

Platelet/Lymphocyte Ratio: A Potential Biomarker for Disease Activity in Ankylosing Spondylitis

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Study Aim

Evaluate the utility of the neutrophil/lymphocyte ratio and platelet/lymphocyte ratio as biomarkers for Ankylosing Spondylitis disease activity and severity by examining their association with c-Reactive Protein and sacroiliac joint damage scores.

Background

Ankylosing spondylitis: a chronic inflammatory disease involving the sacroiliac joint (SIJ) and the spine → over time, joints can be involved with erosions or fusion that can be debilitating and affect the quality of life.

C-Reactive Protein (CRP): low specificity and sensitivity, but is the most commonly used biomarker for disease activity.

Neutrophil/lymphocyte ratio (NLR) and Platelet/lymphocyte ratio (PLR): shown in prior studies to be associated with disease activity and severity for inflammatory diseases such as malignancies and ulcerative colitis. A high NLR and PLR reflect inflammation.

Results

Demographics		
	N	Mean
Age (years)	42	51.9
Married, %	41	56.1
White, %	42	78.6
Black, %	42	9.52
HLA_B27 (+), %	42	76.2
Male, %	42	97.6
Current smoker, %	42	24.3
Former smoker, %	41	39.0
Never smoker, %	41	36.6

Multiple linear regression (n=42)						
Dependent variable	Independent variable	Coefficient	P value	95% CI lower	95% CI upper	R²
SIJ mNY total score	PLR	0.010	0.064	-0.001	0.0215	0.1015
	NLR	-0.137	0.506	-0.548	0.275	

Simple linear regression (n=37)						
Dependent variable	Independent variable	Coefficient	P value	95% CI lower	95% CI upper	R²
CRP	PLR	0.244	<0.001	0.122	0.366	0.3205
	NLR	2.304	0.403	-3.219	7.827	0.0201

Methods

Population characteristics	Program to Understand Long Term Outcomes of Spondyloarthritis (PULSAR) registry at Rocky Mountain Regional VA Hospital
SIJ radiograph scored for sacroiliitis	- scored using the modified New York criteria (mNY). - excluded those who did not meet mNY criteria
Obtain CBC and CRP at time of Xray (+/- 6 mo)	
Data analysis	Determined relationship between NLR, PLR, CRP and mNY score using regression techniques in STATA (v13) statistical package

Conclusion

- No statistically significant correlation was found between mNY radiograph scores and the NLR nor the PLR.
- CRP concentration was associated with the PLR.

Future Directions

- Validate these results in other populations
- Explore the relationship of PLR with patient reported outcomes
- Determine if PLR is associated with findings from other imaging modalities.

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