THE DIAGNOSTIC ROLE OF SERUM ANNEXIN A1 AS A BIOMARKER FOR EARLY STRUCTURAL DAMAGE IN AXIAL SPONDYLOARTHRITIS

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https://doi.org/10.5281/zenodo.18044875

ARTICLE INFO

Received: 21st December 2025
Accepted: 22nd December 2025
Online: 23rd December 2025

KEYWORDS

To evaluate the clinical significance of serum ANXA1 levels in detecting early structural spinal alterations and its correlation with disease progression in patients with axSpA

ABSTRACT

Axial spondyloarthritis (axSpA) is a chronic inflammatory disease characterized by progressive structural damage to the sacroiliac joints and the spine, often leading to early disability in young adults. A significant challenge in rheumatology is the "diagnostic lag," which averages 12.5 months due to the absence of radiographic changes in the early stages. Identifying molecular biomarkers that reflect early bone remodeling, such as Annexin A1 (ANXA1)—a protein with potent anti-inflammatory and bone-protective properties—is of high clinical relevance

Background. Axial spondyloarthritis (axSpA) is a chronic inflammatory disease characterized by progressive structural damage to the sacroiliac joints and the spine, often leading to early disability in young adults. A significant challenge in rheumatology is the "diagnostic lag," which averages 12.5 months due to the absence of radiographic changes in the early stages. Identifying molecular biomarkers that reflect early bone remodeling, such as Annexin A1 (ANXA1)—a protein with potent anti-inflammatory and bone-protective properties—is of high clinical relevance.

Aim. To evaluate the clinical significance of serum ANXA1 levels in detecting early structural spinal alterations and its correlation with disease progression in patients with axSpA.

Materials and Methods. The study involved 62 patients with axSpA at various clinical and radiological stages (mean age 43.2±5.3 years) and 10 healthy controls. Disease activity was assessed using ASDAS and BASFI scores, while structural damage was quantified using RASSS and BASRI indices. Serum ANXA1 concentrations were measured via enzyme-linked immunosorbent assay (ELISA). Statistical analysis was performed using Microsoft Excel 2016.

Results. Serum ANXA1 levels were significantly lower in axSpA patients compared to healthy controls (9.3 ng/ml). In the non-radiographic stage (Group I), ANXA1 levels were 4.3±1.1 ng/ml, whereas in advanced stages (Group III), the concentration decreased to 2.3 ng/ml. Correlation analysis revealed a strong negative relationship between ANXA1 levels and the presence of osteitis ($r = -0.76$) and bone erosions ($r = -0.83$). Interestingly, as syndesmophytes formed in the later stages, the correlation shifted to a positive trend ($r = 0.42$), suggesting a complex role for ANXA1 in the transition from inflammation to bone ankylosis.

Conclusion. Serum ANXA1 serves as a sensitive biomarker for early spinal tissue damage in axSpA. Its depletion reflects a failure of endogenous anti-inflammatory mechanisms and

correlates with structural progression. Monitoring ANXA1 levels facilitates early diagnosis during the non-radiographic phase, allowing for timely initiation of biologics or DMARD therapy to improve long-term patient outcomes.

References:

1.Sieper J., Poddubnyy D. Axial spondyloarthritis // Lancet. — 2017. — Vol. 390. — P. 73–84.
2.Braun J., Sieper J. Ankylosing spondylitis // Lancet. — 2007. — Vol. 369. — P. 1379–1390