Between Academia and Clinical Application: Where is Platelet Indices in Disease Activity Score of Rheumatoid Arthritis?

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1. Introduction & objectives

Platelet Indices (PI) are widely available laboratory parameters that could be easily obtained from the complete blood count (CBC). Numerous studies showed significant association between platelet count & PI and disease activity of rheumatoid arthritis (RA). Even though PI are not included in the commonly used disease activity score (DAS) 28 of RA. DAS 28 is dependent mainly on subjective parameters such as number of swollen & tender joints and visual analogue scale (VAS). According to EULAR response criteria, DAS 28 is very crucial for treatment decision and disease monitoring of patients with RA. This study aimed to narrow the gap between the profound knowledge of the association between PIs and disease activity in RA, and their use in clinical practice, through development of a new DAS.

2. Subjects & methods

Study subjects: A cross sectional study design was used for the study, that was done at Assiut University Hospital (AUH), in the period 20th of May 2018- April 2019 . The study included patients with RA who were admitted in the study period. Another group of age and sex matched healthy volunteers , was recruited for comparison.

Tools of the study: Detailed medical history, physical examination, measurement of visual analogue scale (VAS), and calculation of DAS28. The control subjects were also interviewed to collect demographic data , ensure absence of any inflammatory disease.

8 mL of blood were collected , from each patient and control, and distributed in three vacutainer® tubes; for complete blood picture , erythrocyte sedimentation rate (ESR) and C- reactive protien, all samples were analyzed with CELL-DYN 3700 automated cell counter (Abbott-Germany), Westergren method and Modular P auto analyzer (Roche Diagnostics, Mannheim, Germany).

3. Results

Characteristics of the study subjects:

The study included 52-patients with RA, and 30-sex and age matched healthy volunteers, table 1 , showed characteristics of the study patients. Table 2, illustrated a significant difference in PDW among patients and controls.

Disease activity of the study patients

Figure 1, showed degree of disease activity in the study patients , it was high in three fourths of the RA patients.

Association between PI and DAS28 or VAS in patients with RA.

Table 3, showed highly significant correlation of PDW% with DAS28 of the patients, similar results were obtained with VAS. On the contrary, there were no significant association between MPV, PCT, platelet count and DAS28 or VAS.

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Table 3. Correlation between PDW% & DAS28 of the study patients (n=52).

		PDW%	DAS28
PDW%	Pearson Correlation	1	.553**
	Sig. (2-tailed)		.000
	N	52	42
DAS28	Pearson Correlation	.553**	1
	Sig. (2-tailed)	.000	
	N	42	42

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1. Characteristics of the study patients (n=52).

	Frequency	Valid Percent
Gender		
Female	45	86.5
Male	7	13.5
Governorate		
Assiut	41	78.18
Sohag	10	19.2
AlMenia	1	1.9
Residence		
Rural	39	90.7
Urban	4	9.3
Marital status		
Married	45	86.5
Single	2	3.8
Widow	5	9.6
Special habits		
None	25	48.1
Passive smoker	24	46.2
x-smoker	3	5.8

Table 2. Age , ESR and CBC differences among rheumatoid arthritis patients (n=52) and the control subjects (n=30) .

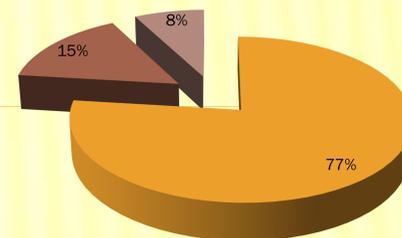|	Study groups	Mean	Std. Deviation	Sig. (2-tailed)
Age in years	Patient group	49.31	11.705	.207
	Controls	46.00	10.667	.197
ESR mm/h	Patient group	56.82	33.625	.000
	Controls	7.53	2.662	.000
TLC x 103	Patient group	6.498	2.5846	.295
	Controls	7.083	2.1073	.270
Hb g/dL	Patient group	10.864	1.8704	.000
	Controls	12.577	1.2096	.000
Plt x 103	Patient group	317.27	121.571	.135
	Controls	280.90	66.716	.084
PDW%	Patient group	39.846	17.61823	.000
	Controls	13.096	2.84569	.000
MPV um3	Patient group	8.470	1.1478	.797
	Controls	8.534	.9728	.788
PCT	Patient group	.2854	.18432	.450
	Controls	.2593	.04588	0.337

Figure 1. Disease activity of the study patients.

High Moderate Low

8% 15% 77%

4. Conclusion

In conclusion this study showed

1. Very high platelet distribution width of RA patients compared with the normal healthy controls.

2. The study revealed significant association between PDW and DAS28, and VAS

References

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