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Case Report: An Enigmatic Case of AL Amyloidosis

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ABSTRACT

Primary amyloidosis(AL) is defined by the extracellular deposition of immunoglobulin light chain fibrils in several organs, which eventually causes multiorgan failure. Amyloidosis is very rare disease which is more prevalent in elderly and has poor prognosis. This report details the case of 67 year old male presented to our hospital with papules around oral cavity and eyes, Macroglossia, dysphagia, restricted joint movement, impaired tongue movement for last 2 years which was later diagnosed as AL Amyloidosis. Patient was treated with bortezomib, cyclophosphamide and dexamethasone.

Keywords: AL Amyloidosis, Dysphagia, Bortezomib, Cyclophosphamide

ABBREVIATIONS

AL: Primary Amyloidosis; ESR: Erythrocyte Sedimentation Rate.

INTRODUCTION

The extracellular deposition of amyloid, a fibrillar substance produced from diverse precursor proteins that self-assemble with highly organised aberrant cross-β-sheet structure, causes the amyloidoses, an uncommon category of illnesses [1]. A plasma cell dyscrasia that results in the production of kappa or lambda monoclonal light chains that are deposited in the body as amyloid fibrils is the cause of primary amyloidosis, also known as AL amyloidosis [2].

Amyloidosis is multisystem disorder which leads to nephrotic syndrome, cardiomyopathy, peripheral neuropathy and rarely presents with extensive skin involvement and myopathy [3].

Prognosis of Amyloidosis varies based on the type, extent of organ involvement, and response to treatment [1]. Here we present the case of 67 year old male presenting with extensive skin involvement, dysphagia, restricted joint and tongue movement which is a rare presentation of primary amyloidosis (AL).

CASE PRESENTATION

A 67 year old man resident of district Tinsukia of the state of Assam, presented to Department of Medicine of our institute with the chief

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complaint of papule around oral cavity and dysphagia for last 2 years. These papules initially started from circumoral area and then progresses to periorbital area (FIG.1). The patient also complains of restricted movement around joint and restricted tongue movement for around 1 year. Movement around wrists and right shoulder joint was significantly impaired. The patient also complained of dyspnea on exertion from last 6 months which has increased gradually over period of 6 months. The patient did not give any history of burning and tingling sensation around skin lesion. There was no history of fever, joint pain, cough, breathing difficulty, pain in abdomen, difficulty in walking, vomiting. There was also no history of Raynaud's phenonmenon, puffiness of face, swelling of feet or ankle.There was no similar history in past or family history. Patient was hypertensive for last 20 years on tablet telmisartan(40mg) and amlodipine(5mg) and also known diabetic for 10 years on oral hypoglycemic agent such as tablet metformin(1g) and glimerpride(2mg). The patient did not give history of any alcohol consumption or smoking in past.

On general examination, the patient was alert, conscious, and well oriented to time, place and person. Examination of skin revealed, amyloid deposits around oral cavity and eyes which were waxy, raised, non-pruritic, painless. Macroglossia was present along with fissures in the tongue (Figure 1). Skin was tight with no purpura, ecchymosis, petechiae. Remaining general examination findings were in significant.

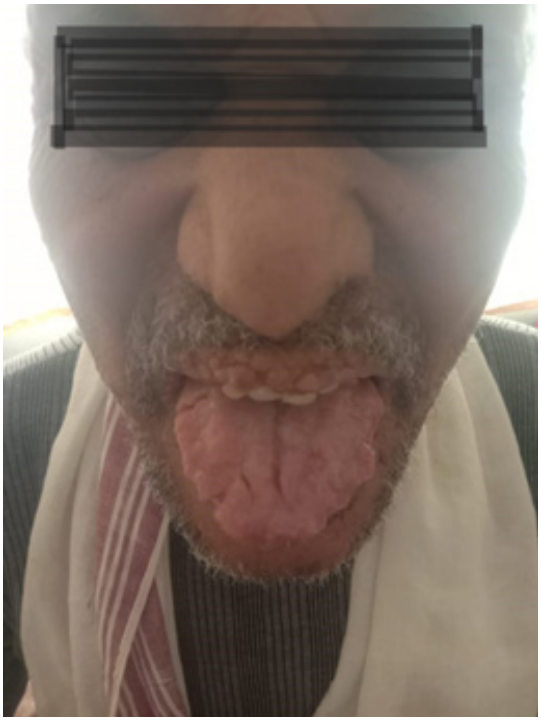

Figure 1. Tongue shows macroglossia and papules around oral cavity.

Laboratory investigation indicated a haemoglobin level of 10.7 g/dl (reference range= 13-18g/dl), a total leucocyte counts of 7,300/cumm (reference range=4000-11000/cumm) and platelet count 1,70,000/cumm (reference range=1,50,000-4,50,000). ESR (Erythrocyte Sedimentation rate) was 60 mmin 1st hour. Rhematoid Arthritis factor was negative. Anti Cyclic Citrullinated Peptide level was <3.5U/ml(Negative:<5.0). Anti nuclear Antibody was also negative Serum urea was 20 mg/dl (reference range = 10-50) and serum creatinine was 0.7 mg/dl (reference range = 0.7-1.2mg/dl). Serum sodium, serum potassium and calcium were within normal limits (Table 1).

Table 1. Investigations

Investigation	Value	Interpretation
Hemoglobin(g/dl)	10.7g/dl	13-18g/dl
Total Leucocyte Count	7300/cumm	4000-11000/cumm
ESR	60mm	
Rheumatoid Factor	<8	Normal
AntiCCP	<3.5U/ml	Negative
S.Creatinine	0.7mg/dl	0.7-1.2mg/dl
Bone Marrow Aspirate	55% Plasma cells	
TSH	2.4 (microU/mL)	Normal
Skin Biopsy		Amyloid deposition

Skin biopsy of lesion was done which show area of epidermal thinning and acanthosis withy elongation of rete ridges which also showed apple green birefringence on polarized microscopy suggestive of amyloid deposition.2D ECHO revealed speckled appearance of interventricular septum, apical strain more than basal (cherry on top appearance), left ventricular ejection fraction of 48% (Figure 2).

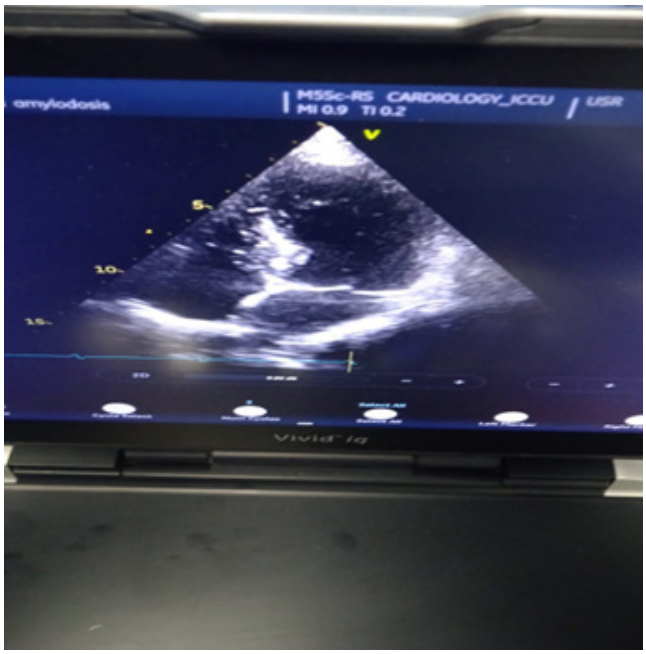

Figure 2. Cherry on top appearance and restrictive cardiomyopathy in 2D ECHO.

Urine analysis was suggestive of significant proteinuria so to quantify proteinuria 24 hours urine protein was done which was suggestive of nephrotic range proteinuria. Bone marrow was done to prove AL Amyloidosis which revealed 55% of plasma cell (Figure 3) thus diagnosis of AL Amyloidosis was made with skin, muscle, heart and kidney involvement.

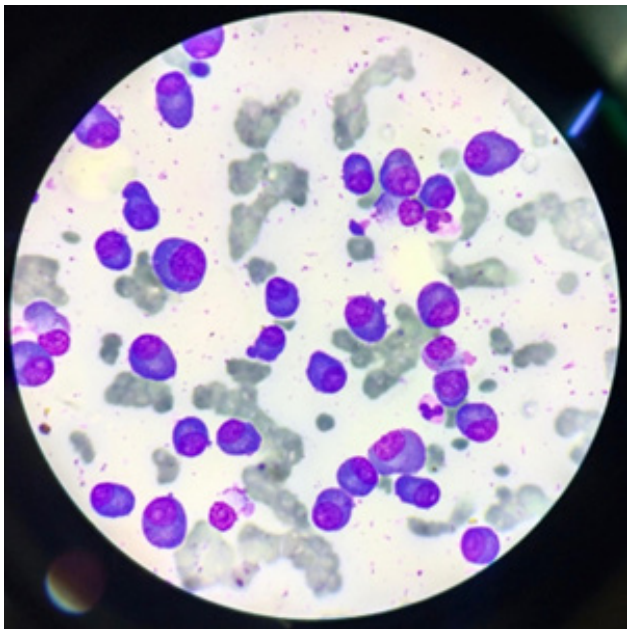

Figure 3. Bone marrow aspirates shows Plasma cells.

Chemotherpy with Inj bortezomib, Tab cyclophosphamide, Tab dexamethasone was started

DISCUSSION

Clinicopathologically, amyloidosis may be classified into two main groups. Two types of amyloidosis are identified: 1) systemic (or generalised) and 2) localised. There are four other classifications for systemic amyloidosis: a) Primary (AL) type, b) Secondary (AA), c) Haemodialysis-associated, and d) Herodofamilial type. There are three more classifications for localised amyloidosis: a) senile cardiac; b) senile cerebral; c) endocrine type; and d) tumour developing (AL) type [4].

Primary amyloidosis is the most prevalent kind of systemic amyloidosis [5], The cause of AL amyloidosis is the deposition of fibrillar protein, which is made up of immunoglobulin's light chain of which the lambda type accounts for 75% of instances [6]. In Western nations, the annual incidence of this uncommon disease has been reported to be 12 cases per million people [7].

A minor gender difference exists in the incidence of primary systemic amyloidosis, males are more affected than females [7]. The condition known as primary systemic amyloidosis primarily affects the elderly; at the time of diagnosis, the average patient age is 65, and 10% of patients are younger than 50 [8].

Skin, peripheral nerves, carpal ligaments, kidney, heart, liver, spleen, and gastrointestinal tract are all impacted by primary systemic amyloidosis [2]. 75% of patients have kidney involvement, 50% have cardiac involvement, 15% have macroglossia, 50% have hepatomegaly, 10% have splenomegaly, and 25% have carpal tunnel syndrome [9].

Fatigue, weight loss, early satiety, nephrotic syndrome features like generalised edoema, congestive heart failure symptoms like dysphagia from macroglossia, angina from amyloid deposits in the coronary arteries, giddiness from prolonged standing, impotence, diarrhoea or constipation from autonomic neuropathy, and dysphagia from pedal edoema could all be present in patients [10].

The diagnosis of AL amyloidosis is supported by protein typing, the presence of a systemic illness, histological evidence of amyloid, and evidence of a monoclonal plasma cell abnormality [11].

a) To diagnose primary systemic amyloidosis (primary AL), the following four requirements must be satisfied [12]: A systemic condition linked to amyloid, such as kidney, liver, heart, gastrointestinal tract, or peripheral nerve dysfunction, must be present.

b) Congo red positive amyloid staining in any tissue (fat aspirate, bone marrow, organ biopsy, etc.).

c) Direct examination of the amyloid (immunohistochemical staining, direct sequencing, etc.) demonstrating that the amyloid is related to light chains; and

d) Evidence of a monoclonal plasma cell proliferative disorder (abnormal free light chain ratio, urine or serum M protein, or clonal plasma cells in the bone.

The treatment for AL amyloidosis involves chemotherapy to eradicate the plasma cells that cause the body's aberrant free

light chain as well as medical optimisation of the affected organs [9].

The standard of care for AL amyloidosis includes regimens like oral melphalan with dexamethasone (MDex) and a risk-adapted strategy involving cyclophosphamide, thalidomide, and dexamethasone (CTDa) [1]. These treatments are linked to hematological responses in 65–75% of patients within 3–4 months of treatment [1].

CONCLUSION

AL amyloidosis is a rare disease in which multisystem involvement is present and eradication of clonal plasma cell in bone marrow is treatment of choice. Early diagnosis and treatment is necessary as AL amyloidosis is associated with poor prognosis and high mortality rate. Early diagnosis and treatment can reduce mortality to some extent.

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AUTHOR CONTRIBUTION

Conceptualization - Y.D, S.K, A.D, A.B; Methodology- Y.D, S.K, S.L.D, B.J. V.S; Validation – S.K, A.D, S.L.D; Formal Analysis- Y.D; Investigation- V.S, B.J, A.B; Writing and original draft preparation- Y.D, Writing review and editing- A.D; Supervision-S.K,A.D,S.L.D

CONFLICT OF INTEREST

None.

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CONSENT FROM PATIENT

Written as well as verbal consent taken.

REFERENCES

1. Wechalekar AD, Gillmore JD, Hawkins PN. (2016). Systemic amyloidosis. Lancet Lond Engl. 387(10038):2641-2654.
2. Rosenzweig M, Landau H. (2011). Light chain (AL) amyloidosis: update on diagnosis and management. J Hematol Oncol. 4:47.
3. Law S, Fontana M, Gillmore JD. (2021). Advances in Diagnosis and Treatment of Cardiac and Renal Amyloidosis. Cardiol Clin. 39(3):389-402.
4. Merlini G, Stone MJ. (2006). Dangerous small B-cell clones. Blood. 108(8):2520-2530.
5. Gertz MA, Comenzo R, Falk RH, Fermand JP, Hazenberg BP, Hawkins PN, et al. (2005). Definition of organ involvement and treatment response in immunoglobulin light chain amyloidosis (AL): a consensus opinion from the 10th International Symposium on Amyloid and Amyloidosis, Tours, France, 18-22 April 2004. Am J Hematol. 79(4):319-328.
6. Koh Y. (2020). AL amyloidosis: advances in diagnosis and management. Blood Res. 55(Suppl):S54-S57.
7. Kumar N, Zhang NJ, Cherepanov D, Romanus D, Hughes M, Faller DV. (2022). Global epidemiology of amyloid light-chain amyloidosis. Orphanet J Rare Dis. 17:278.
8. Desport E, Bridoux F, Sirac C, Delbes S, Bender S, Fernandez B, et al. (2012). Al amyloidosis. Orphanet J Rare Dis. 7:54.
9. Falk RH, Alexander KM, Liao R, Dorbala S. (2016). AL (Light-Chain) Cardiac Amyloidosis: A Review of Diagnosis and Therapy. J Am Coll Cardiol. 68(12):1323-1341.
10. Merlini G, Dispenzieri A, Sanchorawala V, Schönland SO, Palladini G, Hawkins PN, et al. (2018). Systemic immunoglobulin light chain amyloidosis. Nat Rev Dis Primers. 4(1):38.
11. Kumar S, Dispenzieri A, Lacy MQ, Hayman SR, Buadi FK, Colby C, et al. (2012). Revised Prognostic Staging System for Light Chain Amyloidosis Incorporating Cardiac Biomarkers and Serum Free Light Chain Measurements. J Clin Oncol. 30(9):989-995.
12. Rajkumar SV, Dispenzieri A, Kyle RA. (2006). Monoclonal gammopathy of undetermined significance, Waldenström macroglobulinemia, AL amyloidosis, and related plasma cell disorders: diagnosis and treatment. Mayo Clin Proc. 81(5):693-703.