CASE STUDIES

Amyloid arthropathy presenting as symmetrical polyarthritis

Laxmi Patil[1], Jyotsna Oak[2]

[1]Resident, Dept. of Medicine, Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India
[2]Consultant Physician and Rheumatologist, Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India

Abstract

The present case study deals with two cases of symmetrical polyarthritis mimicking rheumatoid arthritis. Autoantibodies and rheumatoid factor were negative in both the cases and subtle clinical findings led to the diagnosis. The former patient was diagnosed with primary amyloidosis-related arthropathy and the latter with multiple myeloma-related amyloid arthropathy.

Keywords: amyloid, polyarthritis

Introduction

Inflammatory polyarthritis is most commonly caused by rheumatoid arthritis (RA) and spondyloarthritides, which include psoriatic arthritis and reactive arthritis. However, in rare cases, the presentation of systemic disorders may mimic the clinical features of inflammatory arthritides.[1]

Amyloid arthropathy resembles inflammatory arthritis with juxta-articular soft tissue swelling, mild periarticular osteoporosis, subchondral cystic lesions and usually well-defined sclerotic margins.[2] Amyloid arthropathy occurs chiefly as a manifestation of beta-2 microglobulin amyloidosis in patients on chronic hemodialysis. Other less common causes could be primary light chain amyloidosis and multiple myeloma.[3,5] We report two cases of amyloid arthropathy, the former case was diagnosed as primary amyloidosis and the latter as multiple myeloma.

Case 1

A 60-year-old female was admitted with a 2-month history of multiple joint pain involving small and large joints. She complained of generalized weakness, decreased appetite, bilateral pitting edema, weak grip, limited sensation in both feet, and difficulty in feeling the ground. She was diagnosed with hypothyroidism a year ago, and chronic deep vein thrombosis in lower limbs and bilateral carpel tunnel syndrome based on nerve conduction studies, prior to visiting our hospital. She had diffuse swelling of both lower limbs and forearms. She had swelling (PIP, DIP (Fig. 1), knees and ankles), tenderness, and decreased movement of wrists, elbows, and shoulders. She had macroglossia, with teeth impression over lateral borders of tongue (Fig. 2) and difficulty in chewing and eating since 1 month. The peripheral nerves were not thickened and there were no ulcers. However, she had reduced sensation to pin prick in lower limb. ANA and rheumatoid factor were negative (Table 1). X-ray of chest was normal, while X-ray of hands showed periarticular osteopenia and soft tissue swelling. Radiological screening of skeleton did not show any lytic lesions. Fat aspiration biopsy was negative for amyloid. The patient's bone marrow examination demonstrated definite increase in plasma cells, but did not satisfy the criteria for multiple myeloma. Based on the clinical evidence and lab findings, the final diagnosis was concluded as primary amyloidosis. She was initially treated with bortezomib, but it was later replaced with lenalidomide and dexamethasone regime due to development of peripheral neuropathy. The arthritis improved significantly after 8 weeks of therapy with reduction in swelling (Fig. 3), tenderness and improvement in mobility.

Case 2

A 67-year-old male was admitted with complaints of multiple joint swelling involving knees, ankles, shoulders, which gradually progressed over 1 year. He had limited mobility, difficulty in performing daily activities, generalized weakness, loss of appetite, and weight loss of 7 kg in 1 year. He had numbness in both hands with inability to hold

Fig. 1: Pre-treatment PIP joint swelling

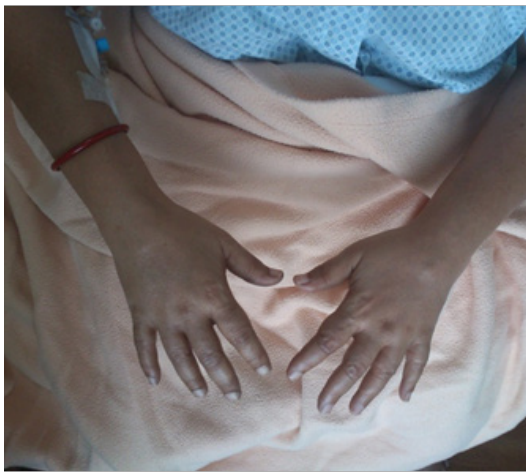


Fig. 2: Macroglossia

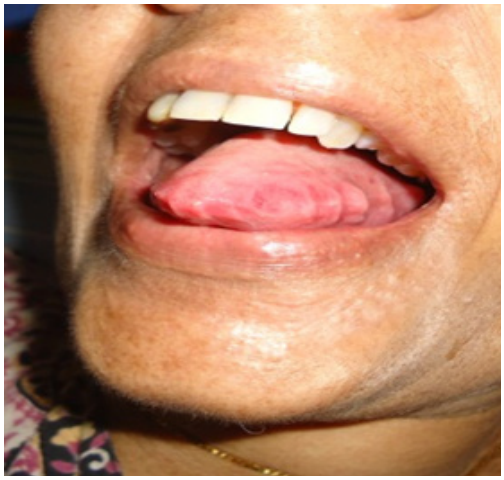
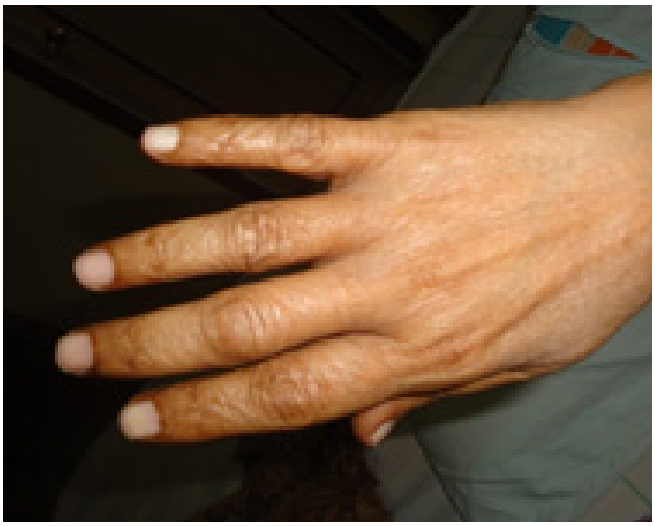


Fig. 3: Post-treatment regression of PIP joint



objects since last 6 months. He also developed oral lesions causing difficulty in talking and chewing food. He had no history of chronic cough, hemoptysis, breathlessness, bone pains, chronic diarrhea, vomiting, per rectal bleed or malena. His history revealed presence of hypertension since 4 years, diabetes mellitus type 2 since 1 year, chronic renal failure since 2 years (not on dialysis) and 2 attacks of acute pancreatitis within 1 year, which required blood transfusion for anemia. There was no history of alcohol or tobacco use.

Physical examination revealed that the patient was cachexic, pale and had submandibular and submental lymphadenopathy, submental area was firm on palpation. He had bilateral pedal edema. The tongue was enlarged with bluish red deposits (Fig. 4). Skin color round deposits on medial aspect of both upper eyelids (Fig. 8). Joint examination revealed swelling and tenderness of bilateral PIP, MCP, knees, ankles and shoulder joints (Fig. 5 and 7). On systemic examination he had glove and stocking type of sensory loss with absent biceps, triceps, knee and ankle reflexes suggestive of peripheral neuropathy. He had hepatomegaly 4 cm in midclavicular line, firm and tender on palpation. Table 1 shows the clinical and lab investigation results. MRI of oral cavity done prior to the current consultation showed small, punctate and nodular hyperintense areas along the anterior surface of tongue parenchyma with no enhancement. Tongue biopsy showed hyaline deposits (Fig. 6), which were confirmed to be amyloid deposits with special congo red stain. The patient was diagnosed to have amyloid arthropathy, secondary to multiple myeloma. He was referred to a hemato-oncologist

and was started on bortezomib and dexamethasone injections.

Discussion

The predominant symptom in the first case was symmetrical chronic polyarthralgia. The probable cause of chronic polyarthralgia could be RA, multiple myeloma, or amyloid light-chain (AL) amyloidosis. The clinical picture of the patient resembled that of RA with respect to symmetrical swelling with tenderness in multiple joints of extremities, including MCP and PIP joints, but serological markers, such as RF and the anti-CCP antibody were negative. It is well

Fig. 4: Macroglossia with amyloid deposits

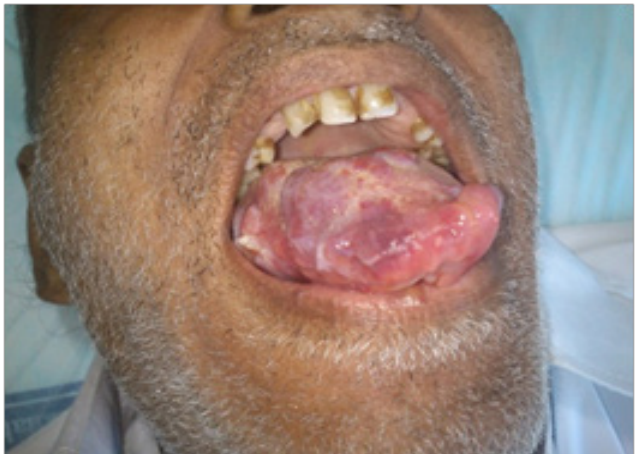


Fig. 5: Swelling of PIP and MCP joints

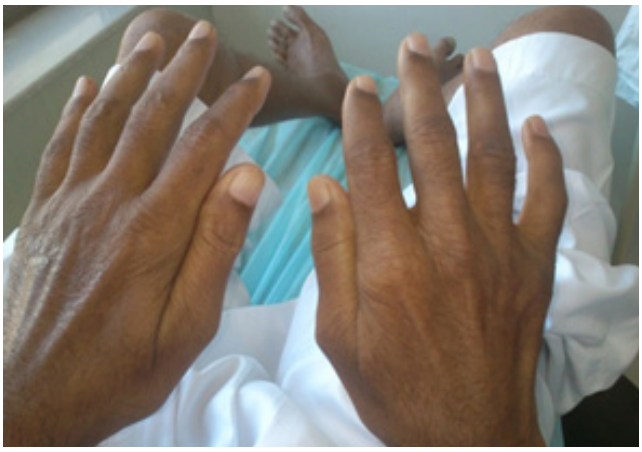


Fig. 6: Histopathology of tongue deposits showing homogenous eosinophillic amyloid deposits

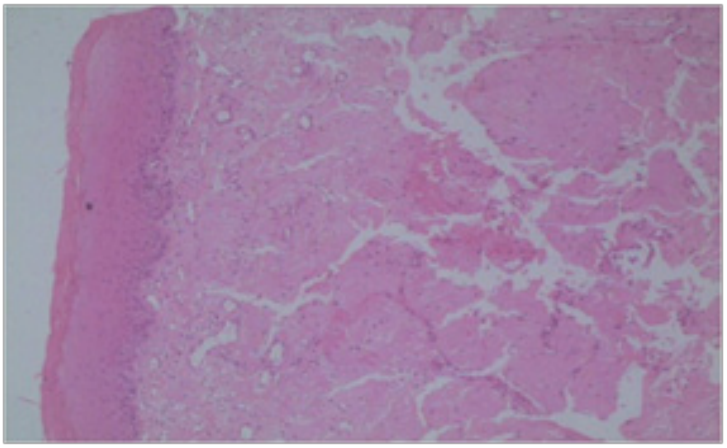


Fig. 7: Swelling of ankle joints

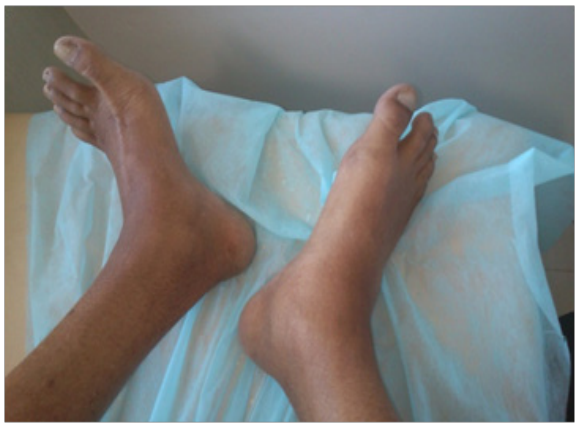


Fig. 8: Deposits around eyelids

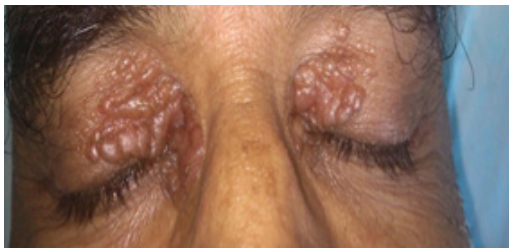


Table 1: Results of clinical and lab investigations

Parameters evaluated	Results	
	Case 1	Case 2
Hemoglobin (mg/dL)	10.7	8.5
Leucocytes (per c.mm)	14210	6100
Thrombocytes (per c.mm)	434000	284000
ESR (cm/hr)	75	62
Creatinine (mg/dl)	0.83	1.62
Serum electrophoresis		
IgG levels (mg/dL)		540
IgA levels (mg/dL)		28.6
IgM levels (mg/dL)		20.3
Free lambda chains	971	5940
Free kappa chains	2.14	13.3
M band	not detected	present
Plasma cells (%)	11	15
Erythroid cells (%)	26	8
Lymphocytes (%)	17	14
Polymorphs (%)	31	44

known that multiple myeloma rarely causes osteoarthralgia due to infiltration of myeloma cells, particularly in the spine, but the patient reported pain on movement in articular regions. Increase in plasma cells in bone marrow aspirate was not remarkable. There was remarkable reduction in joint swelling and tenderness following treatment and decrease in free lambda chains too.

The second patient had multiple system involvement in the form of chronic polyarthritis, chronic renal failure, peripheral neuropathy and history of pancreatitis. Bone marrow aspirates demonstrated definite increase in plasma cells.

Amyloidosis may present clinically with systemic or localized tissue deposits, usually with a predilection to particular organ or tissues. Amyloid deposits are most frequently observed in the walls of small blood vessels and the connective tissue of major organs including the gastrointestinal tract, heart, liver, kidney, and skin.[4] Amyloid may also be deposited in joints, joint capsule, and articular cartilage, which is regarded as AmyA. The joint space width might be normal in most cases, even in the late course of the disease. Systemic amyloidosis may occur in association with plasma cell dyscrasias (AL amyloidosis) when the fibrils are derived from immunoglobulin light chain.[5] Chronic inflammatory disorders such as RA, juvenile idiopathic arthritis or infectious diseases may be associated with secondary (AA-type) amyloidosis. The fibrils are thought to be derived from the acute phase protein, serum amyloid A protein (SAA).[6] Amyloid deposits rarely occur in the joints in these conditions. Dialysis-related amyloidosis is a complication of long-term hemodialysis. It is caused by the deposition of a unique form of amyloid derived from the circulating beta-2 microglobulin.[7]

In conclusion, it is necessary to consider systemic AL amyloidosis (associated with multiple myeloma or not) in the differential diagnosis of patients presenting with clinical symptoms similar to that of RA with regard to symmetrical swelling and tenderness in multiple joints with negative inflammatory reactions and autoantibodies.

Competing interests
The authors declare that they have no competing interests.

Declaration of Interest
None

Citation
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