Inverted Meckel’s Diverticulum as a Leading Point of Intussusception: Computed Tomography Manifestation

Sin-Yi Lyu¹ Chao-Jan Wang¹,² Jin-Yao Lai²,³ Yon-Cheong Wong¹,²

Department of Medical Imaging and Intervention¹, Department of Pediatric Surgery³, Chang Gung Memorial Hospital at Linkou, College of Medicine and School of Medical Technology², Chang Gung University

Meckel’s diverticulum is the most common omphalomesenteric duct anomaly and occurs on the anti-mesenteric border of the distal ileum. An inverted Meckel’s diverticulum is the most common pathologic leading point of intussusception in children and needs emergent operation. However, it is still a challenge to differentiate which children may have intussusceptions due to pathologic leading points from those who have idiopathic intussusceptions. Imaging plays an important role for diagnosis, because the varied and often nonspecific presentation and the wide spectrum of types of pathologic leading points. The frequent diagnostic modalities include conventional barium study, sonography, radionuclide Meckel scanning, computed tomography and angiography. The aim of this report is to demonstrate the role of computed tomography (CT) in diagnosing intussuscepted Meckel diverticulum.

According to a previous review, the incidence of intussusceptions with a pathologic leading point in children was 1.5% to 12% [1]. Imaging plays an important role in the diagnosis, because of varied and often nonspecific presentation and the wide spectrum of types of pathologic leading points [2]. The choice of prior diagnostic model is based on several factors including successful diagnostic rate, availability and radiation dose effect on the children. An inverted Meckel diverticulum is the most common pathologic leading point in child. The frequent diagnostic modalities include conventional barium study, sonography, radionuclide Meckel scanning, computed tomography and angiography. Sonography has a high diagnostic rate for intussusception with a leading point [2]. The sonographic appearances of an inverted Meckel diverticulum can occasionally be nonspecific central hyperchoic fat and/or anechoic fluid [2]. Conventional barium study and radionuclide Meckel scanning are not useful for emergent preoperative evaluation of inverted Meckel diverticulum [3]. CT characteristically shows an inverted diverticulum as a central core of fat attenuation surrounded by a collar of soft tissue attenuation [4]. The aim of this report is to demonstrate the role of CT in diagnosing intussuscepted Meckel’s diverticulum.

CASE REPORT

A 6-year-old girl presented to the emergency room with gradual-onset, intermittent abdominal pain lasting for two weeks. The pain was localized in the right lower quadrant with a palpable sausage mass. Intussusception was suspected by ultrasonography. CT of the abdomen with IV contrast revealed a central mass lesion with fat attenuation surrounded by soft tissue attenuation over the tip of intussusceptum, and an ileo-ileo-colic type intussusception.
Inverted Meckel’s diverticulum as a lead point of intussusception

with an inverted Meckel’s diverticulum as a leading point was suspected (Fig. 1a-1e). Laparotomy showed an ileo-ileo-colic intussusception with an inverted pouch as the leading point (Fig. 2). The pathological diagnosis was inverted Meckel’s diverticulum with ulcer and hemorrhage. The postoperative course of the patient was uneventful, and she was discharged home 3 days later.

**DISCUSSION**

Although old age, underlying disease (Peutz-Jeghers syndrome, familial polyposis, Henoch-Schönlein purpura or cystic fibrosis) and a history of recurrent intussusception may be considered predictors of the presence of a pathologic leading point [1], it is still a challenge to differentiate cases of intussusception caused by a pathologic leading point from cases of idiopathic intussusceptions. The management of the two groups may be different. Most intussusceptions with a leading point are irreducible by air or barium enema and need immediate surgery [5, 6].

Imaging plays an important role in depicting the presence of a pathologic leading point. The common causes of pathologic leading points include Meckel’s diverticulum, intestinal polyp, duplication cyst and lymphoma [2]. Although Meckel’s diverticulum is often indentified with sonography, a specific diagnosis is made in only a small number of cases.
The characteristic sonographic appearances include a segment of blind-ending thick-walled bowel, with a bulbous, elongated or tear-drop shape projecting for a variable distance from the apex of the intussusceptum [7]. Occasionally, it may present as a more nonspecific, heterogeneous, hyperechoic mass or it may simulate a duplication cyst [2].

Sonography has some advantages such as is availability and that no radiation dose is involved. The radionuclide Meckel scanning has a high diagnostic rate and shows a small rounded area of increased activity in the right lower quadrant caused by the heterotopic gastric mucosa [7]. However, the radionuclide Meckel scanning is not useful for emergency preoperative evaluation. CT provides a specific diagnosis in Meckel’s diverticulum, lymphoma and neutropenic colitis [1]. The inverted Meckel’s diverticulum appears as an intraluminal mass composed of a central fat attenuation surrounded by a thick collar of soft tissue attenuation on CT [4]. The differential diagnosis included lipoma, familial adenomatous polyposis and Peutz-Jeghers syndrome. However, lipoma lacks the collar soft tissue attenuation. Familial adenomatous polyposis and Peutz-Jeghers syndrome appear as diffuse lesion without central fatty focus [7]. Surgery is necessary for patients with an inverted Meckel’s diverticulum because it is a potentially life-threatening condition. We conclude that CT is an optimal diagnostic modality for disclosing a leading point in the case of intussusceptions due to a Meckel’s diverticulum.

REFERENCES

內翻性梅克爾憩室導致腸套疊在電腦斷層的表現

呂心宜1 王超然1,2 賴勁堯2,3 黃耀祥1,2

林口長庚紀念醫院 影像診療科部1 小兒外科3
長庚大學 醫學影像暨放射學系2

梅克爾憩室是在卵黃管發育異常最常見的一種，常發生在遠端迴腸的反腸繫膜側，在所有造成小兒腸套疊的病灶種類中，內翻性梅克爾憩室占的比例最高，並且需要緊急手術，然而，在臨床症狀對於鑑別診斷病灶導致腸套疊和原發性腸套疊仍有困難，所以影像學扮演重要的角色，最常使用的影像檢查包括傳統消化道鈦劑攝影、超音波、核醫梅克爾憩室掃描、電腦斷層和血管攝影，這篇文章是討論電腦斷層在內翻性梅克爾憩室導致腸套疊的運用。