Evaluation of Mean Platelet Volume and Related Parameters in Children with Meningitis

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Meningitis is a serious illness, associated with severe complications and risk of long term mortality in the childhood. Nowadays there are many studies about relationship between mean platelet volume (MPV) and mortality in non-cardiac critical illnesses. In this retrospective study we planned to examine clinical and laboratory parameters of children with meningitis and compare the findings with healthy children's laboratory parameters.

Method: In this study there was a case group consisting of sixty two patients at age 0-18 with meningitis who enter Medical Science University Ankara Pediatriral Hematology and Oncology Training and Research Hospital between 2012 January and 2016 September and there was a control group consisting of sixty two healthy children. We recorded the laboratory parameters of first day of admission (1. value), second to fourth day of treatment (2. value) and before discharge from hospital (3. value) in case group and compared first findings with control group.

Results: In both groups there were 22 girls (35.5%) and 40 boys (64.5%). The median age of case group was 35.5 months (3 days- 17,9 years) and the median age of control group was 75.5 months (1.5 months-16.4 years). In case group first values of WBC, CRP, LDH, neutrophil/lymphocyte ratio were higher (p=0.000) and albumin was lower than control group (p=0.000). Median hospitalization time was 20 (5-220) days. Twenty two patients have concomitant illness (35.5%). At the discharge 58 patients (93.5%) were alive, 4 patients (6.5%) were exitus. The median hospitalization time was significantly higher in concomitant illness group (p=0.003). In 59 cerebrospinal fluid samples we found 49.2% culture positive, 50.8% culture negative. In CSF culture positive group first value MPV was lower than CSF culture negative group and also second (p=0.042) and third (p=0.025) value of CRP were higher than culture negative group. CSF glucose value was lower in culture positive group than culture negative group (p=0.009).

Conclusion: This is the first study that the sequential MPV measurement is evaluated in children with menengitis. We found that there is a statistical difference in MPV1, CRP2 and CRP3 between CSF culture positive and negative groups in this study. Because of this results we can say that sequential MPV and CRP measurement is important in meningitis. There is a need for more extensive prospective controlled studies in this area.

Chart showing seasonal distribution of the patients

Table showing laboratory of the patients and the control group

Laboratory parameters	Patients group	Control group	p
MPV1	7,8±1.41 fL	8,1±0,96 fL	0,171
RDW1	%14,6±2,3	%14,3±1,3	0,517
PDW1	%16,2±0,84	%16,4±0,55	0,054
WBC1 ²	15.243±8895/μL	8.138±2251/μL	0,000
PLT1 ³	385.209±200.814/μL	322.725 ±83.000/μL	0,243
N/L1 ⁴	3,41 (0,13-69)	0,98 (0,09-3,38)	0,000
CRP1	4,8(0,01-36,94) mg/dL	0.17(0-0,66) mg/dL	0,000
LDH1	447±226,8 U/L	278±44,7 U/L	0,000
Albumin1	3,8±0,68 g/dL	4.4±0,28 g/dL	0,000