CASE REPORT

A Meckel's diverticulum presenting as pyogenic liver abscesses

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Accepted 7 August 2015a

SUMMARY

Meckel's diverticula are the most common congenital malformation of the small intestine. The condition is rarely symptomatic and is usually an incidental finding during surgery. Bleeding in children and obstruction in adults are the most common symptomatic presentations. Our case involves a 50-year-old man with multiple pyogenic liver abscesses due to a Meckel's diverticulum. The abscesses were percutaneously drained and the diverticulum was eventually resected. Pyogenic liver abscess is a very rare presentation of a Meckel's diverticulum. The diverticulum in our case appeared to have a thickened wall on imaging but no signs of acute inflammation were present on the CT scan or noticed intraoperatively. It was presumed to be the possible source as all other possibilities were ruled out. Ultimately, the surgical pathology revealed acute inflammation and focal abscess. We propose that elective resection of a Meckel's diverticulum should be considered in the setting of pyogenic liver abscess with no other identifiable source.

BACKGROUND

A Meckel's diverticulum is the most common congenital malformation of the gastrointestinal (GI) tract, occurring in 2–4% of the population.[1] The majority of patients with a Meckel's diverticulum are asymptomatic; however, a small percentage of patients may develop GI bleeding, abdominal pain or obstruction. Less frequent complications reported in the literature are torsion, herniation and tumours.[2] This case report describes a Meckel's diverticulum presenting as pyogenic liver abscesses. This is a rare presentation and, to the best of our knowledge, there is only 1 case report in the literature, with a similar presentation.[3]

CASE PRESENTATION

A 50-year-old Caucasian man with a medical history of hypertension and hyperlipidaemia presented with 10 days of worsening cough, fever and generalised body aches. On presentation, the patient was febrile (101.2°F) and tachycardic (113 bpm). Physical examination was unremarkable including a benign abdomen. Laboratory investigations were significant for leucocytosis (20.3 K/UL) with 88% neutrophils, and were normal for liver function and bilirubin tests. A chest X-ray revealed a small infiltrate at the left costophrenic angle, thus community-acquired pneumonia was suspected. The patient was admitted to the medical service, and treatment with intravenous ceftriaxone and azithromycin was started. Despite treatment, the patient remained febrile and intravenous vancomycin was added for broader coverage. Over the next 3 days, the patient continued to spike nocturnal fever as high as 103°F. Blood cultures drawn on admission remained negative. Hepatitis and HIV serologies were also negative. Owing to a suspicion of lymphoma, CT of the chest, abdomen and pelvis was obtained. The imaging was negative for lymphadenopathy but did show multiple liver abscesses (figure 1). In addition, a blind ending tubular structure consistent with a Meckel's diverticulum was identified (figure 2). There was no fat stranding or any other signs of acute inflammation, but it had a slightly thickened wall and some mucosal enhancement. A thin-walled appendix was also seen with an air-filled lumen. A surgical consult was thus requested.

TREATMENT

The liver abscesses were percutaneously drained for a total of 300 cc of purulent fluid and three close suction drainage tubes were left in place. Culture grew *Fusobacterium*, an anaerobic, Gram-negative rod. The patient was transitioned to piperacillin/tazobactam and had an uncomplicated recovery. He was discharged a week after the drainage with a

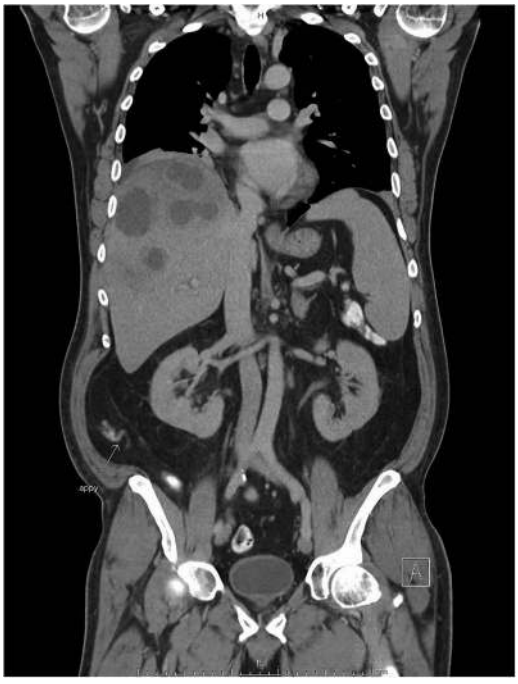

Figure 1 Abdominal CT scan revealing multiple hepatic abscesses, with a normal appendix denoted by the white arrow.

To cite: Field P, Umer A, Mecca-Monahan MA, *et al*. *BMJ Case Rep* Published online: [*please include* Day Month Year] doi:10.1136/bcr-2015-211104

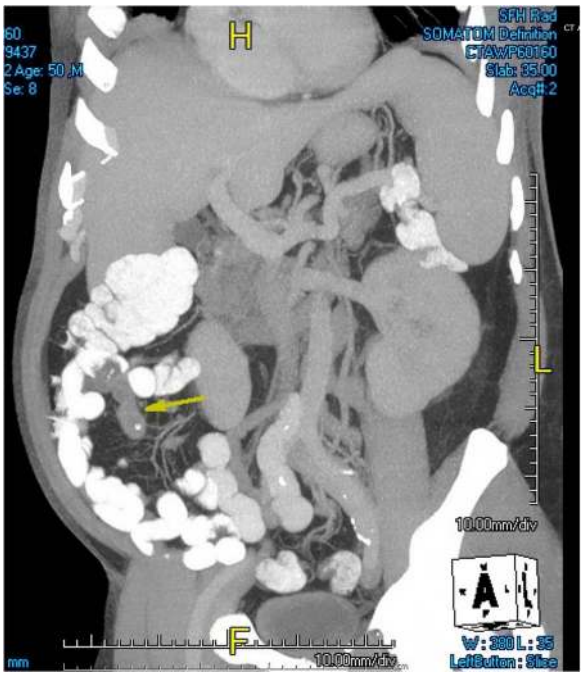

Figure 2 The yellow arrow indicating the blind ending tubular structure consistent with a Meckel's diverticulum.

1 month course of intravenous antibiotic. Once the drains were removed, the patient underwent colonoscopy, which showed no evidence of diverticular disease or neoplasia. The patient then underwent a laparoscopic Meckel's diverticulectomy and an appendectomy. The laparoscopy showed a grossly normal appearing appendix and normal elongated Meckel's diverticulum with a broad base (figure 3). No signs of acute infection were identified during surgery.

OUTCOME AND FOLLOW-UP

Recovery after surgery was uneventful. The pathology report showed a normal appendix but the Meckel's diverticulum had acute inflammation and a focal abscess, confirming our suspicion that the aetiology was a prior Meckel's diverticulitis. No gastric or pancreatic mucosa was found in the diverticulum.

DISCUSSION

Meckel's diverticula result from the congenital failure of the omphalomesenteric duct to involute by the seventh week of gestation. It is a true diverticulum with all three layers of the bowel wall involved. The old dictum follows the 'rule of 2's', indicating that the diverticulum will present in the first 2 years of life, occurs in 2% of the population, will be 2 inches long and 2 feet from the ileocecal valve, and will have two common types of ectopic tissue (gastric or pancreatic). The majority of Meckel's diverticula are asymptomatic and found incidentally during surgery. The most common complication in adults is usually bowel obstruction.[4] Pyogenic liver abscess in an adult, due to Meckel's diverticulum, is a very rare occurrence.

Pyogenic liver abscesses typically develop from portal spread following peritonitis, haematogenous seeding in the setting of bacteraemia, or direct spread from a biliary infection. This patient's abscess fluid culture grew *Fusobacterium*, which suggests a GI source, as it is part of the normal flora of the colon. Additionally, there was no evidence of biliary infection or bacteraemia, making portal spread from the GI tract the likely route. Abdominal CT scan and colonoscopy showed no evidence of colon cancer, appendicitis, or any other active inflammatory or infectious processes.

We do not completely understand why our patient presented without abdominal pain when he was hospitalised with the hepatic abscesses. On further probing, he did recall some vague abdominal pain and an episode of diarrhoea that had occurred 3–4 weeks prior to admission. Perhaps this obese male simply did not experience enough discomfort to seek medical treatment at that time. We cannot dismiss the fact that acute inflammation/abscess was seen on his final pathology, and believe this may be comparable to the more common scenario when an asymptomatic patient undergoes elective colon resection for a previous episode of diverticulitis and is found to have abscess/inflammation on final pathology despite relatively mild intraoperative findings. We surmise that the aetiology of our patient's hepatic abscesses was a resolved episode of Meckel's diverticulitis even in the setting of unimpressive CT and gross findings.

It is impossible to determine which Meckel's diverticula will become symptomatic, but multiple risk factors have been identified including: age under 50 years, male sex, diverticulum length greater than 2 cm, presence of histologically abnormal tissue and a broad based diverticulum.[5] Surgical resection of a Meckel's diverticulum is usually performed with symptomatic patients or is recommended in patients with multiple risk factors when found incidentally during an operation.[6] There is no available literature on elective surgical resection of a Meckel's diverticulum with pyogenic liver abscesses with no other identifiable source; we propose here that elective resection should be considered in this setting.

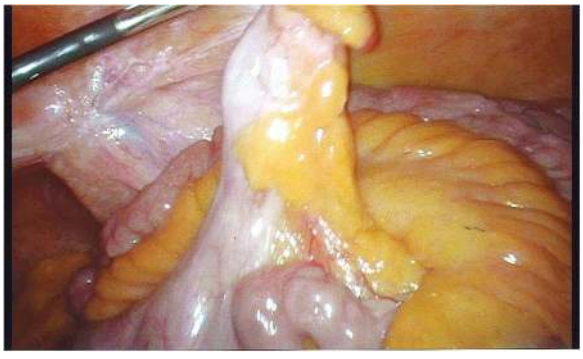

Figure 3 Meckel's diverticulum retracted to visualise the broad base during laparoscopic resection.

Learning points

- Meckel's diverticula are mostly asymptomatic and found incidentally during surgery.
- Risk factors identified for developing complicated Meckel's diverticulitis include age under 50 years, male sex, length >2 cm, broad base and presence of abnormal mucosa.
- Liver abscesses are a rare complication of Meckel's diverticulitis, and occur as bacterial seeding takes place haematogenously through the portal system.
- We propose that elective resection of a Meckel's diverticulum should be considered in the setting of pyogenic liver abscess with no other identifiable source.

Contributors PF and AU were responsible for writing the initial manuscript and for all subsequent revisions. MAM-M was solely responsible for collecting data and images. RT was the treating physician. All the authors contributed to editing and approval of the final manuscript.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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