Abstract 29

THE ROLES OF SYSTEMIC INFLAMMATORY INDEXES IN THE PROGNOSIS AND DIAGNOSIS OF RETINOPATHY OF PREMATURITY

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Introduction:

Premature Retinopathy (ROP) is a vasoproliferative retinopathy associated with abnormal retinal vascularization in the developing retinas of premature infants, and it is a disease that can lead to blindness if left untreated (1). In recent years, publications reporting the association of ROP with inflammation have emerged (2,3). Examining the ratios of blood cells has been suggested as indicators of general systemic inflammatory responses (4). Neutrophil-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR), and platelet-to-lymphocyte ratio (PLR) have been reported as potential inflammatory markers for prognosis in various diseases such as cancer or kidney diseases (5,6). Publications demonstrating the relationship between inflammation and ocular diseases, such as age-related macular degeneration, diabetic retinopathy, and retinal vascular occlusions, have shown that inflammation in these diseases correlates with NLR, LMR, and PLR (7,8). A study investigating the diagnostic role of systemic inflammation in newborns with hypoxic-ischemic encephalopathy examined parameters such as systemic immune inflammation index (SII), systemic inflammatory response index (SIRI), and pan-immune inflammation value (PIV) (9). While studies in patients with premature retinopathy have examined NLR, PLR, LMR, and SII, there is currently no examination of SIRI and PIV parameters, and there is also no prospective study. Therefore, the aim of this study is to examine the relationship between ROP and systemic inflammatory indices in the diagnosis and prognosis of ROP and to determine the risk factors in the development of ROP.

Materials and methods:

174 premature newborns who were prospectively screened for ROP were included in the study. Demographic data of the patients and risk factors for ROP were noted. The patients were divided into 2 groups: those who developed ROP and those who did not, and also 3 groups: group 1 (without ROP), group 2 (with ROP, not requiring treatment), and group 3 (with ROP, requiring treatment). Complete blood count (CBC) analysis was performed in all patients in the first 24 hours after birth, in the 1st postnatal month, and in the 2nd postnatal month. White blood cell, platelet, neutrophil, lymphocyte, monocyte obtained from CBC, and NLR (Neutrophil to lymphocyte ratio), PLR (Platelet to lymphocyte ratio), LMR (Lymphocyte to monocyte ratio), SII (Systemic immune inflammatory index), SIRI (Systemic inflammation response index), PIV (Pan-immune-inflammation value) parameters were compared between groups.

Results:

When the patients were divided into 2 groups, 87 patients were ROP (+) and 87 patients were ROP (-). SII, SIRI and PIV examined in the first 24 hours after birth (p:0.020, p:0.007, p:0.003); LMR in the 1st postnatal month (p:0.006) and PLR, SII and PIV in the 2nd postnatal month (p:0.045, p:0.010, p:0.021) were found to be significantly lower in the ROP (+) group. Additionally, when the patients

were examined in 3 groups, from group 1 to group 3, they consisted of 87 patients, 68 patients and 19 patients, respectively. SIRI and PIV in the first 24 hours after birth were lower in group 2 compared to group 1 (p:0.017, p:0.005). In the 1st postnatal month, LMR was observed to be lower in group 3 compared to group 1 (p:0.005). In the 2 nd postnatal month, PLR and SII were lower in group 3 than in group 1 (p:0.009, p:0.016). According to the multivariate logistic regression analysis, the independent variables that were significant for ROP were low gestational age, presence of sepsis, and low monocyte count in the first 24 hours following birth (OR: 0.559, 95% CI: 0.447-0.700, p:0.000*; OR: 2.740, 95% CI: 1.017-7.386, p:0.046; OR: 0.258, 95% CI: 0.074-0.897, p:0.033).

Conclusions:

Analyzes showed that the low SII, SIRI and PIV values of premature infants on the 1st day after birth, LMR in the 1st postnatal month, and PLR, SII and PIV values in the 2nd postnatal month are associated with the development of ROP. Low gestational age, presence of sepsis and low monocyte count in the first 24 hours following birth were found to be the most important risk factors and predictive parameters in the occurrence and prognosis of ROP.

Sources:

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