Introduction: The mean platelet volume and platelet distribution width are parameters that indicate platelet activation and function. The increase in mean platelet volume and decrease in platelet distribution width demonstrates an increase in platelet reactivity and a tendency to thrombosis. Interestingly, it is known that individuals with cyanotic congenital heart disease are predisposed to thrombosis. We aimed to determine the relationship between platelet count, mean platelet volume, and platelet distribution width in patients with cyanotic and acyanotic congenital heart disease.

Methods: This study included 40 cyanotic patients (group 1) that were followed in the pediatric cardiology clinic, 40 acyanotic (group 2) patients that applied to the outpatient clinic with heart disease, and 40 control patients (group 3) that did not have any heart diseases. Groups were compared in terms of platelet count, mean platelet volume, and platelet distribution width.

Results: In group 1 there were 14 female and 26 male patients with a mean age of 1.5 years (1 day - 13.5 years), in group 2 there were 24 female and 16 male patients with mean age of 3.6 (1 month - 17 years), and in group 3 there were 15 female and 25 male patients with mean age of 4.7 years (5 days - 17 years). There was no significant difference between the groups in terms of the platelet count. Mean platelet volume in group 1 was 9.6 (8.9-10.7) femtoliters (fl), in group 2 was 6.8 (5.9-7.9) fl, while in group 3 it was 6.9 (6.5-8.8) fl. The post-hoc analysis showed that there was a statistically significant difference between group 1 and groups 2 and 3 (p = 0.001), but no significant difference between groups 2 and 3. Mean platelet distribution width in group 1 was 11.6 (10.4-14.6) fl, group 2 was 16.9 (16.1-17.4) fl, and group 3 was 16.5 (11.8-16.8) fl. The post-hoc analysis showed that there was a significant difference between group 1 and groups 2 and 3 (p=0.001), however there was no significant difference detected between groups 2 and 3.

Conclusions: Mean platelet volume was elevated in pediatric patients with cyanotic congenital heart disease compared to patients with acyanotic heart diseases or patients without any disease. There is a need for further studies to investigate whether the mean platelet volume can be used as a marker for predisposition to thrombosis and platelet activation, and may serve as an indicator for cardiovascular complications.