CASE REPORT

Typhoid intestinal perforation in pregnancy: a case report

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Abstract

Typhoid intestinal perforation is a serious surgical complication of typhoid fever due to its associated high morbidity and mortality. Its occurrence in pregnancy is extremely rare and poses great challenges in its management.

We report the case of a 31-year-old pregnant woman at 15 weeks of gestation who presented with generalized peritonitis from typhoid intestinal perforation. She had laparotomy with simple closure of an ileal perforation. Prophylactic sublingual tocolytics was commenced in the early postoperative period. However, she lost the pregnancy following a miscarriage 3 weeks after discharge from the hospital.

Typhoid intestinal perforation in pregnancy is uncommon and characterized by diagnostic and treatment challenges. It is associated with a high maternal and foetal morbidity and mortality, thus, requiring a high index of suspicion, prompt intervention, an inter-professional team approach, and close postoperative monitoring to achieve a favourable outcome.

Keywords: Ileal perforation, Laparotomy, Pregnancy, Peritonitis, Typhoid fever

Introduction

Typhoid fever is a multi-systemic infection caused by *salmonella typhi* and occasionally *paratyphi*. It is a major public health problem in low and middle-income countries due to poor hygiene as the spread is through the faeco-oral route.[1] The occurrence of typhoid fever in pregnancy could result in vertical intrauterine transmission, uteroplacental infection, miscarriage or neonatal typhoid.[2]

While typhoid fever is managed principally with antibiotics, the development of perforation requires urgent surgical intervention. Typhoid intestinal perforation is a frequent cause of acute abdominal issues in sub-Saharan Africa, necessitating urgent surgical intervention. It accounts for 0.8% to 39% of surgical complications related to typhoid fever.[1] The mortality rate associated with typhoid intestinal perforation in sub-Saharan Africa ranges from 10 % to 30%.[3]

Acute appendicitis is the primary surgical condition during pregnancy, making it a highly probable differential diagnosis for acute abdominal issues. Uncommon causes of bowel perforations during pregnancy include acute diverticulosis, tuberculosis, and stercoral perforations.[4]The incidence of typhoid intestinal perforation is extremely rare in pregnancy and only four cases have been reported to the best of our knowledge in the English-language literature.[5,6] The multitude of potential differential diagnoses, coupled with limited use of imaging studies during pregnancy may lead to delayed diagnosis, posing an increased risk of preterm labour and foetal loss, particularly in the first and second trimesters.[7]

Managing acute abdominal conditions during pregnancy, including intestinal perforation, presents several challenges. Due to its rarity, there are no definitive guidelines for its management. These challenges

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encompass diagnostic uncertainties, medication selection, imaging methods, the need for tocolytics, and surgical treatment.

Case presentation

A 31-year-old woman, gravida 4 para 2+1(2Alive) at 15 weeks of gestation, presented to our facility with a high-grade fever of 10 days duration and abdominal pains of 3 days duration. There was associated abdominal distension, constipation and vomiting of 2 days duration before presentation. She had 3 bouts of vomiting that were non-projectile, non-bilious and contained recently ingested meals. The patient had diarrhoea at the onset of the illness before the development of constipation. There was no vaginal bleeding or trauma to the abdomen. About two days into the illness, she sought medical care at a peripheral facility where oral medications and injections were administered without improvement, necessitating her presentation to our centre. She did not know the names of the medications administered to her. She does not have hypertension or diabetes. She is a farmer with a secondary level of education whose source of drinking water is the well.

Examination revealed an acutely ill-looking young woman in painful distress who was pale, febrile (38.4^{O}C) and dehydrated. Her pulse was 128 beats/minute with a blood pressure of 100/70 mmHg. The abdomen was distended and moved minimally with respiration with generalized tenderness and rigidity which precluded deep palpation. There was an absent bowel sound, and her vaginal examination was unremarkable. The rectum contained watery stool and the wall was tender.

She was anaemic with a haemoglobin concentration of 8.7g/dl, had hypokalemia of 3.2mmol/l and an elevated serum creatinine with value of 176 micromol/l. The serum urea was normal. An abdominopelvic ultrasonography scan showed a life foetus, dilated bowel loops with reduced peristalsis and intraperitoneal collection in both paracolic gutters and the pelvis. A diagnosis of generalized peritonitis presumptively from typhoid intestinal perforation was made, necessitating an invitation of the general surgical team who agreed with the diagnosis and decided to operate the patient.

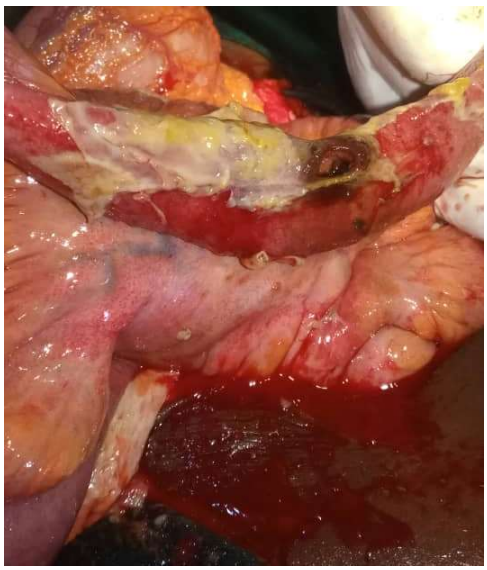

Figure 1: showing a 1.5cm x 1.5cm perforation at the anti-mesenteric border of the ileum (Intra-operatively).

Pre-operatively, the patient received intravenous ceftriaxone (1 gram 12 hourly) and metronidazole (500 mg 8 hourly) and subsequently had laparotomy using a vertical midline incision. The intra-operative findings were 800mls of bilious peritoneal collection and a 1.5 x 1.5cm perforation on the anti-mesenteric border of the ileum at 70cm to the ileocecal junction (Figure: 1). The gall bladder was inspected and found to be grossly normal. The edge of the perforation was excised and a simple closure in two layers was done. Minimal and gentle handling of the uterus was ensured during the surgery.

The parenteral ceftriaxone and metronidazole were continued for 5 days post-operatively following which they were converted to oral cefixime 400mg daily and oral metronidazole 400mg 8 hourly and continued for one week. Sublingual nifedipine, a tocolytic, was commenced by the obstetricians in the early postoperative period and continued for three days. The immediate post-operative period was uneventful. She subsequently developed a superficial incisional surgical site infection which was successfully managed. She was discharged on postoperative day 10.

The stool and urine culture yielded no growth whereas the histopathology result confirmed typhoid ileal perforation as it revealed transmural infiltration of the excised part of the ileum by predominantly lymphocytes, plasma cells, neutrophils, macrophages and Mallory cells.

She was followed up at both the antenatal and surgical out-patient clinics. Unfortunately, she had a spontaneous termination of pregnancy and lost the pregnancy 3 weeks after discharge from the hospital at a gestational age of 19 weeks.

DISCUSSION

Typhoid intestinal perforation is an extremely rare cause of acute abdomen in pregnancy. Only four cases have been reported in the English literature to the best of our knowledge. Na'aya *et al*.[5] reported four pregnancy-related cases (three during pregnancy and one in the puerperium), constituting 9.3% of the 43 cases reported in their series. Typhoid intestinal perforation could masquerade as one of the acute pregnancy-related abdominal conditions, hence, a high index of suspicion is required to make an early diagnosis and institution of multidisciplinary care.[5,6,8] This is important as patients would likely present first at the obstetric and gynaecological unit.

Historically, the absence of typical risk factors such as hypertension and trauma to the abdomen, the insidious nature of the abdominal pain and the absence of vaginal bleeding in the index case makes the diagnosis of pregnancy-related complications such as abruptio unlikely. Furthermore, generalized abdominal tenderness rather than uterine tenderness suggests extrauterine causes. These historical and examination findings and the prompt access to ultrasonography aided the early diagnosis in the highlighted case.

Most typhoid intestinal perforations occur within 2-3 weeks of the onset of symptoms. However, the onset of the symptoms and signs of typhoid fever in pregnancy has been reported to be earlier than in the non-pregnant patient due to some physiological changes that include immunomodulation, biliary stasis and reduced gastrointestinal peristalsis.[7] In the index case, the preoperative diagnosis was essentially clinical but supported by an imaging study. The intestinal perforation of

our patient occurred less than 2 weeks following the onset of the symptoms in contrast to the recognized timeline for intestinal perforation. The early perforation in West African patients has been attributed to the hypersensitivity of the payer's patches in the ileum which is not the experience in other parts of the world.[5]

Culture isolation of *salmonella typhi* from body fluids such as blood, stool, urine and bone marrow has long been the standard for the diagnosis of typhoid fever. However, in this patient the cultures were negative but the finding of Mallory cells which are the hallmark for the histopathologic diagnosis of typhoid fever, formed the basis of our diagnosis.[9]

Radiological Investigations for acute abdomen in pregnancy pose significant challenges. Imaging techniques not involving ionizing radiation are preferred, thus, an Ultrasound scan is considered the first-line imaging modality, especially in early pregnancy. Its drawback includes limited anatomical visualization due to the displacement of adjacent structures by the gravid uterus and is operator-dependent.[10] Though magnetic resonance imaging is also safe during pregnancy and is not operator dependent, our patient had ultrasonography of the abdomen due to its availability, less expensive and the imaging of choice in pregnant women with acute abdomen.

There is a high risk of foetal loss from miscarriage/preterm labour in intestinal perforation in pregnancy as seen in our patient, although she had the miscarriage after discharge from the hospital. In a previous study, two of the three women who had typhoid perforation in pregnancy had preterm birth and miscarriage.[5] Although we ensured minimal and gentle handling of the uterus intra-operatively and administered prophylactic tocolytic (Nifedipine) to our patient to ensure uterine quiescence which could help to reduce the risk of miscarriage, she ultimately had a spontaneous miscarriage on the 19th week of gestation. Nifedipine is a calcium channel blocker that reduces intracellular calcium concentration and, thus, prevents activation of myosin light chain kinase, and thereby myometrial contractions, although there is limited evidence to suggest its use during early gestation remote from the age of viability as in the case of our patient.[11]

While antibiotics are the mainstay of treatment for typhoid fever, the development of intestinal perforation warrants surgical intervention as the mainstay of treatment. A simple closure/repair is often performed for single or multiple perforations that are far apart from each other. Segmental resection and anastomosis is preferred for multiple perforations that are close to each other. Wedge resection and hemicolectomy are infrequently performed.[1,5] Ileostomy is offered to patients with a high risk of leakage of the repair. Such high-risk factors include severe peritoneal contamination and unstable patients.

Laparotomy and repair were the surgical options in the series by Na'aya *et al*.[5] while Kumar *et al*.[6] described image-guided percutaneous drainage alone with resolution of symptoms. The highlighted patient had laparotomy with repair of perforation which is the current standard of treatment with a good surgical outcome. Delayed presentation, inadequate resuscitation, delayed surgery, multiple perforations and severe peritoneal contaminations have been associated with poor outcomes.[1,5] The index case, however, presented early, was adequately resuscitated, had single perforation and was operated on early, hence, the good outcome.

Conclusion

Typhoid intestinal perforation in pregnancy is rare and poses diagnostic challenges. A high index of suspicion, a multidisciplinary approach and early surgical intervention can considerably reduce the foeto-maternal morbidity and mortality associated with this disease.

Consent for Publication
Informed consent was obtained from the patient for publication of this report and the accompanying images.

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AHO and OOF co-wrote the first and final drafts of this case report. SS and KMY both made significant contributions to the first major and final revision of the manuscript. All the authors approved the final version and its submission.

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References

1. Abdurrazzaaq AI, Grimah V, Yakubu AA. Outcome of Typhoid Intestinal Perforation Management in a Tertiary Hospital, North-Central Nigeria. European Journal of Medical and Health Sciences2023; 5(3):30-34
2. Faraj T, John D H, Richard V L. Typhoid fever during pregnancy; case report and review. Obstet Med 2009;2(4):161-163
3. Birkhold M, Coulibaly Y, Coulibaly O, Dembele P, Kim DS, Sow S, Neuzil KM. Morbidity and Mortality of Typhoid Intestinal Perforation Among Children in Sub-Saharan Africa 1995-2019; A scoping Review. World J Surg 2020;44(9):2892-2902
4. Snehasis D, Sagar P, Julia S, Oseen S. A Rare Phenomenon of Stercoral Ileal Perforation in a Pregnant Woman. Cureus 2023;15(7): e 41529
5. Na'aya HU, Eni UE,Chama CM. Typhoid perforation in Maiduguri, Nigeria. Annals of African Medicine 2004; 3(2): 69-72
6. Kumar S, Karmakar D, Sharma JB, Kashinath JA. Treatment of typhoid perforation during pregnancy and the postpartum period. Int J Gynaecol Obstet 2011;115(1):72-73
7. Dare J, Lawal A, Olabinjo H, Balogun O, Aremu I, Adenuga A. Postpartum Typhoid Intestinal Perforation; A Case Report. Medical Journal of Zambia2022;49(2):198-201
8. Taylor D, Perry LR. Acute abdomen and pregnancy. Medscape (internet).2024 Apr 1 (cited 2024 Jun 25); Available from; https://emedicine.medscape.com
9. Ogundoyin O, Ijeoma C, Hyginus E, Chukwudi N. Typhoid Caecal Perforation in a Two-Year-Old Child: A Case Report. Ethiop J Health Sci2019; 29(5):653-655
10. Wallace GW, David MA, Smelka RC, Fielding JR. Imaging the pregnant patient with abdominal pain. Abdominal imaging 2012;37(5):849-860
11. O'Malley, David M, Sauchak, Kimberly A, Stepp KJ. Is prophylactic Tocolysis Associated with improved outcomes in Antenatal intraperitoneal surgery? Obstetrics & Gynecology2002; 99(4):19