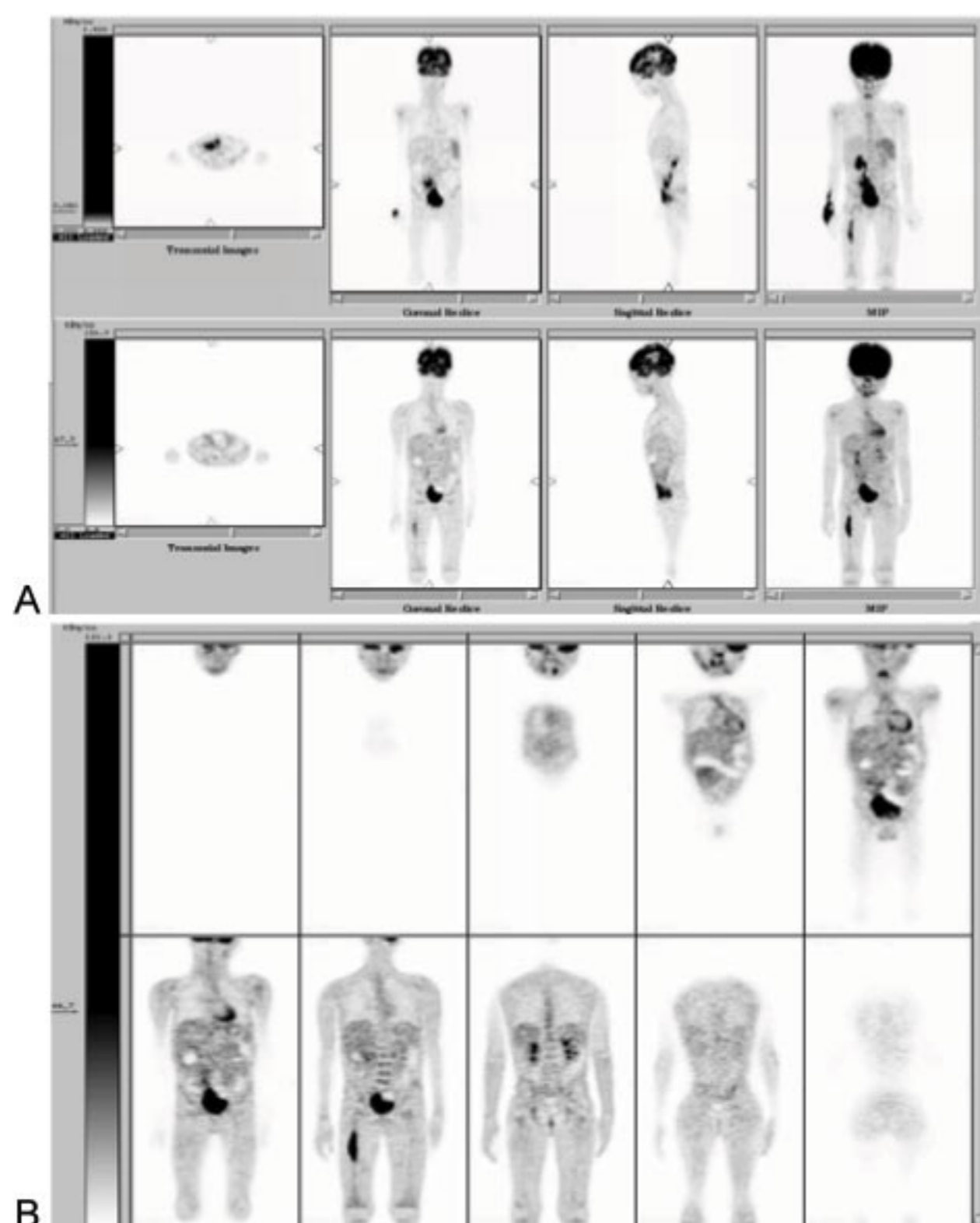


Figure 3. The lower panel of Fig. 3a represents whole body ^{18}F -FDG-PET study that was repeated after a gap of 10 days wherein the patient received conservative management. The comparative scans (with that of baseline scan at upper panel) demonstrate complete resolution of FDG uptake in the bowel loops. In Fig. 3b, the coronal slices showing no focal abnormal tracer uptake in the right iliac fossa.

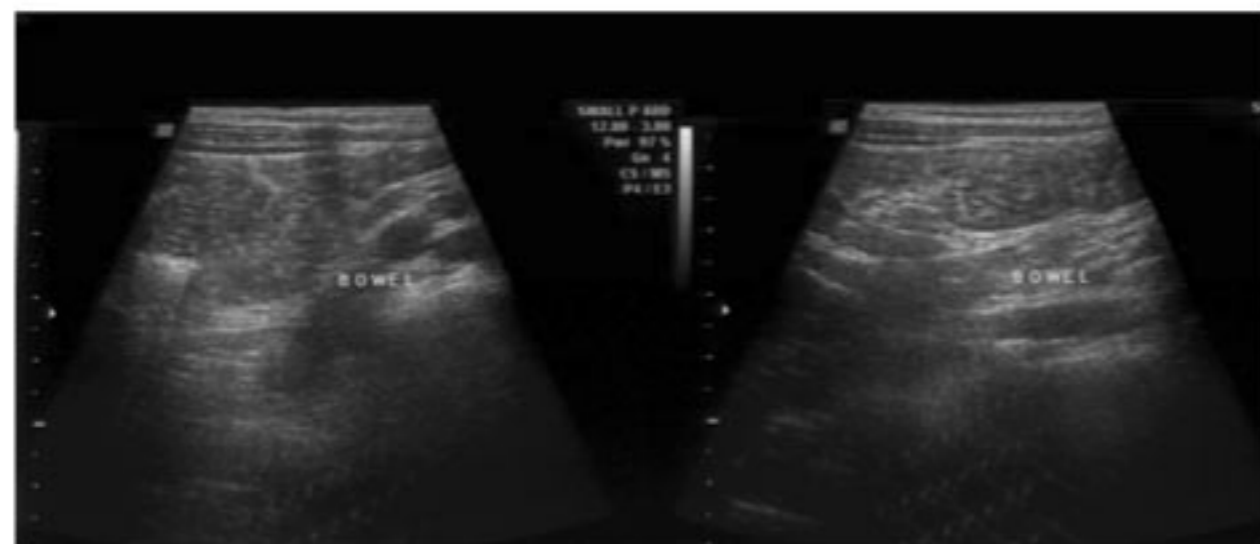


Figure 4. Repeat USG of the abdomen showing normal bowel loops demonstrating resolution of the small bowel intussusception.

Two thirds of the cases occur before the patient's first birthday. The occurrence is rare in persons younger than 3 months, and it becomes less common in persons older than 36 months. Overall, the male-to-female ratio is approximately 3:1. With advancing age, gender difference becomes marked; in patients older than 4 years, the male-to-female ratio is 8:1. The telescoping proximal portion of bowel (i.e., intussusceptum) invaginates into the adjacent distal bowel (i.e., intussusciptens). The mesentery of the intussusceptum is compressed, and the ensuing swelling of the bowel wall quickly leads to obstruction. Venous engorgement and ischemia of the intestinal mucosa causes bleeding and an outpouring of mucous, which results in the classic

description of red "currant jelly" stool [1-3]. Most cases (90%) are idiopathic, with no identifiable lesion acting as the lead point or pathological apex of the intussusceptum. Most patients recover if treated within 24h. Mortality with treatment is 1%-3%. If left untreated, this condition is uniformly fatal in 2-5 days. Recurrence is observed in 3%-11% of cases. Most recurrences involve intussusceptions that were reduced with contrast enema [1-3].

Over the recent years, there has been great interest in assessing the potential utility of ^{18}F -FDG-PET in various benign conditions particularly in the infection and inflammatory disorders [4-9]. In an earlier report published in this journal, the utility of ^{18}F -FDG-PET/CT imaging in the diagnosis of subacute-upon-chronic appendicitis was highlighted [4]. *In conclusion*, in the present report, the potential role of this imaging in the setting of intussusceptions, a non cancerous condition of the gastrointestinal tract is presented, which demonstrates its role in monitoring the efficacy of therapeutic intervention in this disorder.

Bibliography

1. DiFiore JW. Intussusception. *Semin Pediatr Surg* 1999; 8:214-20.
2. Rattan KN, Khurana P, Malik V, Maggu S. Intestinal intussusception in children: a review of 70 cases. *Indian J Gastroenterol* 2000; 19: 92.
3. Daneman A, Navarro O. Intussusception. Part 1: a review of diagnostic approaches. *Pediatr Radiol* 2003; 33: 79-85.
4. Moghadam-Kia S, Nawaz A, Millar BC et al. Imaging with ^{18}F -FDG-PET in infective endocarditis: promising role in difficult diagnosis and treatment monitoring. *Hell J Nucl Med* 2009; 12: 165-7.
5. Imperiale A, Federici L, Lefebvre N et al. ^{18}F -FDG PET/CT as a valuable imaging tool for assessing treatment efficacy in inflammatory and infectious diseases. *Clin Nucl Med* 2010; 35: 86-90.
6. Basu S, Chryssikos T, Moghadam-Kia S et al. Positron emission tomography as a diagnostic tool in infection: present role and future possibilities. *Semin Nucl Med* 2009; 39: 36-51.
7. Basu S, Torigian D, Alavi A. The role of modern molecular imaging techniques in gastroenterology. *Gastroenterology* 2008; 135: 1055-61.
8. Basu S, Zhuang H, Torigian DA et al. Functional imaging of inflammatory diseases using nuclear medicine techniques. *Semin Nucl Med* 2009; 39: 124-45.
9. Kumar R, Basu S, Torigian D et al. Role of modern imaging techniques for diagnosis of infection in the era of ^{18}F -fluorodeoxyglucose positron emission tomography. *Clin Microbiol Rev* 2008; 21: 209-24.

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Hell J Nucl Med 2010; 13(3): 289-290
Published on line:25-11-10