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Non-healing gastro-duodenal ulcer: A rare presentation of primary abdominal tuberculosis

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ABSTRACT

INTRODUCTION: We present a case of primary gastrointestinal tuberculosis that has culminated in ulcer formation, in the absence of pulmonary involvement in an immunocompetent patient.
PRESENTATION OF CASE: A 28-year-old Asian male presented to casualty with a 1-week history of epigastric cramping abdominal pain and several episodes of non-bilious vomiting. The patient deteriorated clinically, becoming more cachectic and given his unexplained weight loss, an oesophageal-gastro-duodenal endoscopic imaging confirmed a duodenal ulcer. The biopsy of the non-healing ulcer was the hallmark of the disease, revealing evidence of granulomatous inflammation consistent with tuberculosis bacilli.
DISCUSSION: Gastrointestinal tuberculosis with ulceration is rare with respect to the oesophagus, stomach and duodenum. This case proves to be unique, as our patient had experienced primary isolated gastric tuberculosis in the absence of pulmonary tuberculosis in a healthy individual. Immunohistochemical staining, histopathology and radiological investigations have demonstrated their importance in confirming abdominal tuberculosis and the extent of bowel involvement.
CONCLUSION: This case has illustrated the difficulties associated with a prompt diagnosis of an unusual case of primary duodenal tuberculosis from chronic peptic ulcer disease in an immunocompetent patient.

1. Introduction

Tuberculosis has infected one third of the world's population according to the World Health Organisation, with 1% of new cases occurring each year.[1] Left untreated, it can become a life-threatening disease. Nevertheless, tuberculosis is preventable and more importantly, treatable. Gastrointestinal tuberculosis can affect any region of the gastrointestinal tract, most commonly the ileocaecal region. The duodenum is an unusual site for tuberculosis and typically occurs due to secondary spread from pulmonary disease. We present a case of primary gastrointestinal tuberculosis in an immunocompetent patient, which has culminated in ulcer formation within the duodenum in the absence of pulmonary involvement.

2. Presentation of case

A 28-year-old Asian male presented to casualty with a 1-week history of epigastric cramping abdominal pain and several episodes of non-bilious vomiting. The patient denied weight loss, fever and melaena. His past medical and surgical history as well as his systematic clinical examination were unremarkable. At presentation, the patient was found to be chronically microcytic anaemic with a haemoglobin of 10.8 g/dL (13.5–17 g/dL) and mean corpuscular volume of 74.3 fL (80–99 fL). After a month, the patient's symptoms had progressed to a cachectic state and he had lost a stone in weight. Given his unexplained weight loss, a blood test was organised to screen for coeliac disease and human immunodeficiency virus, which was negative.

An abdominal ultrasound demonstrated the presence of multiple echogenic mass lesions in the epigastrium and around the aorta, which were consistent with lymphadenopathy. This raised the suspicion of abdominal tuberculosis and under ultrasound control, fine needle aspirations and core biopsies were obtained. The aspirations revealed caseating material and a negative Auramine stain.

Therefore, no acid-fast microorganisms were found in the direct staining and specific culture of the abdominal lymph node region. Histology from the abdominal lymph node biopsies was non-diagnostic (multiple levels showed fibro adipose tissue). A computerised tomography of his chest, abdomen and pelvis illustrated multiple enlarged lymph nodes within the mediastinum of hypo dense centres (Fig. 1). The lung windows showed

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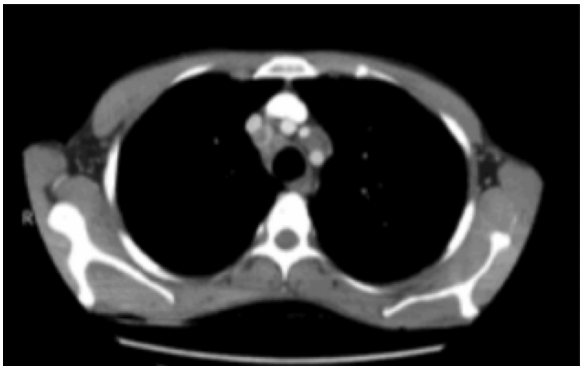

Fig. 1. Multiple enlarged lymph nodes within the mediastinum.

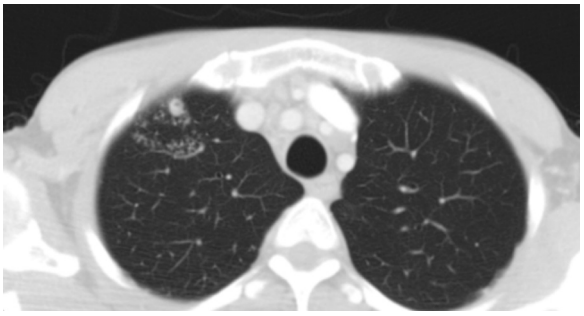

Fig. 2. Inflammatory changes noted within the lung windows.

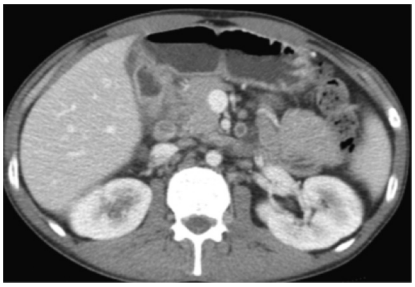

Fig. 3. Further evidence of gastro hepatic caseation.

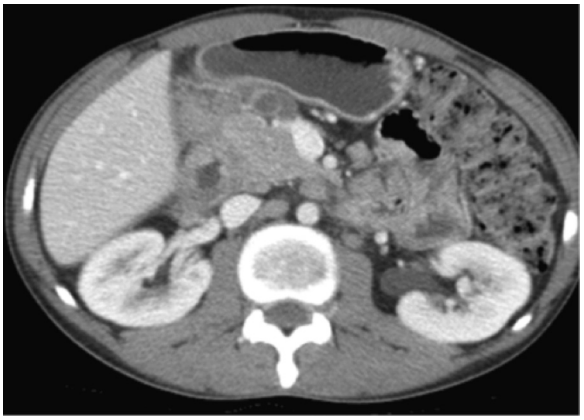

Fig. 4. Enlarged hypo-dense abdominal lymph nodes.

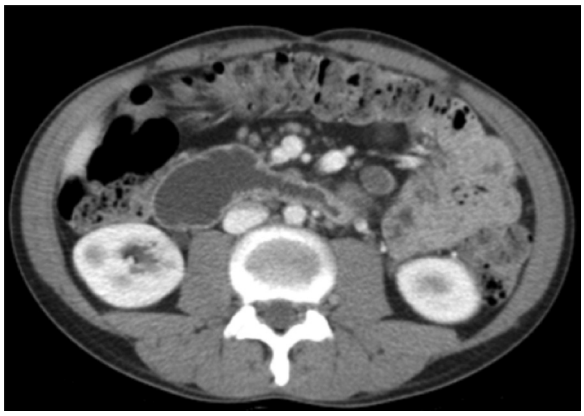

Fig. 5. Enlarged lymph nodes seen in the retro-peritoneum.

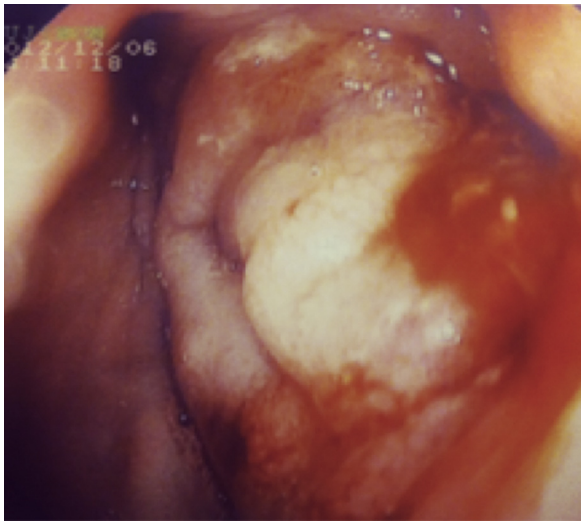

Fig. 6. Endoscopic imaging confirmed a duodenal ulcer.

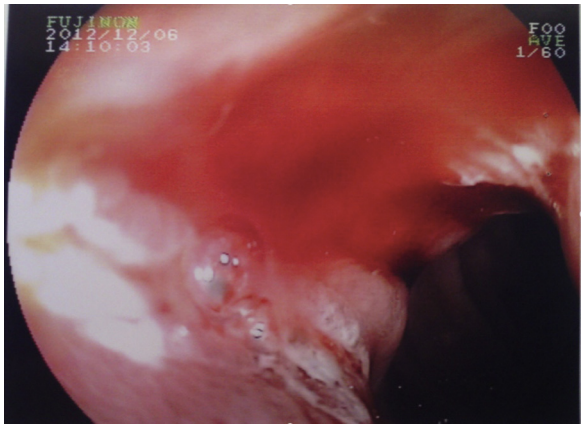

Fig. 7. Irregular ulcerations in the ampulla region (D2).

inflammatory changes (Fig. 2). Further enlarged lymph nodes with evidence of caseation were seen in the retroperitoneal, gastro hepatic, gastrosplenic and retro peritoneum regions (Figs. 3–5).

Oesophageal-gastro-duodenal endoscopic imaging confirmed a duodenal ulcer (Figs. 6 and 7) showing deep irregular ulcerations with marked enlarged and erythematous surrounding folds in the ampulla region of the duodenum. An oesophageal-gastro-duodenal biopsy was obtained from the folds and centre of the ulcer located within the duodenal ampulla region (D2). The biopsy report had macroscopically shown multiple pieces of pale tissue. The report also revealed microscopic evidence of granulomatous infection with occasional multinucleated giant cells and loose aggregates

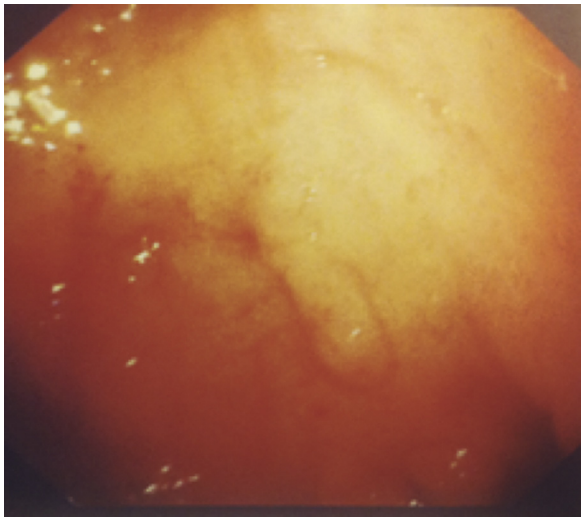

Fig. 8. Healing site of the duodenal ulcer post-treatment.

of epitheloid histiocytes, consistent with tuberculosis bacilli. The histopathological diagnosis from the biopsy of the duodenum was indicative of the disease, which correlated with the further investigations revealing abdominal lymphadenopathies and the likely diagnosis of primary abdominal tuberculosis.

The patient was referred to the tuberculosis respiratory medical team and was started on conventional first line anti-tuberculous treatment consisting of ethambutol, isoniazid, pyrazinamide and rifampicin. He tolerated the medication well with no adverse effects noted. Additionally, he gained weight and established a normal nutrition balance. Having completed his 6-month anti-tuberculous treatment, the follow-up oesophagogastroduodenoscopy showed the duodenal ulcer had healed (Fig. 8) and the patient's symptoms had improved.

3. Discussion

Gastrointestinal tuberculosis with respect to the oesophagus, stomach and duodenum with ulceration is highly uncommon. Few reported cases have described an ulcer or mass being caused by Mycobacterium Tuberculosis close to the gastro-oesophageal junction.[2] Primary tuberculosis of the stomach has been characterised by haematemesis, a non-healing ulcer or perforation with or without fever,[3] in association with pulmonary tuberculosis or immunoincompetent patients.[4] This case is distinctive and unusual as our patient had primary isolated gastric tuberculosis in the absence of pulmonary tuberculosis in an otherwise healthy individual. Having presented with chronic non-specific symptoms that suggested peptic ulcer disease, he was subsequently diagnosed with a non-healing duodenal ulcer consistent, histologically with tuberculosis. Gupta et al.[5] described a similar case report of a patient being treated for abdominal tuberculosis from histopathological diagnosis of a biopsy of the duodenum, defining it as the hallmark of the disease.

Recent papers on gastrointestinal tuberculosis in the United Kingdom describe reports from regions with large Asian populations, concluding that such populations are either sufferers from late recrudescence of inactive disease or a susceptible group.[6] Establishing a diagnosis proves to be challenging due to the non-specific symptoms of abdominal tuberculosis. Suspicions for patients from the Asian subcontinent with symptoms similar to those described in the above case should be brought to consideration. This would avoid any potential delay in management and adverse outcomes relating the complications of tuberculosis, including multi-organ failure and mortality. There is a change in pattern within developed countries, with a greater predominance of non-pulmonary tuberculosis.[7] The main reasons being an increased number of human immunodeficiency virus positive individuals that are immunocompromised, evolving multi-drug resistance mycobacterium tuberculosis strains and an increased number of immigrants from mainly developing countries. Along the gastrointestinal tract, the prevalent areas affected are usually the ileocaecal region, lymphatic system, peritoneum and visceral organs.

Infection often results in granuloma formation, caseation, mucosal ulceration, fibrosis, and scarring.[8] A tuberculosis infection of the gastrointestinal tract can occur by haematogenous spread from a primary site (pulmonary origin) via lymphatic drainage or direct spread from nearby organs. Methods of transfer of tuberculosis bacilli arise from different means such as air droplets, sputum transfer and infected food sources. Histopathology with immunohistochemical staining is important in confirming abdominal tuberculosis and radiological investigations would prove useful in characterising the extent of bowel involvement. Chen et al. stressed that colonoscopy with a biopsy is a useful diagnostic tool for early diagnosis of tuberculosis. Avoiding unnecessary morbidity and mortality associated with exploratory laparotomy in colonic tuberculosis.[9]

Aljafari et al.[10] compared a study between fine needle aspiration cytology (FNAC), microbiological methods and polymerase chain reaction (PCR) techniques on the diagnosis of tuberculosis lymphadenitis. Twenty-five cases were treated and resulted in a positive response to anti-tuberculosis therapy. Among those treated, 17 were correctly diagnosed by FNAC (68%) and eight by microbiological methods (32%). Twenty-four patients (96%) were diagnosed by polymerase chain reaction, which is considered the gold standard. Staining and culture techniques are not routinely done, such as in the case of our patient, as mycobacterium are slow growing (averaging between 6 and 8 weeks to grow on conventional medium) and starting treatment is of most urgency. Endoscopic biopsies are positive in approximately a third of cases; reasons being tubercular granulomas are sub-mucosal and endoscopic biopsies do not include sub-mucosa routinely.[11] There have been cases noted regarding further progression of the ulcer resulting in fibrosis, leading to a stricture along the duodenum with the addition of enlarged lymph nodes. A gastric-outlet obstructive picture can form along the duodenum and simulate a malignancy.

The first line of treatment for gastrointestinal tuberculosis is medical treatment, indicating that 6 months of an anti-tuberculosis regime is satisfactory. Surgical treatment should be sought for patients who develop complications such as obstruction, perforation, and stricture formation. Therefore, depending on the site of complication, surgical procedures like resection and anastomosis, stricturoplasty, laparotomy or right hemicolectomy would be required. In cases of abdominal tuberculosis peritonitis, laparoscopy has been reported as the most useful modality for establishing a specific diagnostic test for abdominal tuberculosis.[12]

4. Conclusion

This case has illustrated the difficulty of promptly diagnosing an unusual case of primary duodenal tuberculosis from chronic peptic ulcer disease, in the absence of pulmonary involvement in an immunocompetent patient. The patient had remained asymptomatic and as his condition progressed, his symptoms became more apparent. In the absence of positive pathological (polymerase chain reaction or acid-fast bacilli staining) and radiologic tests, the

diagnosis is often established by obtaining a surgical histopathology specimen.

Conflict of interest

The authors have no financial and personal relationships with other people or organisations that could inappropriately influence (bias) this submission.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and its accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

Nabeel Merali was the major contributor in writing the case report and he was involved in the acquisition and analysis of literature review. Punkaj Chandak was involved in the review and preparation of the manuscript. Sudeendra Doddi and Prakash Sinha provided clinical care of the patient during his treatment and further follow-up as well as supervising the writing of the case report. Image and figures were courtesy of the Department of Radiology and the Surgical Department with patient consents.

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