Case Report

Raised Amylase/Lipase levels in Enteric Fever: Prognostic marker or a sign of Pancreatitis? – Case Report

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Abstract

Enteric fever is a commonly diagnosed entity in developing nations. Mostly uneventful, it can sometimes manifest with a plethora of complications, including gastrointestinal hemorrhage, intestinal perforation, peritonitis, encephalopathy, and pancreatitis. We are discussing a case of enteric fever with the presentation in the form of bleeding per rectum. The patient's raised amylase and lipase levels confused the scenario as it could not be decided whether this rise was due to enteric fever or its possible but rare complication, pancreatitis. There was no radiological or clinical evidence of pancreatitis; hence the rise in the amylase and lipase levels was due to enteric fever only and not pancreatitis. Serial titers showed declining enzyme values with the improvement of patient condition. A correlation of amylase and lipase levels with enteric fever and the use of serial amylase and lipase levels as a prognostic marker for enteric fever are proposed hereby, hence, proposed.

Keywords: Amylase, enteric fever, lipase, pancreatitis

"Enteric fever versus Pancreatitis"

Introduction

Typhoid is a common entity in developing nations, with incidence rates approaching 493.5 per 100,000 person-years in India.[1] The most common manifestations include fever, abdominal pain, weakness, constipation, and reddish eruptions on the skin, referred to as rose spots. With effective antimicrobial use, the case fatality risk is <1%.[2] Complications are seen in about 10–15% of the hospitalized patients with a higher risk in children.[3] They include encephalopathy (7.3%), gastrointestinal hemorrhage or intestinal perforation (4%), peritonitis (2.3%), and pancreatitis (very rare).[3] Pancreatitis is not considered a dreaded complication of typhoid.[4] The changes in pancreatic enzymes amylase and lipase are commonly observed in the *Salmonella typhi* infection, even in the absence of abdominal symptoms. Acute pancreatitis is itself associated with a corresponding rise in the amylase and lipase levels. The dilemma faced by us was whether the rise in the enzyme levels in the patient should be attributed to enteric fever itself or to pancreatitis, which is a complication of enteric fever. This report will help the primary care physicians utilize their clinical judgment and not refer every case of enteric fever with raised amylase/lipase levels to a specialist.

Case Report

An 18-year-old male presented to us with fever for 2 weeks, continuous type, associated with chills and rigors, and relieved with antipyretics [Figure 1]. Four days after the fever, he developed pain in the epigastric region, sudden-onset, dull aching type, non-radiating, non-referred, and associated with three bouts of non-projectile and bilious vomiting. Multiple loose stools followed this with the presence of blood in the stools.

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Clinical findings

On examination, the patient's blood pressure was 90/60 mmHg, the pulse was low volume and thready with a rate of 102 beats per minute, oxygen saturation was 97%, and respiratory rate 28 per minute. He was febrile, with a temperature of 101°F. The abdominal examination revealed generalized tenderness, voluntary guarding, and abdominal distension. The cardiovascular, respiratory, and neurological examinations were within normal limits.

Diagnostic assessment

The patient was anemic, with a hemoglobin value of 7.1 gm/dl, falling to 5.9 gm/dl over 2 days due to the ongoing blood loss in the feces. He was incidentally detected to be positive for hepatitis B surface antigen (HBsAg). His liver function tests showed transaminitis and hypoproteinemia with SGOT 841 U/L, SGPT 184 U/L, total protein 4.79 gm/dl, albumin 2.26 gm/dl, globulin 2.53 gm/dl, and an A:G ratio of 0.89. The renal function tests were normal. As he had abdominal pain, we sent his amylase and lipase levels, which, to our surprise, were significantly elevated, being 219 U/L and 790 U/L, respectively. Serum lactate dehydrogenase (LDH) and triglyceride were also significantly elevated at 4370 U/L and 310 mg/dl. The abdomen's ultrasound did not reveal any specific pathology; the study was compromised due to distended abdomen. He was provisionally diagnosed as suffering from acute pancreatitis and managed on the same lines. The patient showed no improvement, with fever spikes and pain in the abdomen being persistent. Contrast-enhanced CT (CECT) of the abdomen displayed no signs of pancreatic inflammation or attenuation [Figure 2, Video 1].

This put our diagnosis in question. Later, the fever panel revealed that the patient's Typhidot test Immunoglobulin M (IgM) and Immunoglobulin G (IgG) Enzyme-Linked Immunosorbent Assay (ELISA) was positive, detected via an immuno-chromatographic method, thereby diagnosing enteric fever. The upper gastrointestinal endoscopy was normal, but colonoscopy revealed edematous and erythematous mucosa with multiple ileal ulcers separated by normal intervening mucosa. A biopsy was taken from the ulcer, which demonstrated edematous lamina propria with patchy inflammatory infiltrates suggestive of non-specific inflammation.

Differential diagnosis

Epigastric pain and bleeding per rectum tilted the diagnosis toward peptic ulcer; however, persistent fever was not explained, and the endoscopy proved this wrong. High amylase, lipase, LDH, triglyceride levels, fever, pain in the epigastric region, and abdominal guarding prompted the diagnosis of acute pancreatitis, but CE-CT abdomen conclusively removed pancreatitis from our diagnosis. The Typhidot test was positive, and colonoscopy showed the presence of an ileal ulcer with non-specific background inflammation. The patient had typhoid fever complicated by an ileal ulcer, which had bled, leading to the bleeding per rectum.

Therapeutic intervention

Injectable ceftriaxone was started in a dose of 2 gm twice daily, and a dramatic response was seen. Two days after the initiation of antibiotics, the fever spikes settled, and surprisingly, the amylase and lipase levels also started normalizing, coming to 68 IU/L (from 219 IU/L) and 200 IU/L (from 790 IU/L), respectively, 7 days after.

Discussion

The patient had a diagnosis of typhoid fever complicated by an ulcer that had bled. He improved after initiating the most spartan antibiotic regimes for enteric fever. However, all this was possible only after wastage of a significant amount of time managing non-existent pancreatitis suggested by the rise in the pancreatic enzymes' level. Acute pancreatitis shows raised levels of amylase and lipase enzymes (97%); however, lipase is considered quite specific.[5] Pancreatitis is considered a complication of enteric fever, although very rare.[6] Studies by Hermans *et al.*,[4] Renner *et al.*,[7] and Baert *et al.*[8] demonstrated raised amylase and lipase levels in about 50, 62, and 23% of enteric fever patients, respectively. In most cases of Salmonella enteritis, pancreatitis is present biochemically, as indicated by the increased amylase and lipase levels without causing any clinical signs or symptoms. In an Indian study, the proportion of children with raised amylase levels in typhoid fever was 44.68%. None of the patients included in these studies was diagnosed with pancreatitis clinically or radiologically.[9,10] Similar was the scenario in this case where the patient, despite having the serum amylase/lipase values being way beyond the upper limits, did not have any radiological signs of pancreatitis. Enteric fever is associated with pancreatitis

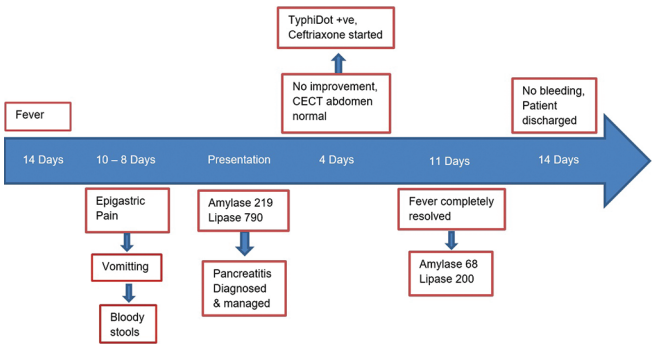

Figure 1: Timeline of the patient course.

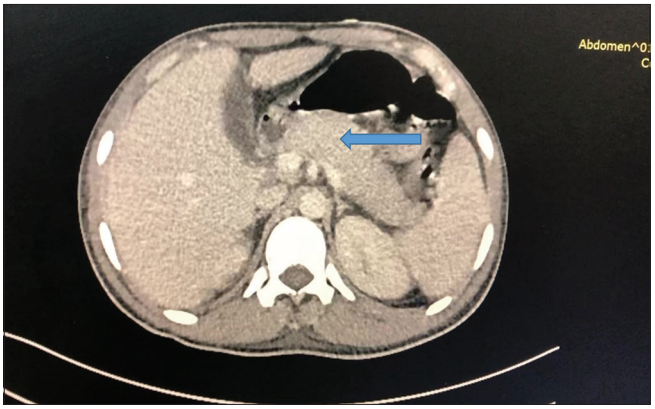

Figure 2: CECT abdomen showing normal pancreas.

as its potential complication, but before labelling the patient as suffering from typhoid-induced pancreatitis, good clinical acumen should be applied and radiological evidence sought. This is a critical learning point; in enteric fever, the amylase, and lipase levels may be raised without the actual existence of pancreatitis. Moreover, we observed that as the patient improved, his amylase and lipase values also improved serially. Hence, we propose that serial serum amylase and lipase levels be considered markers for enteric fever prognosis. Further data analysis and case series studies are, hence, warranted in this direction.

Learning points/Take home messages

- Enteric fever may have associated raised levels of amylase or lipase
- Hyperamylasemia/hyperlipasemia may not always suggest acute pancreatitis in enteric fever
- Serial amylase and lipase levels may be considered prognostic markers for enteric fever.

Research quality and ethics statement

The authors of this manuscript declare that this scientific work complies with the reporting quality, formatting, and reproducibility guidelines set forth by the EQUATOR Network. The authors also attest that this clinical investigation was determined not to require the Institutional Review Board/Ethics Committee review, and the corresponding protocol/approval number is not applicable. Informed consent was taken for case publication.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient's relatives has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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