

## Case Report

# Light-chain amyloidosis (AL amyloidosis) presenting as gastrointestinal bleeding

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### Case presentation

A 51 year old male was admitted with nausea, vomiting and loss of weight (10 kg) for 2 months and two episodes of mild haematemesis. He had no history of liver disease and had not used non-steroidal anti-inflammatory drugs (NSAIDs). Physical examination revealed normal vital signs, mild epigastric tenderness, moderate hepatosplenomegaly, ascites and mild ankle oedema. There were no macroglossia or peripheral stigmata of chronic liver cell disease.

Initial investigations revealed a normal full blood count, normal renal function tests and an elevated erythrocyte sedimentation rate (65mm/1<sup>st</sup> hour). Blood picture showed normocytic normochromic red cells with moderate rouleaux formation. Urinalysis showed significant proteinuria with a bland sediment. In liver biochemistry, alkaline phosphatase (751 IU/L) and gamma GT (355 U/L) were high with normal transaminases. Serum albumin (2.7 g/dL) and total protein (5.2 g/L) were low.

Oesophagogastroduodenoscopy (OGD) revealed an unhealthy oedematous mucosa with erosions and exposed blood vessels in the stomach (Figure: 1a) & duodenum (Figure: 1b).

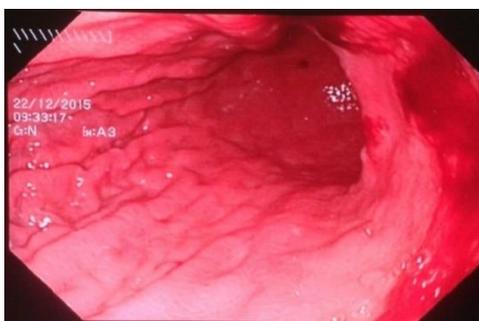
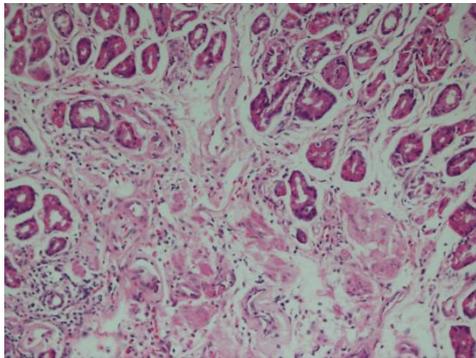


Figure: 1a : Gastric mucosa

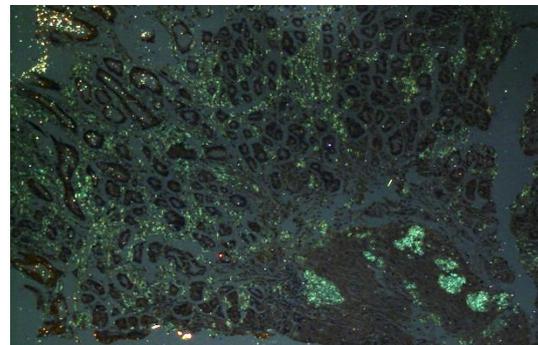


Figure: 1b : Duodenal mucosa

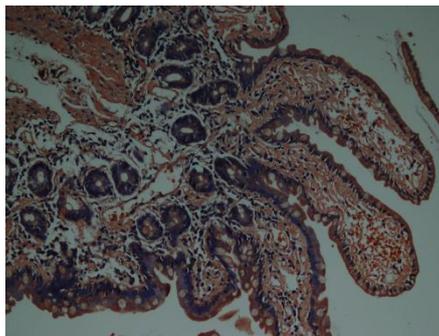
Gastric and duodenal mucosal biopsies showed normal glandular architecture with amorphous eosinophilic material in lamina propria staining positively for amyloid. (Figure: 2a - 2d)



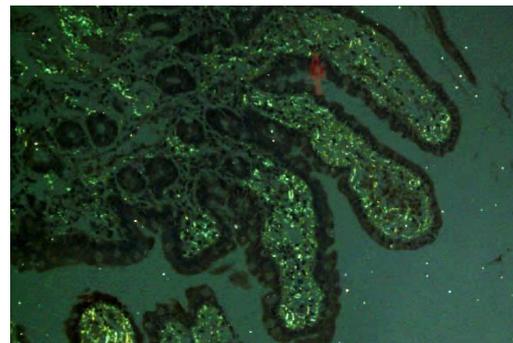
**Figure: 2a** Gastric mucosa showing amorphous eosinophilic material in lamina propria (H&E stain)



**Figure: 2b** : Apple green birefringence of amyloid deposits in gastric mucosa (Congo red viewed under polarized light)



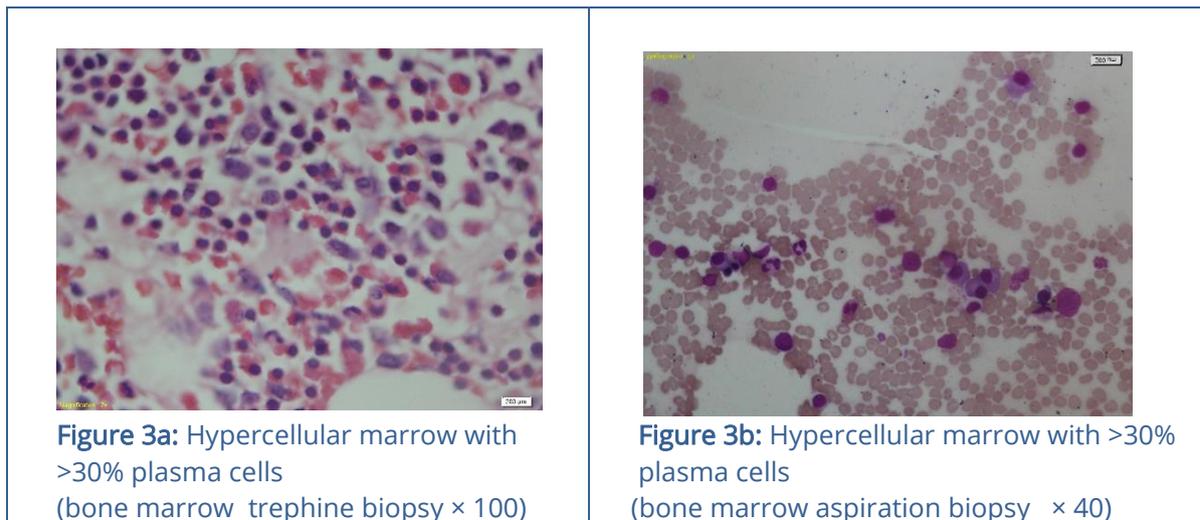
**Figure: 2c:** Duodenal mucosa showing salmon pink deposits of amyloid (Congo red stain)



**Figure: 2d** : Apple green birefringence of amyloid deposits in duodenal mucosa (Congo red viewed under polarized light)

Abdominal contrast-enhanced CT scan revealed an irregularly thickened wall in the distal lesser curvature and antrum of the stomach suggestive of a gastric carcinoma confined to the stomach.

Proteinuria and deranged liver function tests were further investigated. Significant amyloid deposition was found in renal and liver biopsies. 2D echocardiography revealed asymmetrical hypertrophy of the interventricular septum and left ventricular free wall with sparkling appearance suggestive of amyloid deposition. Bone marrow aspiration (Figure: 3a) and biopsy (Figure: 3b) revealed hyper cellular marrow with more than 30% plasma cells which was confirmed by CD 138 positivity in immunohistochemistry.



Urine for Bence-Jones protein was positive. A monoclonal band was detected in serum protein electrophoresis and immunotyping confirmed it as IgG and lambda chains. Serum beta 2 microglobulin was high 5600 micrograms/L (normal 0 – 3000 micrograms/L).

We also looked for the presence of “end-organ” damage due to his plasma cell disorder. However he did not have evidence of classical “CRAB” features of myeloma (elevated Calcium, Renal failure, Anaemia, lytic Bone lesions visible on x-ray) We were unable to do the quantification of serum free light chains and MRI, CT or PET-CT to detect lytic bone lesions due to limited resources, which are now considered as myeloma defining events even in the absence of classical CRAB features [1]. Therefore, his diagnosis was considered as smoldering multiple myeloma causing AL amyloidosis.

He was supported with intravenous human albumin, diuretics, proton pump inhibitors, anti-emetics and therapeutic aspirations of pleural and peritoneal fluids. As for definitive treatment chemotherapy with melphalan dexamethasone (M-Dex) regimen was planned. The patient’s condition gradually deteriorated with massive pleural effusions, lower respiratory tract and urinary tract infections. Hypoglycaemia (55mg/dl), with hyponatraemia (130mmol/l) and elevated potassium level (5.4 mmol/l) were detected and managed as for hypoadrenalism. However patient rapidly deteriorated and succumbed to septic shock. Amyloidosis of adrenal glands was not proven pathologically as pathological postmortem was not consented.

## Discussion

Amyloidosis results from a sequence of changes in protein folding that leads to the deposition of insoluble amyloid fibrils in extra cellular spaces of organs and tissues. AL (Immunoglobulinic or primary) amyloidosis, in which fibrils are made up of a monoclonal immunoglobulin light chain, is the most common and the most severe form [2].

As a less common cause of GI haemorrhage, high index of suspicion is needed to diagnose amyloidosis of the GI tract. Here we report a case of AL amyloidosis due to smoldering multiple myeloma presenting as GI haemorrhage. Amyloid deposition in the gastrointestinal (GI) tract can manifest as macroglossia, GI bleeding, abdominal pain,

impaired intestinal transit (possibly enhanced by autonomic neuropathy), malabsorption, perforation, acute intestinal obstruction or hepatic injury [3]. GI bleeding was the second most frequent symptom of amyloidosis (36%), after weight loss (45%), and closely followed by heartburn (33%) [4]. Congo red stains of gastric biopsies are recommended for monoclonal gammopathy patients with unexplained weight loss, GI bleeding, abdominal pain, or early satiety [4]. The endoscopic appearance of gastric amyloidosis can closely resemble that of gastric malignancy. Amyloidosis can appear as submucosal tumors, polyps, antral narrowing, thickened irregular gastric folds or loss of rugal folds. In a case series of 37 cases of GI amyloidosis, the relative frequency of amyloid deposition was 100% in the duodenum, 95% in the stomach, and 91% in the colorectum [5].

The treatment of GI tract amyloidosis in plasma cell disorder patients should be individualized to support the affected organs and to control the plasma cell disorder. In patients with localized amyloidosis of the GI tract, thorough resection of the foci and their circumambient lymph nodes is probably a preferable therapeutic modality. But in advanced involvement of the GI tract, resection may not be possible and treatment of the underlying plasma cell disorder is the mainstay of the management.

In conclusion, AL amyloidosis is a systemic disease which may rarely present as GI haemorrhage. Congo red staining for gastric mucosal biopsies should be considered for any patient with haematemesis associated with unexplained weight loss, proteinuria, renal failure or history of monoclonal gammopathy.

## References

1. Rajkumar, S Vincent et al., International Myeloma Working Group updated criteria for the diagnosis of multiple myeloma. *The Lancet Oncology*. 2014; 15:12: e538 - e548.
2. WHO-IUIS Nomenclature Sub-Committee, Nomenclature of amyloid and amyloidosis. *Bulletin of the World Health Organization*. 1993; 71:105-112
3. S. Petre, I. A. Shah, and N. Gilani, Review article: gastrointestinal amyloidosis: clinical features, diagnosis and therapy. *Alimentary Pharmacology and Therapeutics*. 2008; 27: 1006–1016. <https://doi.org/10.1111/j.1365-2036.2008.03682.x> PMID:18363891
4. A. J. Cowan, M. Skinner, D. C. Seldin et al., Amyloidosis of the gastrointestinal tract: a 13-year, single-center, referral experience. *Haematologica*. 2013; 98:141–146. <https://doi.org/10.3324/haematol.2012.068155> PMID:22733017 PMCID:PMC3533676
5. S. Tada, M. Iida, A. Iwashita et al., Endoscopic and biopsy findings of the upper digestive tract in patients with amyloidosis. *Gastrointestinal Endoscopy*. 1990; 36:10–14. [https://doi.org/10.1016/S0016-5107\(90\)70913-3](https://doi.org/10.1016/S0016-5107(90)70913-3)