CASE REPORT

Gastric Linitis Plastica and role of endoscopic ultrasound: An under-recognised diagnostic modality

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Abstract

Gastric linitis plastica is an aggressive malignancy with poor prognosis. Timely diagnosis is important for effective management. However, the conventional endoscopic biopsies are often inconclusive leading to delay in diagnosis and subsequent management. We present a case of a 55-year old female with high suspicion of gastric linitis plastica on gastroscopy with repeated negative endoscopic biopsies. She underwent an endoscopic ultrasound fine needle aspiration (EUS-FNA) at our center with establishment of diagnosis of gastric malignancy. There are no established guidelines about the role of EUS-FNA as a sequential diagnostic modality for this tumour. However, EUS-FNA is a highly sensitive modality to establish diagnosis in challenging cases where routine endoscopy remains inconclusive.

Keywords: Gastric linitis plastica, Endoscopic ultrasound, Fine needle aspiration.

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Introduction

Gastric linitis plastica (GLP) is an aggressive cancer accounting for 7-10% of primary gastric malignancies. It is an intramural infiltrative adenocarcinoma which causes gastric wall thickening and stiffening.[1,2] Superficial biopsies obtained during esophagogastroduodenoscopy may not establish the underlying diagnosis. Endoscopic Ultrasound (EUS) is a reliable entity for diagnosing and staging certain gastrointestinal malignancies but the data about EUS guided sampling of infiltrating diseases is meagre.[3] This data mainly comes from a few retrospective studies and individual case reports across the globe.[1,4-8]

Diagnosing GLP is challenging especially in a low middle income country such as Pakistan, with limitation of resources and professional or technical competencies. Here, we present a case of gastric malignancy diagnosed with EUS-FNA.

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Case Report

The case is being reported with the consent of the guardian of the patient. A 55-year old woman attended an out-patient department of her local hospital in August, 2020 with complaints of nausea, early satiety and abdominal fullness for the last 4-5 months. She lost 20 kg weight over this time but denied any history of haematemesis, melena, dysphagia, dyspepsia, vomiting or diarrhoea. She had a background of hypertension and Rheumatoid arthritis. She was taking antihypertensive medications along with steroids and leflunomide for RA. There was no family history of any gastrointestinal cancer.

She was underweight with a BMI of 14.58. Abdominal examination was essentially unremarkable. Her lab investigations showed Haemoglobin 11.72 g/dL (range 12.0-15.0 g/dL), WBC 5.43×10^3/uL (4.0-10.0), Platelet 321.2×10^3/u/L (150–450), MCV 79.1 fL (76–95), PT 16.0 seconds (12.0-16.5), INR 1.14 (0.7-1.5), total bilirubin 0.8 mg/dl (0.9-1.9), Alanine aminotransferase(ALT)17 U/L (<63),Aspartate aminotransferase(AST) 18 U/L (<37), Alkaline phosphatase(ALP) 80 U/L (50-136) and Serum Albumin 3.5 g/dL (3.5-5.0). Her renal function tests, glycosylated haemoglobin and lipid profile were within normal limits. An upper GI endoscopy showed normal oesophagus, thickened gastric folds with large nodular configuration in the fundus. Duodenum was normal. There was high suspicion of infiltrative gastric malignancy. Multiple gastric biopsies were obtained showing benign epithelium, reactive gastropathy with oedematous mucosa and mild chronic nonspecific gastritis.

Computed tomography (CT) scan of chest, abdomen and pelvis revealed multiple metastatic deposits in lungs with mixed osseous lesions in right 4th rib posteriorly. Abdominal organs were reported normal with no mass lesion or any abdominal lymphadenopathy except thickening of gastric walls (Figure-1 A, B, C, D). She underwent a repeat gastroscopy and biopsies in September, 2020 showing mild chronic superficial gastritis with no evidence of malignancy.

In view of diagnostic uncertainty, the patient was then referred to our Center (Pakistan Kidney and Liver Institute and Research Center, Lahore) for endoscopic ultrasound and fine needle aspiration (EUS-FNA) to establish the

diagnosis. EUS-FNA was done on 15th October, 2020. The EUS revealed marked thickening of stomach walls without any mass lesion or abdominal lymphadenopathy (Figure-2 and 3). Fine needle aspiration (FNA) was done with 22G EZ Shot 2 (Olympus Medical) needle. Adequate samples were obtained during three passes. Cytology of FNA samples

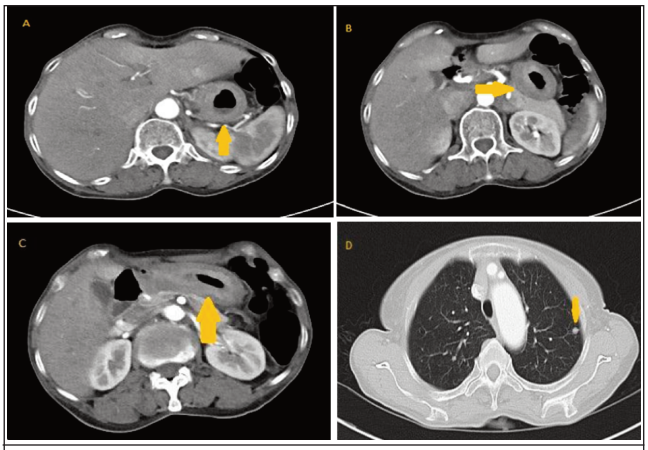

Figure-1: (A, B, C) Arterial phase CT abdomen showing gastric wall thickening (arrow). (D) CT chest showing metastatic pulmonary nodule (arrow).

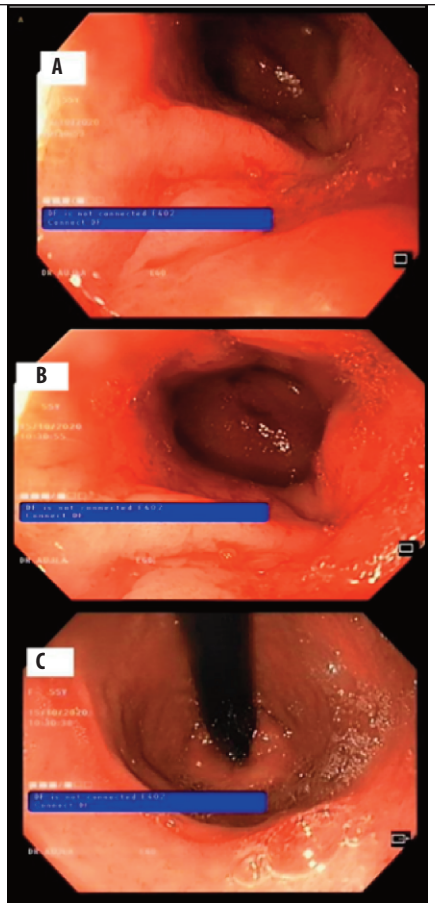

Figure-2: (A, B) Upper GI endoscopy showing narrowed stomach with thick gastric folds. (C) Gastric fundus is deformed and has become tube like.

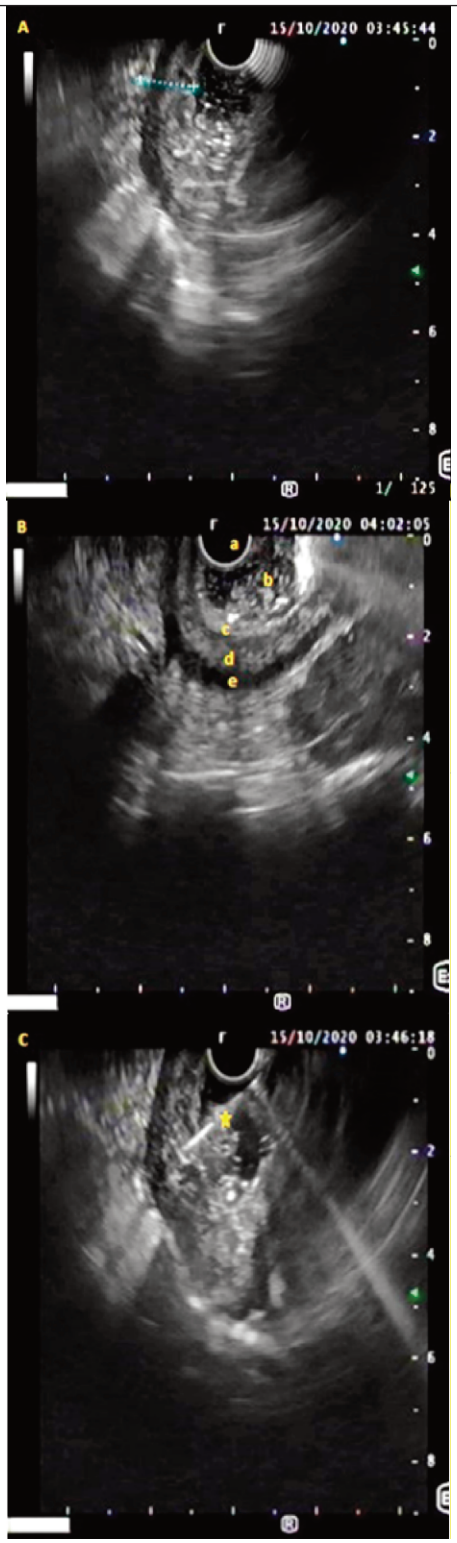

Figure-3: (A) Endoscopic ultrasound (EUS) showing thickened gastric wall (12.8mm). (B) EUS showing probe (a), water filled in stomach (b), mucosa (c), submucosa (d) and muscularis propria (e). (C) Fine needle aspiration is being done with 22G EZ Shot 2 Olympus Medical needle (*).

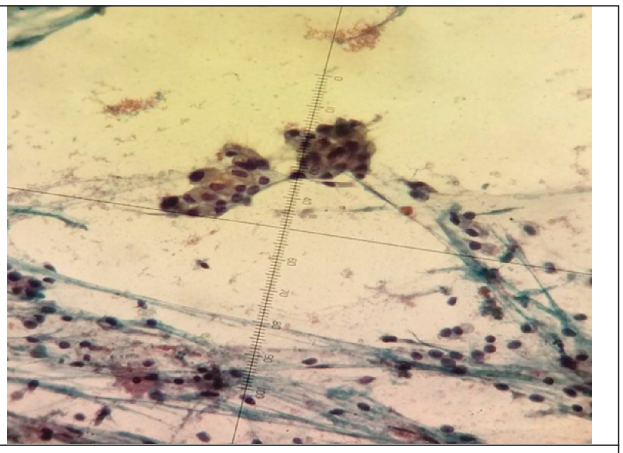

Figure-4: Cytology PAP stain × 400 showing clusters of cells with abundant vacuolated cytoplasm and eccentric nuclei (Signet ring cells).

revealed groups and sheets of epithelial cells with scattered columnar cells and bare nuclei in the background. There were few scattered cells with vacuolated cytoplasm and eccentric nuclei (Signet ring morphology). A diagnosis of poorly differentiated adenocarcinoma with signet ring cells morphology was established (Figure-4). Establishment of the definitive diagnosis was delayed due to non-availability of EUS at the primary center. Patient was subsequently referred to an oncologist for consideration of chemotherapy.

Discussion

GLP is a type of gastric malignancy which diffusely involves the stomach. The tumour tissue originates from the submucosal layer and infiltrates gastric wall which results in reactive fibrosis. Gastric folds are thickened and hardened without marked elevation or ulcerations. Endoscopic characteristics of GLP includes poor distension of the gastric walls and morphological changes of giant, swollen, straight, furrowed and crossed folds.[2] The differential diagnoses include gastric lymphoma, diffuse metastasis, amyloidosis, gastric sarcoidosis, Ménétrier disease, gastroduodenal Crohn's disease and corrosive gastritis. Biopsies are an integral part of establishing the definitive diagnosis.

As GLP is an infiltrative gastric malignancy, superficial biopsies with conventional esophagogastroduodenoscopy can easily miss the diagnosis. This is because of tumour cells migration throughout the submucosa without severely affecting the mucosal lining of the stomach.[3-5] There are some studies showing the rate of missed biopsies as high as 30 to 55%.[6,7] This can cause delay in diagnosis and treatment with implications on prognosis. It also has financial and psychological impacts. In our case report, the patient could not be diagnosed on the first two biopsies which is very similar to some of these studies.[3-5] Shan et al. reported in his study on 55 chinese patients,out of which 41 were diagnosed by second and 12 by third endoscopic biopsies Two patients were diagnosed by surgical biopsy.[7] Similarly, our patient was diagnosed on a third biopsy.

This case highlights the importance of EUS-FNA to ascertain the diagnosis in these challenging patients. It is 64-92% accurate for T staging and 50-90% for N staging.[1] EUS features include diffuse thickening of involved gastric wall in different layers.[2] The diagnostic yield of EUS-FNA in cases of gastric wall thickening is almost 60%.[9]

Conclusion

EUS-FNA can be done in the same setting at the time of initial EGD which will be cost effective in promptly establishing the diagnosis and further management of the patient with Gastric linitis plastica. This was proved in the presented case.

Conflict of interest: None.

Disclaimer: None.

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