

Meckel Divertikülü için en sık kullanılan yöntem olan Tc-99m Perteknetat Sintigrafisi: Kesin tanı için ne zaman yapılmalı?

Tc-99m Pertechetate Scintigraphy for Meckel's Diverticulum is The Most Useful Modality: When Performed for Exact Diagnosis?

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ÖZET

Çocuklarda alt gastrointestinal sistemin en sık kanama nedeni Meckel Divertikülüdür. Tanı için en önemli yöntem klinik bulgular ve Nükleer görüntülemedir. ^{99m}Tc perteknetat sintigrafisi diğer deyimle Meckel divertikülü sintigrafisi tanı için kullanılan en önemli noninvaziv yöntemdir. Ancak Meckel divertikülünün mide mukozası içermesi gerekmektedir. Çünkü Meckel divertikülü sintigrafisi mide mukozasının gösterilmesini sağlar. Hastamız 3 yaşında erkek hasta, abondan parlak kırmızı rektal kanama şikayeti ile başvurdu. Hastaya aktif kanama sırasında Meckel divertikülü sintigrafisi yapıldı. İnceleme sırasında aralıklı lumen içi aktif kanama izlendi. Sintigrafik inceleme aktif kanama sırasında yapıldığında mide mukozası ve aktif kanama gösterilebilir.

Anahtar Kelimeler: Meckel Divertikülü, Meckel divertikülü sintigrafisi, aktif kanama

ABSTRACT

The most common cause of massive lower gastrointestinal hemorrhage is Meckel's diverticulum in children. Clinical examination and nuclear imaging are main topics for diagnosis. ^{99m}Tc pertechetate scintiscan, or so-called Meckel's scan is the best noninvasive method used to diagnosis this condition when heterotopic gastric mucosa is present. Because Meckel's scan is used for detecting gastric mucosa. We described the case of 3 years old boy, complained with abundant bright rectal bleeding. Meckel's diverticulum scintigraphy was made during active bleeding. Intermittant intraluminal extravasation was seen during procedure. Scintigraphic study should be performed during active bleeding. So ectopic gastric mucosa and active bleeding should be shown.

Key Words: Meckel's diverticulum, Meckel's scan, active bleeding

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INTRODUCTION

Meckel's diverticulum is the most common form of congenital abnormality of the small intestine. A Meckel's diverticulum is a remnant of the omphalo mesenteric duct at its junction with the ileum on the anty-mesenteric border with incidence of about 1-4% (1, 2, 3). Common presentations include lower gastrointestinal bleeding, intestinal obstruction, diverticulitis and abdominal pain. Gastrointestinal bleeding is the most common complication in pediatric population (4). ^{99m}Tc-pertechnetate scintigraphy otherwise known as a Meckel's scan, is considered the most accurate method, with a sensitivity of 85%, specificity of 95% and positive predictive value of 95% (1, 3, 5). The aim of this study was to assess the utility of technetium ^{99m}Tc pertechnetate scintigraphy in the diagnostic workup of the pediatric patients with active bleeding of Meckel's diverticulum.

CASE REPORT

3-years old male patient was presented with 1 week history of intermittent abdominal pain and 3 days melena and bright red rectal bleeding. On examination he had pale, hypotension, tachycardia, anemia and normal abdominal examination.

Meckel's scan was performed using 3 mCi of Tc^{99m} pertechnetate. Protocol included an 1-minute dynamic phase every 2 seconds followed by static imaging up to 60 minutes. During dynamic phase activity consistent with tracer extravasation appeared inferior the stomach in the right abdomen. This activity can get on serial static views in a pattern consistent with acute intraluminal hemorrhage into the small bowel. (Figure)

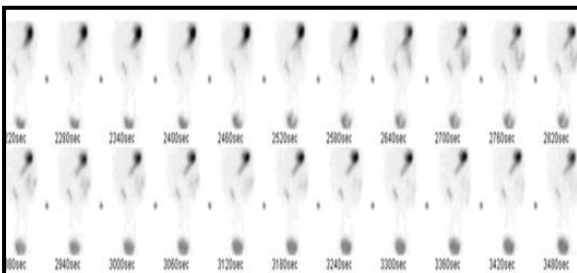


Figure : Appear of Meckel's diverticulum, there is a focus of pathological accumulation of ^{99m}Tc pertechnetate located to the right mid-abdomen and intermittent intraluminal extravasation was seen during procedure located to the left upper abdomen.

DISSUCCION

Meckel's diverticulum, a remnant of the omphalomesenteric duct, is the most common congenital gastrointestinal anomaly, with an estimated prevalence of 1-4% in the general population (1,2,3,5). Although a Meckel's diverticulum is the most common gastrointestinal anomaly, it is usually asymptomatic. Lower gastrointestinal bleeding, intestinal obstruction related to volvulus or intussusception, diverticulitis and recurrant abdominal pain are the leading presenting symptoms (1, 5). It is the most common cause of massive lower gastrointestinal bleeding in children. The clinical presentation has been difficult.

The clinical presentation is variable and nonspecific, which can make diagnosis associated with likelihood of the Meckel's diverticulum containing ectopic gastric mucosa (EGM). While EGM is found in 50-62% of all symptomatic patients, this prevalence is increased to up to 95-100% in patients with bleeding (1, 3, 5).

Confirmation of diagnosis as Meckel's diverticulum can be difficult. Standart imaging studies such as abdominal radiography, barium study and computed tomography, rarely make a preoperative diagnosis (1).

^{99m}Tc pertechnetate pertechnetate imaging is the most useful method of detecting a Meckel's diverticulum (1, 2, 3). ^{99m}Tc pertechnetate has been used since 1967 to identify gastric mucosa and Meckel's diverticulum containing ectopic gastric mucosa (6). Because the isotope is taken up and secreted by heterotopic gastric mucosa (HGM), the most common ectopic tissue in the diverticulum. When a patient presents with

bleeding and with suspicion of Meckel's diverticulum, the diagnostic evaluation should include a technetium ^{99m}Tc pertechnetate scintiscan, or so-called Meckel's scan (1,5). Scintiscan is especially helpful in infants who present with lower GI bleeding. After intravenous injection of the isotope, the gamma camera is used to scan the abdomen. This procedure usually lasts approximately 30-60 minutes. Gastric mucosa detects the radioactive isotope; thus, if the diverticulum contains parietal cells in the gastric mucosa, it is depicted as a hot spot. Advantages of the scan are that the procedure is noninvasive and involves less radiation exposure than that from an upper gastrointestinal and small-bowel follow-through study (1, 3, 5). To be visualized, the Meckel's diverticulum must be actively bleeding at a minimum rate of 0.1 mL per minute. The sensitivity of the scan varies from 75-100%; false-positive results occur in up to 15% of patients, and false-negative results occur in up to 25%. A specificity of more than 80% has been reported in several studies. This scan provides 95% accuracy for detection of gastric mucosa (1, 3, 4). False-positive results on the scan can be due to duodenal ulcer, small-intestinal obstruction, ureteric obstruction, aneurysm, and angiomas of small intestine. False-negative results can occur when gastric mucosa is very slight or absent in the Meckel's diverticulum, or if necrosis of Meckel's diverticulum has occurred (1, 2, 3, 5). Accuracy of the scan may be enhanced with administration of cimetidine, glucagon, and pentagastrin. Cimetidine blocks the secretion of ^{99m}Tc 99 pertechnetate from ectopic gastric mucosa. This helps to improve the lesion to background ratio in enhancing a Meckel's scan (1, 3, 5). With the newer imaging technology, false-positive and false-negative rates have declined. During workup of patients, the barium study should never precede the ^{99m}Tc

scan because barium may obscure a hot spot on the scan, if present (1, 5).

If Meckel's diverticulum bleeding over 0.1 ml / min, it should be shown during procedure as a intermittent extravasation into intestinal lumene. So we think that, Meckel's scan should be done during active bleeding, although some clinicians prefer to do Meckel's scan after stop bleeding.

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