Systemic AL Amyloidosis from Plasma Cell Neoplasm in Younger Population Presenting with Gastrointestinal Symptoms Primarily

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Introduction

- AL amyloidosis, known previously as primary amyloidosis, is a disorder in which fragments of monoclonal light chains deposit throughout various tissues
- Signs and symptoms include generalized weight loss, nausea, and vomiting, along with more specific systemic signs, such as nephrotic range proteinuria, restrictive cardiomyopathy, hematochezia and abdominal pain
- Diagnosis begins with serum and urine electrophoresis, followed by bone marrow biopsy or fat pad aspiration
- Incidence of amyloidosis increases after the age of 40, with a mean age of 63 years old at diagnosis
- Less than 5% of patients are diagnosed at 40 years or younger

Case Summary

Case presentation

- 32-year-old Indian male presented with abdominal pain and hematochezia of few days duration
- Pain mainly in the left lower quadrant, not associated with nausea or vomiting
- 4-5 kilogram weight loss over the past year
- Shortly before, was seen in the urgent care for bilateral lower extremity edema, urinalysis showed 3+ protein, was diagnosed with nephrotic syndrome, discharged home to follow up with a nephrologist outpatient.

Hospital Course

- On physical examination, abdomen soft, non-tender, non-distended, bilateral 2+ lower extremity
- CT of abdomen and pelvis: 3.5 lobulated mass at the inferior right hepatic border, additional 3.5 cm subtle enhancing area in the posterior left hepatic lobe
- Colonoscopy and endoscopy: biopsy showed amyloidosis in the gastroesophageal junction, gastric, duodenal, terminal ileum, and colonic mucosa
- CT guided renal biopsy of left kidney: kappa light chain associated, AL type amyloidosis
- Bone marrow biopsy of right iliac: kappa type clonal plasma cell population that made up 20-25% of marrow cellularity, consistent with plasma cell neoplasm, amyloid staining of small-sized blood vessels, plasma cell dyscrasia
- Ultrasound-guided liver biopsy: amyloidosis and fibrosis in the liver parenchyma, no malignancy
- 2D echocardiogram: left ventricular hypertrophy with an ejection fraction of 65-70%.
- Nuclear medicine cardiac pyrophosphate scan: equivocal for transthyretin cardiac amyloidosis
- Diagnosed with systemic amyloidosis stage III
- Transferred to another facility to start chemotherapy with cyclophosphamide, bortezomib, and dexamethasone (CyBorD)

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Clinical Images

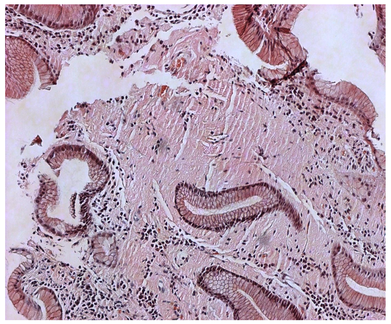

Figure A. Congo red/trichome special non-polarized stain of gastroesophageal junction demonstrating amyloidosis in the cardiac type mucosa

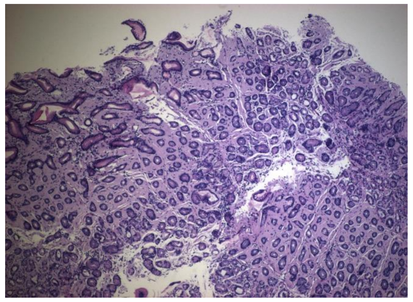

Figure B. Amyloidosis seen in gastric mucosa

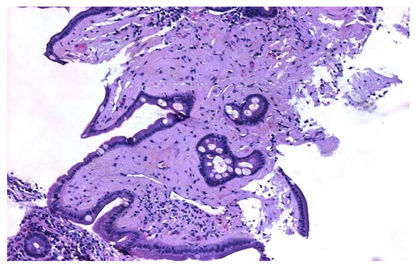

Figure C. Duodenal mucosa lymphocytes, plasma cells, and amyloid deposits

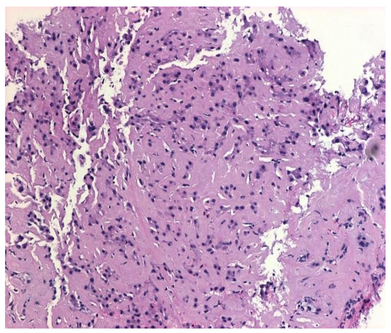

Figure D. Liver biopsy demonstrating sinusoidal expansion by amyloid

Discussion

- AL amyloidosis occurs as a result of deposition of amyloid in tissues
- Amyloid fibrils are composed of insoluble low molecular weight protein subunits, derived from immunoglobulin light chain fragments that undergo conformational changes into antiparallel beta-pleated sheets and aggregate into highly orderly fibrils that interact with extracellular matrix components and propagate aggregation and oligomer formation
- Dangerous B-cell clones produce misfolded light chains that can target every organ, except the brain
- Deposition of amyloid into various tissues causes cellular stress and death, subversion of normal structure, organ dysfunction, and eventually death
- The mean age of diagnosis for AL Amyloidosis is approximately 63 years old, younger patients should not be overlooked
- The prevalence and incidence of AL amyloidosis is higher in males than females
- Poor prognosis, estimated median survival time ranges between 6 months to 3 years
- To make the diagnosis, consider both generalized symptoms, such as weight loss, as well as specific symptoms relating to end organ dysfunction, such as abdominal pain, hematochezia, nephrotic syndrome, and diastolic heart failure
- GI tract involvement less common, can be involved at any level, signs and symptoms include macroglossia, dysphagia, bleeding or malabsorption
- The presence and extent of cardiac dysfunction determines staging and overall prognosis for patients with AL amyloidosis respectively

Conclusion

- While AL amyloidosis is an illness that commonly appears in patient population with an average age of 63 years old, it should not be overlooked in younger patients
- Patient presentation with symptoms, such as nephrotic range proteinuria, cardiac dysfunction, and indolent gastrointestinal problems, such as abdominal pain, intermittent constipation and diarrhea, and hematochezia can be a guide to keep amyloidosis on the differentials

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