

Case Report

A case series of gastric outlet obstruction secondary to tuberculosis: New diagnostic and treatment paradigm

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Abstract

Tuberculosis can involve any part of gastrointestinal tract. Gastro-duodenal involvement in tuberculosis is rare. We report four cases of gastric outlet obstruction due to tuberculosis. In all of these patients obstruction was due to extra-luminal compression from lymph-nodes. Clinical presentation was with epigastric pain and recurrent vomiting. Upper GI endoscopy revealed duodenal stricture without any active ulcer or mass. Computed tomography scan showed duodenal thickening along with abdominal lymph nodes. Diagnosis was confirmed with EUS guided FNAC. Antral dilatation using CRE can be used as first treatment option for obstruction in these patients. Patients non responsive to dilatation may require surgery.

Key words

Controlled radial expansion dilatation of benign gastric outlet obstruction, gastric outlet obstruction, gastro-duodenal tuberculosis

Introduction

Gastric outlet obstruction (GOO) refers to obstruction at level of pylorus and first part of duodenum. The most common cause of GOO is peptic ulcer disease either gastric or duodenal ulcer. Malignant obstruction, either luminal (adenocarcinoma or lymphoma) or extra-luminal (gall-bladder or pancreas) are the other common causes. Rarely inflammatory diseases like tuberculosis (TB) or Crohn's disease can cause GOO.^[1]

Gastro-intestinal (GI) TB is seen commonly in Indian setting due to its endemicity. GI TB can involve any part of the intestinal tract.^[2] Gastro-duodenal involvement in TB is not very common with a reported incidence of 0.003–0.21% of all routine autopsies.^[3]


We report four cases of GOO due to TB and discuss salient clinical features, diagnostic modalities and treatment outcome of these patients.

Case Reports

Case 1

A 50-year-old female presented with history of epigastric pain, recurrent vomiting and significant weight loss since 4 months. On physical examination, she had pallor and low body mass index (BMI) and investigations showed anemia and hypoalbuminemia. Upper GI endoscopy showed stricture at D1 and D2 junction without any mucosal lesion. Biopsy taken from stricture did not reveal malignancy or granuloma. Computed tomography (CT) scan of abdomen showed diffuse circumferential thickening of first part of duodenum with grossly distended stomach and enlarged peri-pancreatic lymph nodes. Endoscopic ultrasound (EUS) guided fine needle aspiration (FNA) from peri-pancreatic lymph node [Figure 1] showed caseating granuloma and Ziehl–Neelsen stain for acid fast bacilli (AFB) was positive [Figure 2a and b]. Dilatation of stricture was done using controlled radial expansion (CRE) of 20 mm size [Figure 3], after which the patient was able to take orally. She was started on anti-tuberculous treatment (ATT) with standard weight based Rifampicin (R) Isoniazid (H)

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Pyrazinamide (Z) and Ethambutol (E). After 2 months of intensive phase R and H were given for next 4 months. She showed significant clinical improvement with resolution of vomiting and weight gain. After initial session of dilatation, she underwent two more session of dilatation at 4 weekly intervals Repeat endoscopy after 3 months showed opened up stricture with passage of endoscope in second part of duodenum.

Case 2

This patient was 30-year-old female who presented with epigastric pain, recurrent vomiting and anorexia for 1 month. Clinical examination showed pallor and dehydration. Routine investigations were normal except mild anemia. Upper GI endoscopy showed stricture at D1 and D2 junction with ulceration of the mucosa at apex of the duodenal bulb [Figure 4] and endoscope could not be negotiated in the second part of the duodenum. Biopsy taken from stricture showed features of chronic inflammatory infiltrate without any granuloma. CT

scan of the abdomen showed diffuse circumferential thickening of the first part of the duodenum with distended stomach. There were enlarged peri-pancreatic and preportal lymph nodes. EUS guided FNA from peri-pancreatic lymph node showed epithelioid granuloma with caseous necrosis. To relieve obstruction she underwent antral dilatation with CRE balloon up to 20 mm. After first session of dilatation her oral intake was inadequate, so option of surgery and naso-jejunal (NJ) tube placement was discussed. NJ tube was placed for enteral feeding as well as for ATT. Total 4 sessions of CRE dilatation were done at 4 weekly intervals, and NJ tube was removed after 6 weeks after second session when she was able to take orally. Four drugs ATT was started initially for 2 months and two drugs were continued for next 4 months. Repeat upper GI endoscopy done after 3 months of treatment showed resolution of mucosal ulceration, D1 was deformed, but there was no obstruction.

Case 3

This patient was 18-year-old male with recurrent nonbilious vomiting for 2 months. Physical examination and routine investigations were normal. Upper GI endoscopy was suggestive of stricture at D1 and D2 junction, and contrast-enhanced CT scan of the abdomen suggested diffuse circumferential thickening of the first and second part of duodenum with distended stomach and enlarged perigastric and retroperitoneal



Figure 1: Endoscopic ultrasound showing homogenous, round peri-portal lymph node with fine needle aspiration needle *in situ*

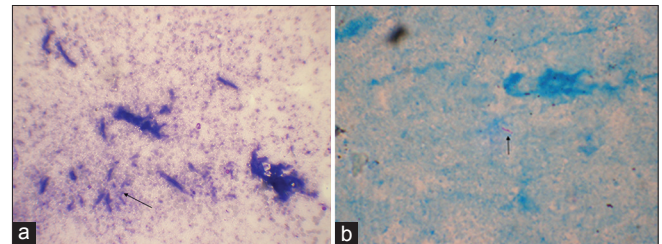


Figure 2: (a) Endoscopic ultrasound guided fine needle aspiration smear from peri-pancreatic lymph node showing caseous Granuloma caseating granulomas to caseous necrosis (May-Grünwald-Giemsa stain ×200). (b) Acid fast bacilli demonstrated on ziehl neelsen stain on same smear (×1000)

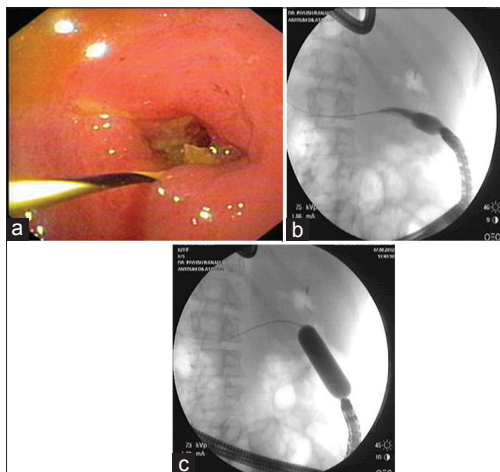


Figure 3: Steps of controlled radial expansion (CRE) dilatation (a) Guidewire being passed beyond stricture at D1-D2 junction (b) Fluoroscopic view of partially inflated CRE balloon (c) Fluoroscopic view of CRE balloon showing complete disappearance of waist indicating adequate stricture dilatation

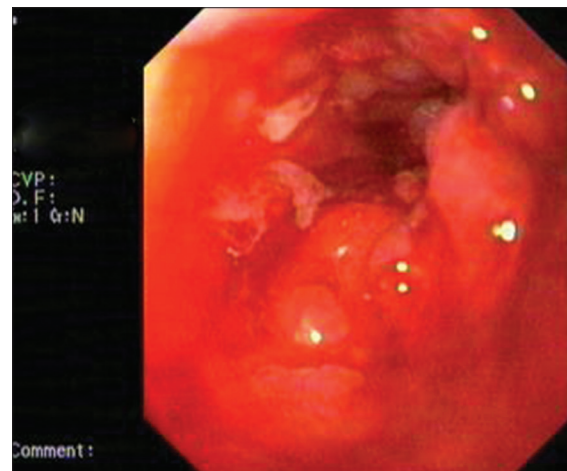


Figure 4: Endoscopic view of stricture at D1-D2 junction showing stricture with mucosal erosions and nodularity

lymph node. EUS guided FNA from perigastric lymph node [Figure 5] was done, which showed caseating granuloma. ATT was started, and the option of CRE dilatation was given for which he was unwilling. He underwent gastro-jejunostomy with feeding jejunostomy. Intra-operative frozen section from involved lymph node was consistent with TB. Postoperatively, he recovered well and ATT was continued for 6 months.

Case 4

This 44-year-old male presented with recurrent vomiting for 2 years. He was evaluated outside and found to have obstruction at D1-D2 junction. He underwent multiple sessions (six) of CRE dilatation but his symptom persisted. He presented to us with complaints of significant weight loss, progressive constipation, and intermittent vomiting. Clinical examination showed low BMI (19.6 kg/m²), pedal edema and anemia. Investigations revealed anemia and hypoalbumenia. CT abdomen revealed colonic thickening and multiple enlarged periportal and peripancreatic lymph nodes. Upper GI endoscopy showed nonnegotiable stricture at D1 and D2 junction. Colonoscopy was done which revealed stricture at hepatic flexure [Figure 6], biopsy showed noncaseating

granuloma with presence of epithelioid cells, Langhans giant cell. EUS guided FNA from peri-pancreatic lymph node showed epithelioid granuloma [Figure 7] and AFB was negative. Due to failure of prior endotherapy and additional colonic stricture, he underwent exploratory laparotomy with right hemicolectomy with ileo-transverse anastomosis and gastro-jejunostomy with feeding jejunostomy. He was started on ATT and is completely symptom free at 5 months follow up.

Table 1 shows a summary of salient clinical and laboratory investigations of four cases.

Discussion

According to World Health Organization (WHO), 3–4 million new cases of TB occur in India every year. Abdominal TB comprises 2–5% of all cases of TB. Commonest site for abdominal TB is ileo-caecal region, and gastro-duodenal involvement is uncommon.^[4]

Pathogenesis of gastro-duodenal TB may either be due to hematogenous spread or direct extension into serosa from



Figure 5: Endoscopic ultrasound showing homogenous, round peri-gastric lymph node with fine needle aspiration needle in situ

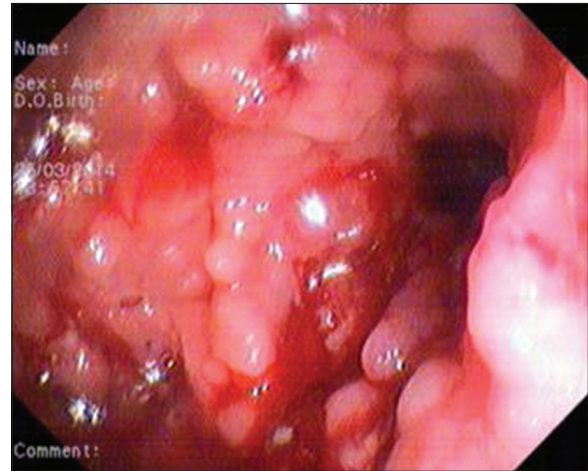


Figure 6: Colonoscopic view of stricture at hepatic flexure with nodularity of mucosa

Table 1: Salient clinical features and diagnostic findings of all cases

	Case 1	Case 2	Case 3	Case 4
Age/Sex	50/F	30/F	18/M	44/M
Manifestation of GOO	Yes	Yes	Yes	Yes
Fever	No	No	No	No
Pain abdomen	Yes	Yes	No	No
Weight loss	Yes	No	No	Yes
Duration of symptom (months)	4	1	1	24
Endoscopy	D1-D2 stricture No mucosal involvement	D1-D2 stricture Mucosal lesions in D1	D1-D2 stricture No mucosal involvement	D1-D2 stricture No mucosal involvement
CT scan	Peri-pancreatic lymph nodes	Peri-pancreatic and Peri-portal lymph nodes	Retroperitoneal and Perigastric lymph nodes	Periportal and peripancreatic Lymph nodes
EUS-FNAC	Caseous necrosis Scant AFB +	Caseous necrosis AFB -	Caseous necrosis AFB -	Epithelioid granuloma AFB -
Treatment	CRE dilatation	CRE dilatation and NJ tube	Gastro-jejunostomy	Gastro-jejunostomy and right hemicolectomy

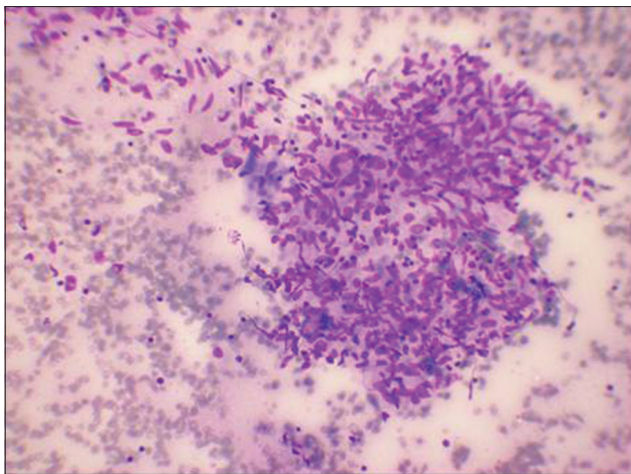


Figure 7: Endoscopic ultrasound guided fine needle aspiration smear from peri-pancreatic lymph node showing granulomatous lymphadenitis with presence of epithelioid cell granuloma (May-Grünwald-Giemsa stain $\times 400$)

nearby lymph nodes. GI involvement due to AFB in sputum in patients with pulmonary TB was reported in earlier literature and is largely unknown now.^[2]

Out of four patients in our series only one had mucosal lesion on endoscopy. All patients had involvement of lymph nodes in proximity to antrum and the first part of the duodenum. Peri-portal, peri-duodenal and peri-pancreatic the lymph nodes are present around distal stomach and proximal duodenum. GOO results due to compression from these lymph nodes.

Most common clinical feature of gastro-duodenal TB is GOO. Vomiting (60.8%) and epigastric pain (56.5%) were the most common presenting symptoms in earlier reported series.^[5] Other less common symptoms are weight loss, upper GI bleeding and fever. The mean age at presentation in this series was 34.4 years with the duration of symptoms varying from 2 day to 15 years.^[5] In our series, all patients presented with to persistent vomiting and duration of symptom ranged from 1 month to 24 months. Fever was seen in only one patient in our series, and none had GI bleeding.

Site of obstruction was D1-D2 junction in all the patients, and the source of obstruction was extrinsic compression due to lymph-nodes. Mucosal involvement was seen in only one patient in our series.

Endoscopic mucosal biopsy is usually noncontributory, because tubercular granulomas are located in submucosa.^[6] Gastro-duodenal TB is paucibacillary disease and microbiologic proof in the form of AFB has been reported in 4–6% cases only.^[7] In our series one, patient with had scant AFB positivity in EUS guided FNA cytology (FNAC) from lymph node.

Computed tomography scan does not have any specific characteristic features. It demonstrates various lymph node groups adequately.

Endoscopic ultrasound is a very helpful tool for diagnosis in these patients. In our series, EUS guided FNAC was done, and granuloma with or without caseous necrosis was seen in all. AFB was positive in only one case in with a scant number of bacilli seen. The lymph node groups responsible for obstruction are easily accessible to EUS guide FNAC.

Two aspects need to be addressed in treatment:

- Anti-tubercular medications
- Relief from obstruction.

Anti-tuberculous treatment should be given according to standard WHO guideline. There is no specific guideline for prolonging ATT beyond 6 months. Resolution of obstruction with medical therapy only can be achieved when there is partial obstruction. In our series, all patients had complete obstruction, therefore, requiring some intervention for relief of obstruction.

Prior to availability of endoscopic tools for dilatation, surgery (gastro-jejunostomy) was the only available option for treatment. Endoscopic dilatation using CRE balloon has emerged a safe and effective method for treatment of benign or malignant obstruction in GI tract.^[8] In our series, we offered CRE dilatation to three patients (except one with additional colonic stricture) after explaining the need of multiple sessions of dilatation and risk of perforation. One patient did not agree for multiple sessions of dilatation and underwent gastrojejunostomy. Both the patients who underwent the dilation with CRE ballon dilatation responded to treatment. The number sessions required was three and four in these patients. One patient in addition required NJ placement for maintenance of enteral nutrition.

The results of endoscopic CRE balloon dilatation for GOO due to peptic stricture have been variable. Immediate relief with CRE balloon dilatation has been universally found in most studies, but the long-term response has varied from 16%^[9] to 100%.^[10] In our experience, one patient had immediate relief from vomiting while the other one required 6 weeks time for the resumption of adequate oral intake. Subsequently both these patients have remained symptom-free for more than 6 months.

Thus, CRE dilatation is a useful modality for the relief from the obstruction in these patients. Placement of NJ tube can be a useful adjunct for treatment in the period where effect of ATT and dilatation may take 6–8 weeks. Surgery can be considered in patients who are refractory to CRE dilatation or when there is a lack of facilities of CRE dilatation.

Conclusions

High index of suspicion is required to diagnose gastro-duodenal TB. It should be considered in young adults with features of GOO, normal mucosa on endoscopy and no obstruction or infiltration from the adjacent organ on imaging. The mechanism of obstruction is compression from adjacent lymph nodes. CT scan of the abdomen is the initial investigation

and EUS guided FNA is highly sensitive and specific for establishing histo-cytological diagnosis. CRE dilatation can be considered as initial treatment of choice in these patients. NJ tube can be placed for maintenance of nutrition in patients who do not have immediate relief. Surgery can be considered in patients who do not respond to CRE dilatation.

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