

Case Report

Myeloma coexisting with jejunal light chain amyloidosis

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ABSTRACT

Amyloid Light chain (AL) amyloidosis is a rare disease, which is seen in approximately one-tenth of patients with multiple myeloma. We report a 52 years old male, who presented with complaints of anorexia and weight loss. He was diagnosed to have multiple myeloma-international staging score (ISS) Stage 3 and was started on VTD (Bortezomib, Thalidomide, and Dexamethasone) chemotherapy. Within 2 weeks of therapy, he had abdominal symptoms like abdominal pain, loose stools, vomiting and hematochezia. Imaging showed dilated proximal bowel loops with fluid filled contents and prominent vessels in rectum. Emergency surgical exploration revealed thickened proximal jejunum with blood clots in the lumen. Resection of proximal jejunum was done. Histopathological examination of resected specimen was suggestive of AL amyloidosis. Post-surgical resection of jejunum, patient had initial improvement followed by deterioration. He was discharged against medical advice as per relative's request. Hence an index of clinical suspicion of amyloidosis must be present in all Multiple myeloma patients.

Keywords: Jejunal amyloidosis, Myeloma, Hematochezia

INTRODUCTION

Amyloidosis is a rare disease characterized by nonspecific symptoms and signs and it is diagnosed by demonstration of extracellular deposition of an abnormal fibrillary protein, amyloid.¹ There are various types of amyloidosis, depending on the deposited amyloid protein.^{2,3} AL amyloidosis is the most common type, which usually arises in the patients with plasma cell disorders.^{3,4} The amyloid substance, which originates from immunoglobulin light chains produced by myeloma cells, consists of misfolded proteins with a β -pleated sheet structure (AL amyloid).^{5,6} Manifestations depend on the organ involvement, leading to organ dysfunctions such as heart failure, renal insufficiency and peripheral neuropathy.^{5,6}

AL amyloidosis can present in myeloma patients at the time of initial presentation which accounts for approximately 10% to 15% and up to 30% patients have subclinical amyloid deposits.^{7,8} High index of clinical suspicion and treatment at the time of initial presentation may help in control the supply of amyloidogenic light chains, which may reduce the burden of amyloidosis and lead to recovery of the damaged organ function.⁹

CASE REPORT

A 53 years old male, native of Assam who is a known case of hypertension and hypothyroidism presented with complaints of generalised fatigue, anorexia and weight loss of 10 kg in the past 1 month. He also had complaints of abdominal pain for 1-week duration. Clinically he was pale with a BMI of 22.1 (Weight-54 kgs, Height-156 cm).

Laboratory investigations revealed features suspicious of multiple myeloma (i.e. anaemia, significantly elevated ESR, hyperglobulinemia, azotemia and hypercalcemia) (Table 1).

Table 1: Baseline laboratory investigations.

Test parameters	Result	Normal range
Hemoglobin	8 g/dl	11.5 to 16.5 g/dl
Total counts	4360 cells /mm ³	4000 to 11000 cell/mm ³
Differential count	N59, L36, E1, M4	-
ESR	140mm/hr	0 to 20 mm/hr
Serum Urea	122 mg/dl	17 to 49mg/dl
Serum Creatinine	3 mg/dl	0.6 to 1.2mg/dl
Serum Albumin	2.9 g/dl	3.2 to 4.6 g/dl
Serum Globulin	8.5 g/dl	2.0 to 3.5 g/dl
A/G Ratio	0.34	1
Serum Calcium	11.2 mg/dl	8.6 to 10.2 mg/dl
Free Kappa	2557 mg/l	3.30 to 19.40 mg/dl
Free Lambda	6.2 mg/l	5.70 to 26.30 mg/dl
Free Kappa /Lambda ratio	412.42	0.26 to 1.65

Serum protein electrophoresis showed presence of M protein (1.9g/dl). Serum immunotyping (capillary) showed IgG kappa monoclonal gammopathy. Bone marrow aspiration and biopsy confirmed the diagnosis of multiple myeloma with 75% plasma cells [Figure 1].

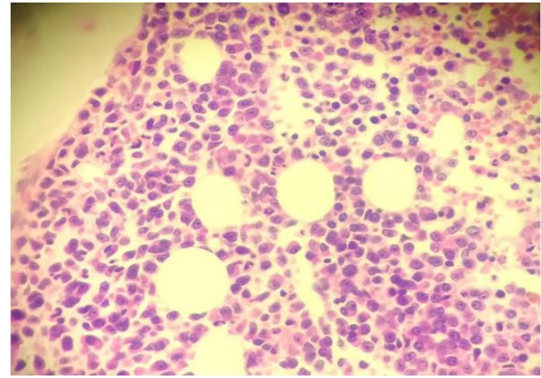


Figure 1: Histopathological examination of bone marrow biopsy specimen showing diffuse plasma cell infiltration.

Due to hypercalcemia he was admitted, started on IV hydration and steroids. Hypercalcemia resolved and he was discharged on VTD regimen (Bortezomib, Thalidomide, and Dexamethasone). Within 2 weeks of chemotherapy, readmission was done as he presented with complaints of abdominal pain, loose stools, vomiting and high-grade fever with productive cough for 3 days. Clinically he had altered sensorium with poor oral intake. In ER, patient was febrile, drowsy and hypotensive. He was intubated, started on inotropes in view of hypotension and broad-spectrum IV antibiotics were started for the suspected infection and he was shifted to ICU. Due to worsening azotemia with oliguria, haemodialysis was initiated. He developed hematochezia with drop in hemoglobin. Clinical examination showed distended and tender abdomen. Urgent CT abdomen with contrast done showed dilated proximal bowel loops, fluid filled with hyperdense contents (most likely hemorrhage) and prominent vessels in rectum in portal-venous phase (Figure 2).

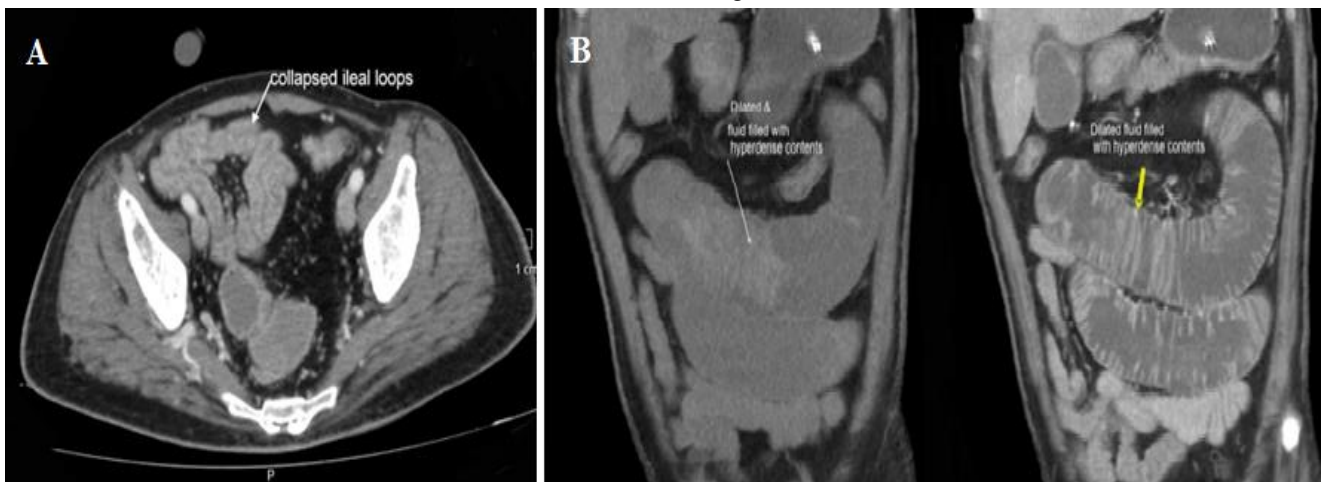


Figure 2: CT of abdomen showing (A) collapsed ileal loops (B) dilated proximal bowel loops filled with hyperdense contents.

Emergency laparotomy was done after blood products transfusion. Intraoperatively, there was evidence of proximal small bowel obstruction. Stomach, duodenum

and proximal jejunum were found to be grossly dilated. This was secondary to a thickened segment of jejunum with significant blood clots within its lumen,

approximately 50 cms distal to the ligament of treitz. Small bowel beyond this thickened segment was collapsed. Jejunal resection (Figure 3) and anastomosis was done and histopathological examination revealed amyloid infiltration of the small bowel (jejunum) (Figure 4, 5). Post operatively his clinical condition improved slightly, but again he worsened, with a drop in hemoglobin, started requiring inotropic support and antibiotics were re-initiated in view of suspected new onset infection. Patient was discharged against medical advice as per relative's request.



Figure 3: Resected jejunal specimen measuring 42 cm in length with attached mesentery measuring 42 x 3 x 1 cm and serosal surface showing grey brown discolouration.

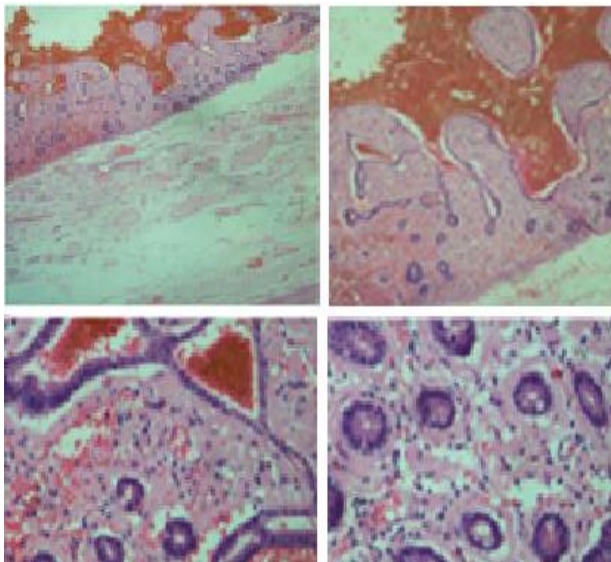


Figure 4: Histopathological examination showing sections of wall of small intestine with the mucosa covered over by erythrocytes and the lamina propria showing extensive pale eosinophilic deposits replacing most of the glands.

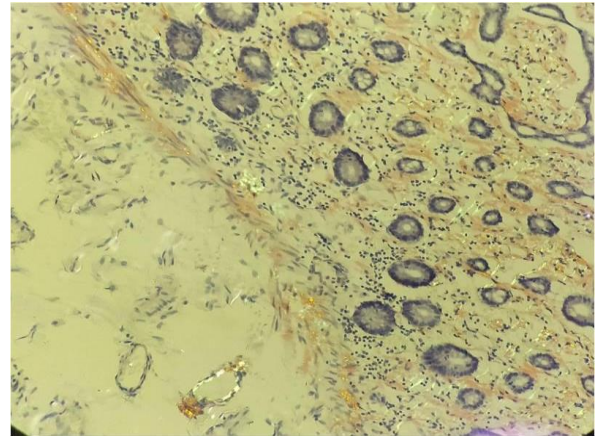


Figure 5: Congo red staining of the resected jejunal specimen showing apple green birefringence under polarized light, which is resistant to pre-treatment by KMNO₄. The amyloid deposits are seen predominantly in the lamina propria and also within the muscle coat and blood vessels.

DISCUSSION

Plasma cell disorders (PCDs) consists of many conditions such as monoclonal gammopathy of undetermined significance (MGUS), smoldering myeloma, myeloma, plasma cell leukemia and AL amyloidosis.¹⁰ AL amyloidosis can often co-exist with any of the PCDs.³⁻⁵

Our patient had significant weight loss and anorexia at the time of initial presentation itself. Treatment was started as soon as the diagnosis was confirmed. But whole-body PET CT scan (as a part of myeloma workup) was not done due to hypercalcemia and azotemia. Other investigations such upper GI endoscopy, colonoscopy or CECT abdomen in view of abdominal pain and significant weight loss might have arisen the suspicion of amyloidosis even earlier.

Although the clinical and endoscopic findings in gastrointestinal amyloidosis can be nonspecific, histopathological patterns of amyloid deposition are diagnostic.¹¹⁻¹³ There are no specific drugs to control bleeding in amyloidosis. However, treating myeloma along with proton pump inhibitor may be helpful in preventing/controlling bleeding. There are no specific treatments required other than myeloma therapy in elderly patients with AL amyloidosis. Bortezomib has antiangiogenic properties, but it takes longer time to control neovascularisation.¹⁴ Surgical resection or embolization are the only option in patients with ongoing bleed.

Amyloidosis should be suspected in all myeloma cases at the time of initial presentation itself. Site of amyloidosis is difficult to predict, however close follow up and looking for non-specific GI complaints including abdominal pain, changes in bowel habits, overt gastrointestinal bleeding and complaints related to altered

motility or symptoms of peripheral neuropathy, heart failure and renal insufficiency should be evaluated at the earliest.^{11,12} Abdominal symptoms can develop due to myeloma therapy also.¹⁵

High dose chemotherapy followed by autologous stem cell transplant provides long term control in patients with myeloma and AL amyloidosis.^{9,16} Newer therapies have a promising role in this condition, but cost is an important issue. With the use of novel agents, elderly patients benefit from treatment.¹⁷

Weekly assessment and laboratory tests in the first month of therapy are important for early identification of complications due to therapy and disease, which will reduce morbidity and mortality.

CONCLUSION

Though AL Amyloidosis is a rare disease, it should be suspected in all myeloma cases at the time of initial presentation itself. GI complaints including abdominal pain, changes in bowel habits, overt gastrointestinal bleeding and complaints related to altered motility or symptoms of peripheral neuropathy, heart failure and renal insufficiency should be evaluated at the earliest in myeloma patients.

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REFERENCES

- Merlini G, Bellotti V. Molecular mechanisms of amyloidosis. *N Engl J Med*. 2003;349(6):583-96.
- Picken MM. The Pathology of Amyloidosis in Classification: A Review. *Acta Haematol*. 2020; 1-13.
- Theis JD, Dasari S, Vrana JA, Mereuta OM, Grogg KL, Gertz MA et al. Proteome Of Amyloidosis: Mayo Clinic Experience In 4139 Cases. *Blood*. 2013;122(21):1900.
- Duhamel S, Mohty D, Magne J, Lavergne D, Bordessoule D, Aboyans V et al. Incidence and Prevalence of Light Chain Amyloidosis: A Population-Based Study. *Blood* 2017;30(1):5577.
- Falk RH, Comenzo RL, Skinner M. The systemic amyloidoses. *N Engl J Med*. 1997;337(13):898-909.
- Wechalekar AD, Gillmore JD, Hawkins PN. Systemic amyloidosis. *Lancet*. 2016;387(10038): 2641-54.
- Kamal WS, Taib T, Noor NM, Jong TJ. Myeloma Associated Primary Systemic Amyloidosis. *Ind J Dermato*. 2016;61(1):124.
- Rajkumar SV, Gertz MA, Kyle RA. Primary systemic amyloidosis with delayed progression to multiple myeloma. *Cancer*. 1998;82:1501-5.
- Guidelines Working Group of UK Myeloma Forum; British Committee for Standards in Haematology, British Society for Haematology. Guidelines on the diagnosis and management of AL amyloidosis. *Br J Haematol*. 2004;125(6):681-700.
- Castillo JJ. Plasma Cell Disorders. *Prim Care*. 2016;43(4):677-91.
- Alahdab F, Saligram S. Gastrointestinal amyloidosis and multiple myeloma. *J Gen Intern Med*. 2015; 30(2):261-6.
- Ebert EC, Nagar M. Gastrointestinal manifestations of amyloidosis. *Am J Gastroenterol*. 2008;103:776-87.
- Hokama A, Kishimoto K, Nakamoto M, Kobashigawa C, Hirata T, Kinjo N, et al. Endoscopic and histopathological features of gastrointestinal amyloidosis. *World J Gastrointest Endosc*. 2011;3(8):157.
- Roccaro AM, Hideshima T, Raje N, Kumar S, Ishitsuka K, Yasui H, et al. Bortezomib mediates antiangiogenesis in multiple myeloma via direct and indirect effects on endothelial cells. *Cancer Res*. 2006;66(1):184-91.
- Smith LC, Bertolotti P, Curran K, Jenkins B. IMF Nurse Leadership Board. Gastrointestinal side effects associated with novel therapies in patients with multiple myeloma: consensus statement of the IMF Nurse Leadership Board. *Clin J Oncol Nurs*. 2008;12(3):37-52.
- Bhutani D, Lentzsch S. Diagnosis and management of systemic light chain AL amyloidosis. *Pharmacol Ther*. 2020;107612.
- Sachchithanatham S, Offer M, Venner C, Mahmood SA, Foard D, Rannigan L, et al. Clinical profile and treatment outcome of older (> 75 years) patients with systemic AL amyloidosis. *haemato*. 2015;100(11):1469-76.

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