ORIGINAL RESEARCH PAPER

Radiology

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A CASE REPORT ON AMYLOID ARTHROPATHY

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ABSTRACT

This abstract focuses on the radiological aspects of Amyloid Arthropathy, a condition marked by amyloid protein deposition in joints. Through an analysis of various imaging modalities such as X-ray and USG. the abstract elucidates characteristic findings, emphasizing their significance in diagnosis and disease monitoring. Additionally, it explores the challenges posed by the often subtle radiological features and suggests potential advancements in imaging techniques for enhanced sensitivity. A comprehensive understanding of the radiological manifestations of Amyloid Arthropathy is essential for accurate diagnosis and optimal patient management.

Amyloidosis is characterized by the infiltrative deposition of amyloid into tissues. This deposition into articular and periarticular spaces can lead to amyloid arthropathy, often resembling rheumatic conditions such as gout or rheumatoid arthritis.

Primary amyloidosis results from the accumulation of monoclonal immunoglobulin light chains, occasionally heavy chains, termed amyloid light chain (AL) amyloidosis. It is associated with monoclonal plasma cell dyscrasias, including multiple myeloma.

On the other hand, secondary amyloidosis involves the accumulation of the acute phase protein serum amyloid A (SAA). It is linked to chronic inflammatory conditions such as Reiter's syndrome, ankylosing spondylitis, Crohn's disease, and rheumatoid arthritis. Additionally, it can be associated with chronic infections like tuberculosis and chronic osteomyelitis, as well as malignant diseases including renal cell carcinoma and Hodgkin's disease.

Amyloidosis stemming from the accumulation of beta-2 microglobulin typically occurs in patients undergoing long-term hemodialysis due to chronic renal failure. In this instance, we discussed the clinical and radiological features of amyloid arthropathy, which were confirmed through bone marrow examination and a punch biopsy report.

Patient presented with diffusely thickened skin with macules and plaque formation.

Macroglossia is present, along with multiple slender, erythematous growths on the tongue and bilateral buccal mucosa.

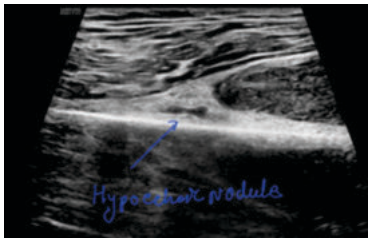
Case Study

A 50-year-old male presented to our hospital with asymptomatic lesions on his face around the eyes, mouth, and nose for the past two months. He has no past history of similar lesions or any family history related to this condition. He reports bilateral knee joint pain persisting for one year without associated weight loss. On examination, there are discrete to confluent, skin-colored, warty papules over both eyelids, around the mouth, and on the nose. Some of these papules have formed a plaque on the right lateral side of his face. In the oral cavity, macroglossia is present, along with multiple slender, erythematous growths on the tongue and bilateral buccal mucosa.

Imaging Findings:

USG - Local Part - Left wrist

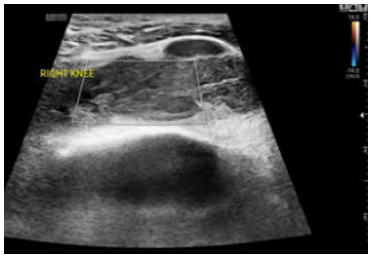
Multiple well-defined hypoechoic nodules without internal vascularity are observed along some of the visualized flexor tendons, with the largest measuring approximately 27x9 mm. Some of these nodules seem to extend into the joint cavity, while a few extend from the wrist up to the distal phalanx of the digits. These findings suggest amyloid myopathy arthropathy.



USG of Left wrist with hypoechoic nodules along flexor tensons

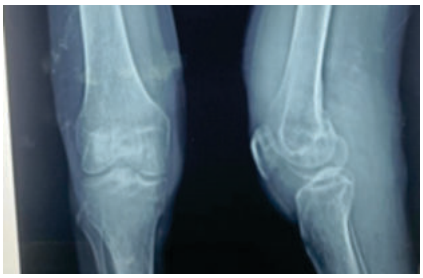
USG - Local Part – Right Knee:

Multiple well-defined hypoechoic nodules without internal vascularity are observed along quadriceps tendon. These findings suggest amyloid myopathy arthropathy.



USG of Right Knee with hypoechoic nodules along quadriceps tensons

Further correlation with X-ray results:
Generalized osteopenia is evident, along with soft tissue radiopacity nodules around the knee joint.



X ray of knee showing soft tissue density nodule with jusxtraarticular osteopenia

X ray of hand showing soft tissue density nodule with jusxtraarticular osteopenia

Microscopic Examination:
This section shows dense, amorphous, eosinophilic, hyaline extracellular deposits. These deposits, when stained with Congo red in routine microscopy, display a red color and exhibit apple-green birefringence under polarized microscopy.

The overall histological findings suggest the presence of Congo red-positive deposits, indicative of Amyloidosis.

Bone marrow examination findings:
Normo cellular marrow aspirate and smear showing 62% plasma cells, few binucleate, flame cells and doutcher bodies.

Amyloid and erythroid series are suppressed. Overall findings s/o Multiple myeloma.

CONCLUSIONS

In conclusion, this case report underscores the pivotal role of radiological imaging in diagnosing and monitoring amyloid arthropathy. Through an analysis of various modalities such as X-ray, ultrasound, and potentially advanced imaging techniques, we highlighted the characteristic findings—subtle yet significant—associated with this condition.

The comprehensive assessment of radiological manifestations aids in early detection, guiding therapeutic interventions and disease management.

The challenges posed by the often inconspicuous radiological features emphasize the necessity of heightened vigilance and utilization of sensitive imaging tools for accurate diagnosis. Advancements in imaging technologies hold promise for enhancing sensitivity, thereby potentially refining the diagnostic process and improving patient outcomes. A deeper understanding of the distinct radiological patterns observed in amyloid arthropathy is crucial for prompt identification, facilitating timely intervention and optimal patient care.

REFERENCES:

1. Llauger J, Palmer J, Rosón N, Bagué S, Camins A, Cremades R. Nonseptic Monoarthritis: Imaging Features with Clinical and Histopathologic Correlation. Radiographics. 2000;20 Spec No(suppl_1):S263-78. doi:10.1148/radiographics.20.suppl_1.g00oc13s263 - Pubmed
2. Kiss E, Keusch G, Zanetti M et al. Dialysis-Related Amyloidosis Revisited. AJR Am J Roentgenol. 2005;185(6):1460-7. doi:10.2214/AJR.04.1309 - Pubmed
3. Cobby MJ, Adler RS, Swartz R et-al. Dialysis-related amyloid arthropathy: MR findings in four patients. AJR Am J Roentgenol. 1991;157 (5): 1023-7. AJR Am J Roentgenol (abstract) - Pubmed citation
4. Hwang S, Park Y, Kim J et al. Primary Amyloidoma of the Cervical Spine. AJNR Am J Neuroradiol. 2000;21(3):601-3. PMC8174966 - Pubmed