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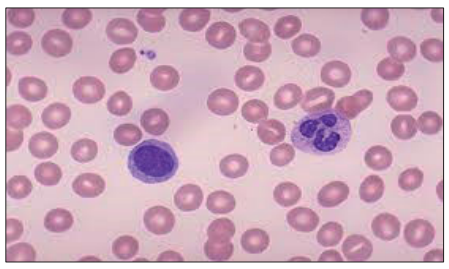
A CLINICO-HEMATOLOGICAL APPRAISAL OF AGGRESSIVE AND GENERALISED CHRONIC PERIODONTITIS



INTRODUCTION: **A complete blood analysis is frequently used to evaluate the presence of infection or inflammation. Various studies have elucidated that periodontal infections affect hematological parameters such as the differential counts of white blood cells, red blood cells, and/or platelets. The aim of present study was to access hematological findings in aggressive periodontitis and generalised chronic periodontitis and to compare their parameters with periodontally healthy control from the native population.**

Risk Factors for Aggressive Periodontitis

- Intrinsic factors
- Aberrant cytokine production
- Increased disease susceptibility
- Specific HLA phenotype

MATERIALS AND METHOD

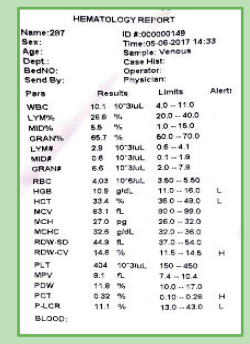
GROUP	SAMPLE SIZE	AGE RANGE & MEAN AGE	INCLUSION CRITERIA
I AGGRESSIVE PERIODONTITIS	8	20-30 , mean age 25.5 years	CAL > 3mm in incisors and molars (localised), Deep pockets, Advanced bone loss, Positive family history
II CHRONIC GENERALISED PERIODONTITIS	15	35 – 45, mean age 38.9 years	Generalised bone loss
III CONTROL	15	20 – 45, mean age 35.4 years	Patients with good periodontal health who came for other dental procedures.
TOTAL	38		

***Exclusion criteria – Patient with systemic disease, pregnancy, smoking or any history of antibiotic therapy in last three months were excluded from the study.**

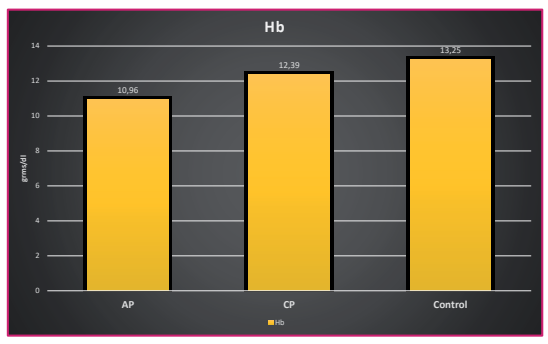
Well-informed consent was taken from the patients prior to blood sample collection. A sample of 2 ml venous blood was obtained by venipuncture in antecubital fossa, and it was kept in an EDTA-coated vacutainer.

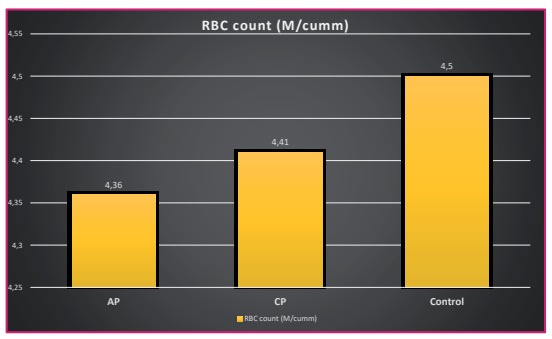
The blood sample was analysed in a Fully Auto Hematology Analyzer (PE 6000 PROKAN). Erythrocyte parameters (values of white blood cells, red blood cells, hemoglobin, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, red-cell distribution width, platelet count, and mean platelet volume) were recorded.

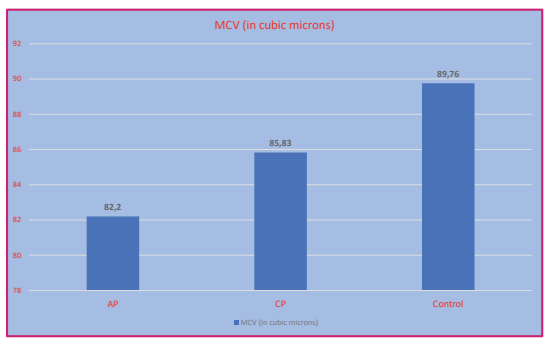
Probing depths and clinical attachment levels were also observed clinically.



RESULTS







AP Aggressive Periodontitis CP Chronic Generalised Periodontitis

Mean ± Standard Deviation				
		AGGRESSIVE PERIODONTITIS	GENERALISED CHRONIC PERIODONTITIS	CONTROL
WBC		7.84 ± 2.83	7.56 ± 1.63	8.42 ± 2.47
	Neutrophils	6.22± 0.44	6.2 ± 0.82	5.97 ± 0.76
	Eosinophils	0.22 ± 0.10	0.19 ± 0.05	0.23 ± 0.06
	Lymphocytes	3.2 ± 0.47	3.23 ± 0.82	3.27 ± 0.66
	Monocytes	0.36 ± 0.13	0.36 ± 0.16	0.54 ± 0.18
RBC		4.24 ± 0.27	4.41 ± 0.46	4.50 ± 0.39
	Hb	10.96 ± 1.44	12.39 ± 1.36	13.25 ± 1.86
	MCH	25.72 ± 2.40	28.07 ± 2.71	29.45 ± 2.93
	MCHC	32.72 ± 1.09	32.60 ± 2.45	33.09 ± 2.94
	MCV	82.20 ± 5.65	85.83 ± 6.76	89.76 ± 7.72
	RDW	15.18 ± 1.51	14.04 ± 1.27	13.88 ± 1.10
Platelet	Platelet Count	284.2 ± 92.4	128.50 ± 17.18	267.5 ± 108.3
	Mean Platelet Volume	9.0 ± 1.10	9.40 ± 1.09	9.45 ± 0.90

WBC, neutrophils, eosinophils, lymphocytes, monocytes ($10^3/\mu L$), RBC red blood cells ($10^6/\mu L$),Hemoglobin (g/dL), MCV mean corpuscular volume (fL), MCH mean corpuscular hemoglobin (pg/cell), MCHC mean corpuscular hemoglobin concentration (g/dL), RDW Red-cell distribution width (%),Platelets ($10^3/\mu L$), MPV mean platelet volume (fL)

Comprehensive analysis of data indicates that aggressive periodontitis patients:

- **MCV was significantly lowered (*Independent Sample T Test, p value 0.027*)**
- **Lower hemoglobin levels**
- **Lower RBC counts as compared to generalised chronic periodontitis and periodontally healthy control group.**

Positive correlation (*Independent Sample T Test, p value 0.032*) between increased values of mean RDW – CV in aggressive periodontitis in comparison to the control group. This parameter was also observed in one study (Anand PS et al) but the difference

- **No significant difference was observed between the mean values of MCH and MCHC among the three groups (*one-way ANOVA*).**
- **The mean values of the WBC counts, neutrophils, lymphocytes, and eosinophils were almost constant.**
- **Monocytes were significantly lowered (*Kruskal-Wallis Test, p value 0.020*)**
- **The data comprise more females among cases and controls, so the gender difference was not considerable.**

DISCUSSION

Aggressive Periodontitis Findings

In Concordance	In Against
•Reduced hemoglobin level	
Anand PS et al	Lopez R et al
• Mean total and differential leukocyte count indistinguishable between cases and controls	
Lopez R et al	Anand PS et al
Dosumu EB et al	
• MCH and MCHC were not different among the three groups	
Hutter JW	Anand PS et al
Lopez R et al	
• Mean value of MCV was lowered	
Anand PS et al	Lopez R et al

Considerable increased values of RDW – CV was observed in aggressive periodontitis patients in contrast to the control group. This difference reflects the increased degree of variation in the size of erythrocytes (anisocytosis). RDW is appreciably increased in iron deficiency, folic acid or Vit B12 deficiency anemia. Various studies have shown that higher values of RDW are associated with aging, poor nutritional status, cardiovascular disease, and diabetes. Aggressive periodontitis generally effects systemically healthy individual, but the increase in the value of RDW-CV suggests the systemic effects of disease.

CONCLUSION: In the present pilot study, lower hemoglobin levels and low erythrocyte counts reflect the systemic effects of periodontal condition. More studies on large scale need to be done in order to find the association of RDW with aggressive periodontitis patients.

Like other systemic disease, can RDW be a parameter for advanced bone loss?? Research must go on!!

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