

HLA B27 Positive Seronegative Knee Arthritis: A Rare Case Report

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1. Introduction

Human leukocyte antigen B27(HLA-B27) is a class I surface antigen encoded by the B locus in major histocompatibility complex on chromosome 6 and presents antigenic peptides to T cells. It is found to be associated with wide spectrum of diseases including Ankylosing spondylitis.¹

Seronegative arthritis is a rare entity defined as patient with symptoms of arthritis but on serology is negative for anti-Rheumatoid Factor (Anti-RF) antibodies and anti-cyclic citrullinated peptide(Anti-CCP). Axial skeleton is most commonly affected with cardinal feature is of involvement of sacroiliac joints and is usually associated with HLA B27.²

The overall prevalence of spondyloarthropathies in India is around 0.1%-0.2% which includes 6% frequency of HLAB27, 0.7% prevalence of rheumatoid arthritis and 0.2% of ankylosing spondylitis but due to scarce data, incidence of HLA B27 positive seronegative arthritis is not well known.³

This case is a rare presentation of HLA B27 positive seronegative arthritis presenting as knee arthritis in a young patient.

2. Case Report

A 15year old male presented with swelling and pain in left knee and ankle since many years. There was no history of fever, diarrhoea, or any other chronic illness.

Laboratoryinvestigations showed raised total leukocyte count(TLC=13,000/mm³), raised erythrocyte sedimentation rate(ESR=55mm) with negative anti-RF and anti-CCP antibodies and positive HLA-B27. X-Ray bilateral knee(Fig.1)revealed non-specific features, howeverMRI left

ankle showed mild joint effusion. With such a varied presentation a biopsy from left knee was sent to the histopathology department which microscopically showed fragments of synovial tissue with papillary hyperplasia(Fig.2), extensive fibrin deposition, mild to moderate mixed inflammatory cell infiltrate comprising of neutrophils and lymphocytes(Fig.3), however there was no synovial cell hyperplasia, no pannus formation or granuloma could be identified(Table 1).

Thus by correlating clinical picture with histological findings and radiological features and excluding all other possible etiologiesa final diagnosis of HLA-B27 positive seronegative arthritis was given.



Figure 1: X-ray Bilateral knee

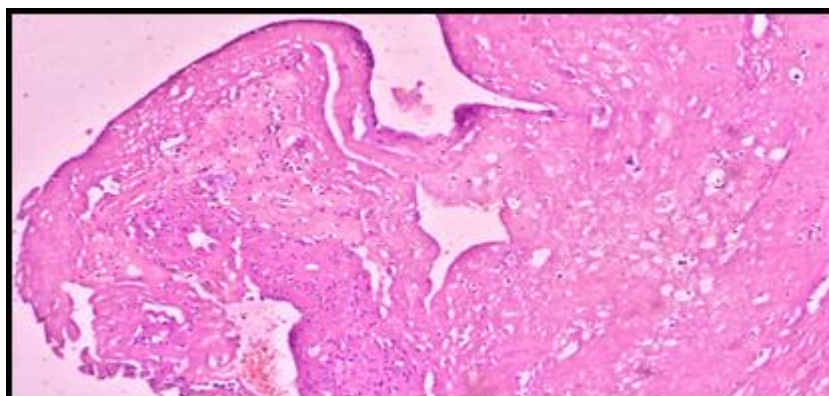


Figure 2: Synovial tissue showing papillary hyperplasia

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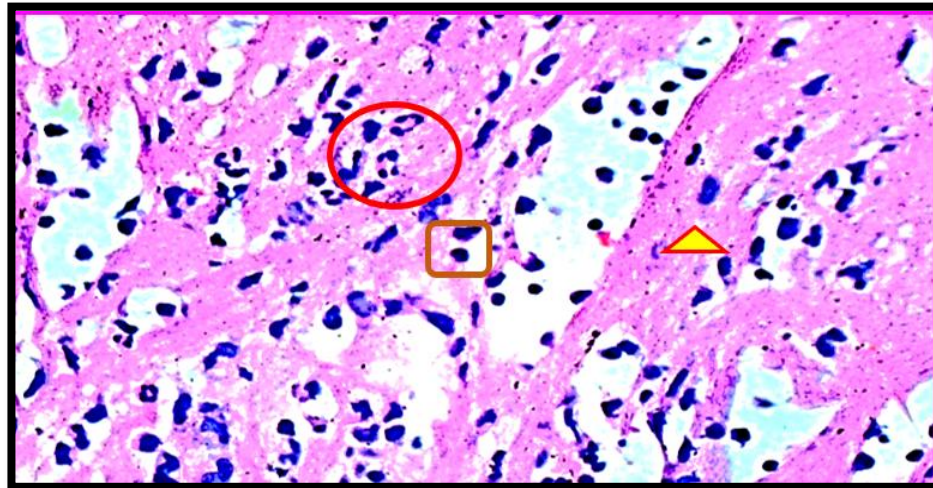


Figure 3: Synovial tissue showing lymphocytes neutrophils and areas of fibrin deposition ▲

Table 1: Differentiating features of various forms of arthritis

Features	Rheumatoid Arthritis ⁴	Ankylosing Spondylitis ⁵	HLA-B27 positive seronegative arthritis ²	Present Case
Clinical Features:				
• Age	40-60years	<30years	No age predilection	15 year
• Polyarthrits	Symmetrical	Asymmetrical	Symmetrical/Asymmetrical	Symmetrical
Radiological findings:				
• X-Ray	Bone erosion	Sacroilitis, Spondylitis	Non specific	Non specific
• MRI	Synovitis, Edema, Erosion	Bamboo spine, End plate erosion, Ankylosis	Variable	Mild joint effusion
Laboratory findings:				
• Anti RF antibodies	Present	Absent	Absent	Absent
• AntiCCP antibodies	Present	Absent	Absent	Absent
• HLA-B27	-	+/-	+	+
Microscopy:	Pannus formation, erosion of synovium, progressing to fibrous ankylosis, Lymphoplasmacytic cell infiltrate, Synovial cell hyperplasia, dense perivascular inflammatory infiltrate	Synovium appears to be unremarkable in initial stage, however advanced stage shows synovial hyperplasia	Mild to moderate inflammatory cell infiltrate comprising of neutrophils and lymphocytes with areas of fibrin deposition	Extensive fibrin deposition with mild to moderate inflammatory cell infiltrate comprising of neutrophils and lymphocytes
Complications: Iritis, Colitis, Dermatitis, Prostatitis	Absent	Present	May be present	Not present

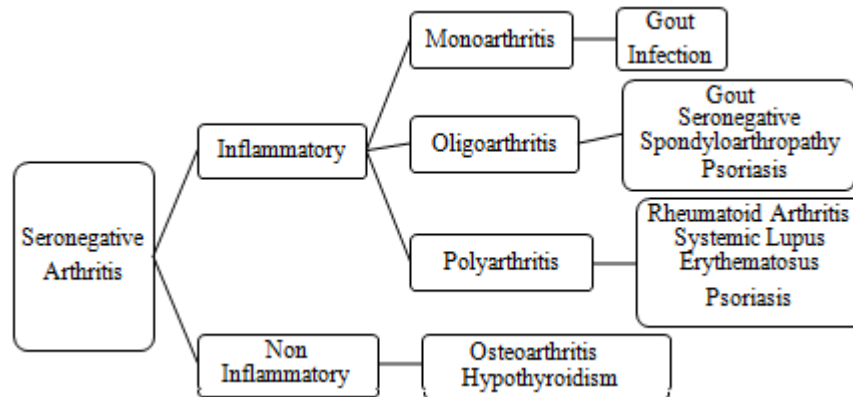


Figure 3: Approach to Seronegative Arthritis

3. Discussion and Conclusion

The human MHC class I molecule, HLA-B27, is strongly associated with seronegative spondyloarthropathies, the most common of which is ankylosing spondylitis(AS)⁶. The association of AS and HLA-B27 was recognized in 1973 and is among the strongest association with HLA for any disease⁷. Rohini H² described that the most classical presentation of this entity assacroilitis with predilection for males of younger age group, but in our case although the patient was a young male with positive HLA-B27 but it presented solely as knee and ankle arthritis of the same side, however the author also mentioned that clinically , Seronegative spondyloarthropathy should be suspected whenever a young patient (< 40 years) presents, with inflammatory low back pain, and asymmetrical, below waist oligoarthritis, that is, asymmetric involvement of knees or ankles and majority of such cases are found to be associated with HLA-B27.

A study by Mahendra N S and Vinay S ⁸also showed the strong association of HLA-B27 with seronegative spondyloarthropathies but none of the case presented solely as knee arthritis.

Due to the lack of Indian literature on HLA-B27 positive seronegative arthritis presenting as knee arthritis with no other history, make this a difficult diagnosis thus it requires the clinician and the pathologist should be well aware of this unusual presentation of this entity.

As in our case, although clinico-radiological diagnosis was favouring rheumatoid arthritis but it turned out to be a seronegative arthritis, so we need to rule out all other possible causes of seronegative arthritis be it inflammatory or non inflammatory (Fig.3)³ Also the patient did not had any complaints of skin lesions, colitis or iritis which is commonly seen with HLA-B27 positive cases also adds a point to varied presentation of this entity in such a young patient , thus it is important to note that HLA-b27 positive seronegative arthritis can have a varied presentation and requires a thorough patient examination⁷.

Since there were no other symptoms found in this patient, but as HLA-B27 was positive, there are higher chances that the cases may turn up to develop severe form of arthritis along with other HLA-b27 associated complications⁶ (example iritis, colitis,dermatitis, etc).

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