

Colonoscopy Findings of Uncomplicated Enteric Fever Mimicking Koch's Disease

Anushka Verma¹, Amol S Dahale², Prashant Gopal³, Suruchi Mandrekar⁴, Reshu Aggrawal⁵, Nanda Kachare⁶

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ABSTRACT

Enteric fever is a common occurrence in Southeast Asia with a myriad of presentations. Partial treatment often leads to prolonged illness. Along with this, bowel imaging often confounds the picture with tuberculosis. Colonoscopy and biopsy may help to differentiate from tuberculosis. The data on colonoscopy is scarce in enteric fever and is mostly available from case reports of gastrointestinal (GI) bleeding. We have described three cases of enteric fever with GI involvement mimicking tuberculosis. The colonoscopy picture is characteristic of pinkish-bluish ileal mucosa, with edema and decreased distensibility, along with multiple superficial ulcers. The ileocecal valve was involved in all three cases. The ascending colon was involved in two cases. There was complete resolution of lesions after treatment on follow-up.

Keywords: Colonoscopy, Enteric fever, Tuberculosis.

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INTRODUCTION

Enteric fever is endemic in the Indian subcontinent.¹ It is caused by *Salmonella typhi* (*S. typhi*) and *Salmonella* Paratyphi A and B. It presents with fever as the dominant symptom along with diarrhea and abdominal pain.² *Salmonella* is known to have multi-drug resistance and responds slowly to antibiotic therapy and the average resolution time of fever is usually 5–10 days.³ Partial treatment, suboptimal dosing of antibiotics, and unavailability or delay in blood cultures often land patients in the late phase of illness at tertiary care. It poses a unique challenge given that the list of differential diagnoses is huge and the gold standard test i.e., blood culture only has a sensitivity of 60%. Computed tomography (CT) imaging done as part of a protocol for pyrexia of unknown origin often adds to the confusion. Computed tomography shows terminal ileal circumferential thickening, lymphadenopathy, and free fluid in the abdomen which are seen in 50–75% of patients.⁴ Thus, the symptomatology and imaging features of enteric fever often resemble tuberculosis and create a dilemma. We recently came across three such cases of enteric fever which mimicked tuberculosis on imaging. We also aimed to share clinical and colonoscopy findings in all three cases as the description of uncomplicated enteric fever colonoscopy findings in literature is sparingly rare.

CASE DESCRIPTION

Case 1

A twenty-nine-year-old male presented with a history of fever with chills and rigor for 19 days, evening rise in temperature, which responded to paracetamol. Pulse rate was 90 per minute, blood pressure was 112/78 mm of Hg, and SpO₂ was 98% on room air. General examination revealed no hepatosplenomegaly. Laboratory investigations showed hemoglobin of 12.3 gm/dL, and leucocyte counts of 8900/μL with a platelet count of 1.8 lakhs/μL and ESR was 98 mm/hr. Chest X-ray was normal. Urine routine examination was normal. Malarial smears were negative. Ciprofloxacin was given empirically outside for 5 days. Ceftriaxone was started empirically;

¹Department of Physiology, Dr. D. Y. Patil Medical College, Hospital and Research Centre (Deemed to be University), Pimpri, Pune, Maharashtra, India

^{2,3}Department of Medical Gastroenterology, Dr. D. Y. Patil Medical College, Hospital and Research Centre (Deemed to be University), Pimpri, Pune, Maharashtra, India

⁴⁻⁶Department of Internal Medicine, Manipal Hospital Baner, Pune, Maharashtra, India

Corresponding Author: Amol Dahale, Department of Medical Gastroenterology, Dr. D. Y. Patil Medical College, Hospital and Research Centre (Deemed to be University), Pimpri, Pune, Maharashtra, India, Phone: +91 7843026038, e-mail: amolsd1986@gmail.com

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blood cultures were sent which showed *S. typhi* growth on the third day with sensitivity to ceftriaxone. The patient didn't respond to sensitive antibiotics till day 7. Meanwhile, the Mantoux test was done which showed a 14 mm induration. We did a CT scan which showed terminal ileal concentric thickening of size 8 mm of length 9 cm. The patient underwent a colonoscopy which showed a normal colon till caecum, but the ileocecal valve showed multiple small superficial ulcers with whitish exudate on both lips. Ileum till 15 cm showed edematous, reddish bluish mucosa, less distensible, circumferential superficial ulcer near to ileocecal valve extending to the length of 3 cm with a few other small superficial ulcers till 30 cm (Fig. 1). Biopsies from the ulcer showed acute inflammation mixed with sheets of histiocyte infiltration (Fig. 2). No distortion of crypt architecture or well-defined epithelioid granuloma was noted. Ziehl Neelsen (ZN) stains did not reveal acid-fast bacilli, and Gene Xpert

was negative. Intravenous antibiotics continued, and the patient improved on day 11. Antibiotics were continued for 5 more days. The patient was discharged, repeat colonoscopy was done 6 weeks later which showed normal ileum.

Case 2

A 24-year-old male presented with a fever for 16 days mild abdominal pain and a weight loss of 4 kg. He was treated outside with cefixime for five days at suboptimal doses. Routine investigations revealed a leucocyte count of 3400/ μ L with ESR 87 mm/hr with slightly elevated SGOT (62 IU/dL) and SGPT (58 IU/dL), rest parameters were normal. He was evaluated for dengue, malaria, and typhus fever and all workups were negative. Ultrasound showed ileal thickening with few mesenteric lymph nodes (LN) triggering suspicion of Koch's disease. Meanwhile, he underwent a CT abdomen that showed terminal ileal thickening with mesenteric LN of maximum size 12–14 mm and was non-necrotic. In between blood cultures grew *S. typhi*. He was started antibiotic ceftriaxone, but there was no

response till day 7 which prompted us to colonoscopy which showed multiple superficial ulcers with whitish exudate with surrounding erythema in the ascending colon and caecum. The ileocecal valve and ileum showed multiple superficial ulcers with whitish exudate with surrounding erythema. Mucosa edematous, erythematous with a bluish hue seen till 20 cm (Fig. 3). Histopathology revealed diffuse active ileitis with lymphoid hyperplasia and prominent histolytic inflammatory infiltrate. Acid-fast staining did not reveal acid-fast bacilli and Gene Xpert for mycobacterium tuberculosis was negative. The patient responded to ceftriaxone on day 9th and was discharged after 5 days of more intravenous antibiotics. At the 2-month follow-up, the ultrasound was repeated which showed a resolution of ileal thickening.

Case 3

A 26-year-old male presented with documented fever, anorexia with mild nausea for 20 days. Fever work-ups including malarial antigen test, dengue, typhus, Widal test, and urine routine microscopy were done outside, and all were negative. At admission, vitals were stable, hemogram revealed a leucocyte count of 6700/ μ L, with normal hemoglobin and platelets. Elevated value of ESR was 68/hr and CRP (18 mg/dL). Chest X-ray was normal. Ultrasound abdomen showed minimum free fluid in the abdomen, ileal thickening for a segment 6 cm of size 9 mm, with few mesenteric lymph nodes. Computed tomography abdomen confirmed the ultrasound findings (Fig. 4). Blood culture revealed *S. typhi* growth on the third day of admission. Ceftriaxone was given but the fever didn't respond by the 7th day when the patient underwent colonoscopy. Meanwhile, the IGRA test was positive and tuberculosis suspicion arose. On colonoscopy, ascending colon and caecum showed few superficial ulcers maximum size 5–6 mm with surrounding erythema seen. The ileocecal valve and ileum to 12 cm displayed edematous mucosa with superficial ulcers, ileum was less distensible. Beyond 12 cm transition to normal mucosa is seen. Ileum is seen till 30 cm. A few more superficial ulcers maximum 8 mm in size were seen around 20 cm while the rest of the mucosa was normal (Fig. 5). Biopsy from ileocecum showed preserved architecture with marked surface ulceration with dense and diffuse lymphohistiocytic admixed with neutrophilic inflammatory infiltrate. No acid-fast bacilli or fungal organisms were identified on special stains. Gene Xpert test was negative. Fever responded to the 12th day of antibiotics and the course was given for five more days. At the 6-month follow-up review CT scan showed normal ileum and no lymphadenopathy.

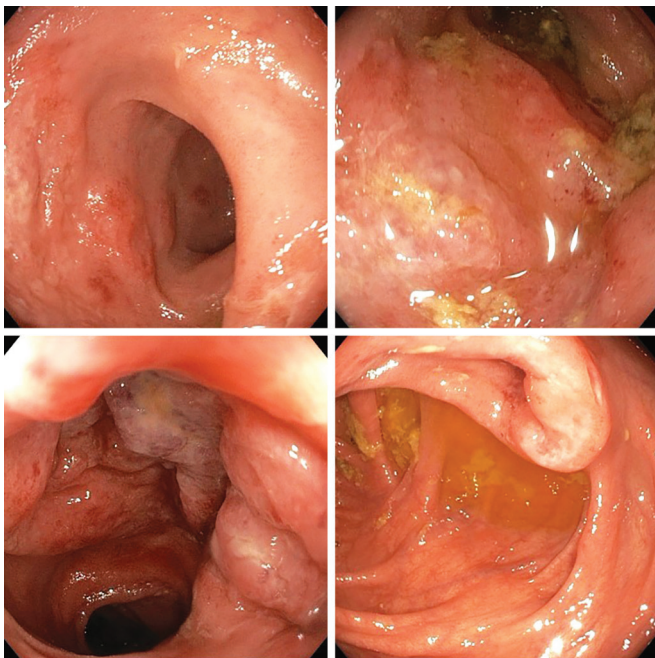
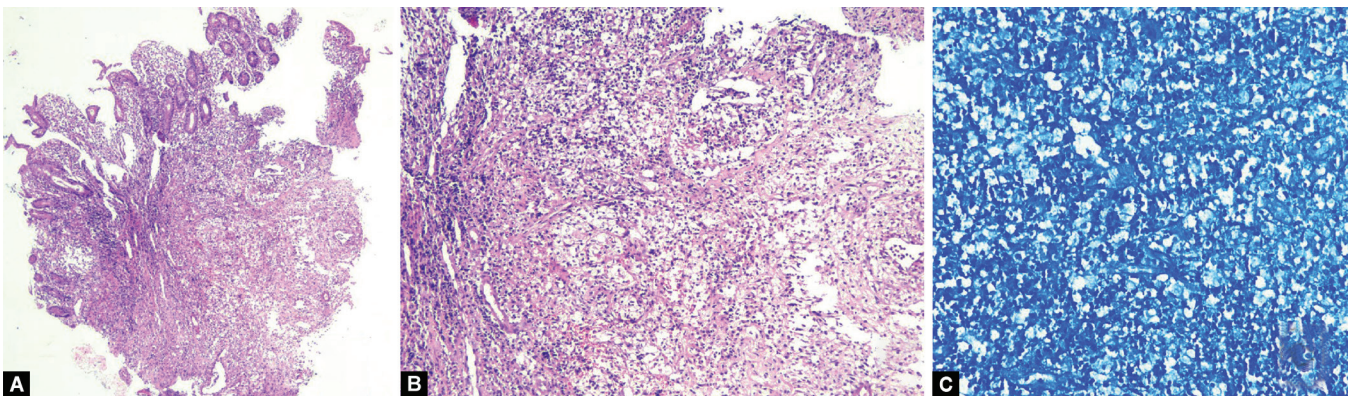


Fig. 1: IC valve showing superficial ulcer with whitish exudate, terminal ileum showing edema, superficial ulcers with bluish-red hue



Figs 2A to C: (A and B) Diffuse active ileitis with lymphoid hyperplasia and prominent histolytic inflammatory infiltrate (10 \times , 20 \times H&E); (C) Acid-fast staining did not reveal acid-fast bacilli

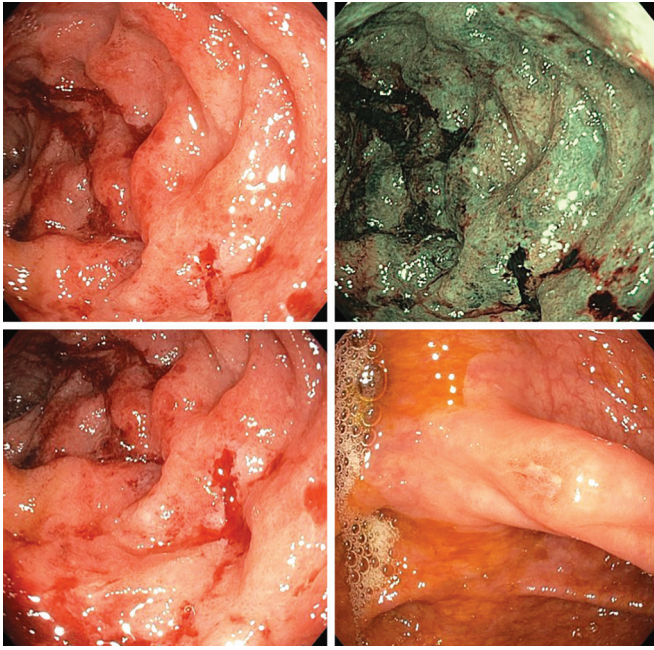


Fig. 3: Terminal ileum showing edema, superficial ulcers with bluish-red hue with less distensibility. One small superficial ulcer was noted in the caecum

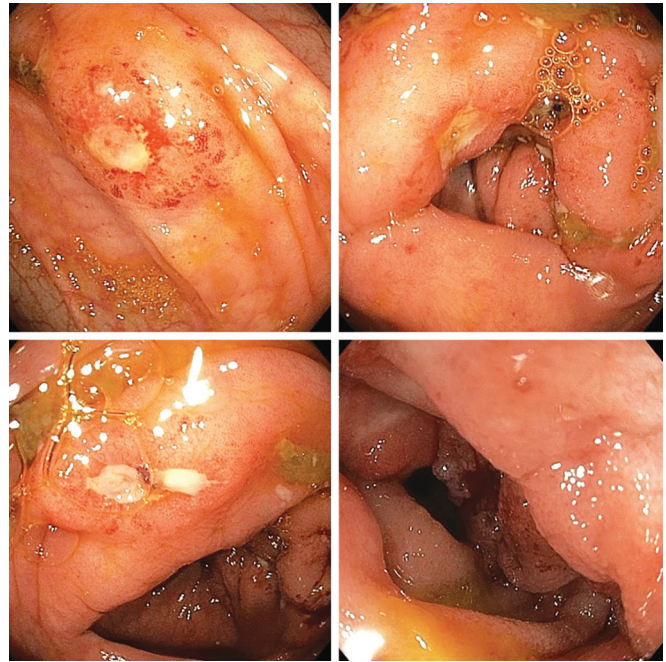


Fig. 5: Ascending colon and caecum showed few superficial ulcers maximum size 5–6 mm with surrounding erythema seen. The ileocecal valve and ileum till 12 cm displayed edematous mucosa with superficial ulcers, ileum was less distensible

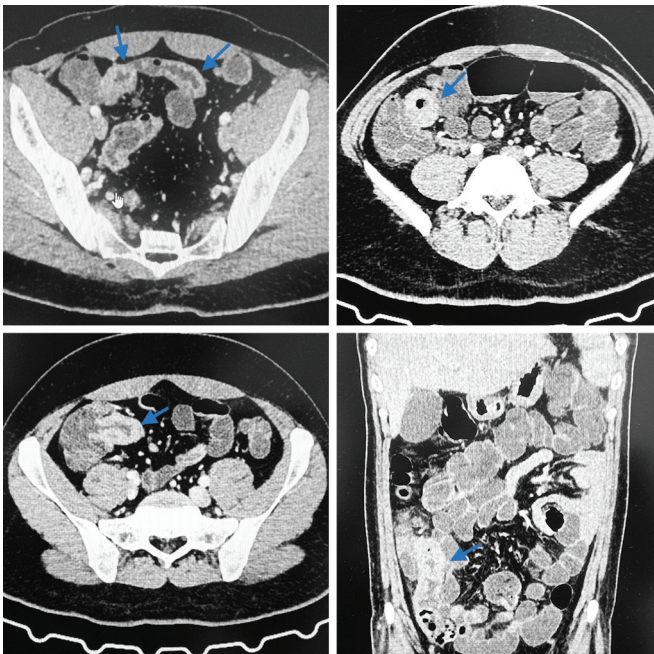


Fig. 4: Computed tomography enterography showing terminal ileal thickening with mural stratification, note made less distensibility with contrast

DISCUSSION

Enteric fever is a common occurrence in tropical countries. Presentation as pyrexia of unknown origin is not uncommon due to the various reasons mentioned in the introduction. The most common cause of referral of patients with enteric fever to a gastroenterologist is gastrointestinal (GI) complications, especially GI bleeding followed by perforation. Gastrointestinal bleeding

as a complication is a rarity nowadays, given the availability of effective antibiotic availability and early hospital contact. Given the easy availability of endoscopy, GI bleed management nowadays is mainly done with endoscopy in contrast to the past where surgery was the treatment. Most descriptions of colonoscopy findings of enteric fever come from the same GI bleed complications setting.⁵⁻⁸ We have described colonoscopy findings in non-GI bleed patients with enteric fever. Given the CT findings and symptomatology often mimic tuberculosis, colonoscopy becomes decisive, and hence one should be aware of the colonoscopy findings.

The current case series is unique in a way that it describes colonoscopy features of enteric fever in patients with no GI symptoms/complications and which mimic clinical tuberculosis. The most common site of GI involvement in enteric fever is the terminal ileum followed by the ascending colon. The involvement shows more edema in mucosa which can be contrasting features to other differential like Crohn's and Koch's disease. Ulcers are relatively smaller in size, and the ileum is less distensible due to edema. The bluish, reddish hue of mucosa appears to be quite characteristic of enteric fever as it was seen in all three of our patients. It is notable that the ileocecal valve is also involved in all three patients. Contrarily, in the literature most common description is punched-out ulcers of variable size in the ileum and ascending colon.⁹⁻¹¹ This difference is probably because nowadays we feel most of the patients are partially treated or already on antibiotics most patients have nondominant GI symptoms. However, given the scarcity of data, generalizing is difficult. The small sample size and variable timing of colonoscopy are a few drawbacks of our study. But the gold standard used for diagnosis i.e., blood culture and complete recovery posttreatment, the rarity of the scenario makes our case series clinically relevant.

In conclusion, partially treated enteric fever may mimic tuberculosis and have characteristic colonoscopy findings.

AUTHOR CONTRIBUTION

Anushka Verma: Formal analysis, investigation, data curation; Amol Dahale: Conceptualization, methodology; Prashant Gopal: Formal analysis, software, validation, writing-review, and editing; Suruchi Mandrekar: Formal analysis, software, validation; Reshu Aggrawal: Formal analysis, software, validation; Nanda Kachare: Formal analysis, software, validation.

ORCID

Anushka Verma  <https://orcid.org/0009-0008-9565-0538>

Amol S Dahale  <https://orcid.org/0000-0002-8545-4751>

Prashant Gopal  <https://orcid.org/0000-0002-6876-9137>

Suruchi Mandrekar  <https://orcid.org/0009-0004-1066-1336>

Reshu Aggrawal  <https://orcid.org/0009-0001-4282-0977>

Nanda Kachare  <https://orcid.org/0000-0001-5712-394X>

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