

# REFERENCE VALUES OF NEUTROPHIL-TO-LYMPHOCYTE RATIO, LYMPHOCYTE-TO-MONOCYTE RATIO AND PLATELET-TO-LYMPHOCYTE RATIO IN HEALTHY TUNISIAN FEMALE ADULTS AND PREGNANT WOMEN

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## BACKGROUND

- ✓ The neutrophil-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR) and platelet-to-lymphocyte ratio (PLR) are emerging biomarkers to predict outcomes in various clinical situations. However, reference values for these attributes based on large, healthy populations have yet to be determined.
- ✓ The aim of this study is to establish reference values of NLR, LMR and PLR in healthy Tunisian female adults and pregnant women.

## MATERIALS & METHODS

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**120** healthy female > 18 years old (**G I**).  
**60** pregnant women without any health issues (**G II**).

**NLR** = Neutrophil count / Lymphocyte count  
**LMR** = Lymphocyte count / Monocyte count  
**PLR** = Platelet count / Lymphocyte count

Reference intervals are set based on the percentile method where the **lower** and **upper** limits are given by the **2.5th** and **97.5th** percentiles for a double-sided reference interval.

Quantitative variables were reported as medians with minimum and maximum values.  
 • Intergroup comparison was performed using analysis of variance test.

## Results

**G I**: 21 years (18-59)  
**G II**: 31.5 years (20-43)

Neutrophils and monocytes were significantly **higher** in **G II** ( $p < 0.001$  and  $p = 0.0149$  respectively), whereas lymphocytes and platelets were significantly **lower** ( $p < 0.001$ ).

Ratio	NLR	LMR	PLR
Reference Interval			
<b>G I</b>	[0.4-3.11]	[2.61-8.02]	[65.59-238.4]
<b>G II</b>	[1.49-5.24]	[1.62-7.42]	[64.03-279.2]

**NLR**:  $p < 0.001$

**LMR**:  $p < 0.001$

**PLR**:  $p = 0.657$

## DISCUSSION

- ✓ NLR, LMR, and PLR, as simple and easy to measure systemic inflammatory markers, have attracted more and more attention and are currently widely used in the world. However, the results of NLR, LMR, and PLR without appropriate RI in clinical application are not valuable.
- ✓ The reference intervals of these ratios vary depending on the gender, age, ethnicity and many other factors. Different studies have shown that the NLR cutoff values for populations in western countries range from 2.5 to 5, higher than those in Asia or Africa.
- ✓ The reference upper limit of male NLR and PLR increases with age, and the reference upper limit of male LMR decreases with age, which may be due to the aging of human [1].

## CONCLUSION

NLR, LMR and PLR could be reliable, cost-effective and convenient biomarkers to assess various pathologies. A multicentric study with a larger population will provide further support for our findings.

## REFERENCES

[1] Wang and al : Distribution and reference interval establishment of neutral-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR), and platelet-to-lymphocyte ratio (PLR) in Chinese healthy adults; 2021