

Hematologic Inflammatory Markers and Inflammation-Related Hepatokines in Pediatric Obesity

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Abstract : Obesity in children particularly draws attention because it may threaten the individual's future life due to many chronic diseases it may lead to. Most of these diseases, including obesity itself altogether are related to inflammation. For this reason, inflammation-related parameters gain importance. Within this context, complete blood cell counts, ratios or indices derived from these counts have recently found some platform to be used as inflammatory markers. So far, mostly adipokines were investigated within the field of obesity. The liver is at the center of the metabolic pathways network. Metabolic inflammation is closely associated with cellular dysfunction. In this study, hematologic inflammatory markers and two major hepatokines, cytokines produced predominantly by the liver, fibroblast growth factor-21 (FGF-21) and fetuin A were investigated in pediatric obesity. Two groups were constituted from seventy-six obese children based on World Health Organization criteria. Group 1 was composed of children whose age- and sex-adjusted body mass index (BMI) percentiles were between 95 and 99. Group 2 consists of children who are above the 99th percentile. The first and the latter groups were defined as obese (OB) and morbid obese (MO). Anthropometric measurements of the children were performed. Informed consent forms and the approval of the institutional ethics committee were obtained. Blood cell counts and ratios were determined by an automated hematology analyzer. The related ratios and indexes were calculated. Statistical evaluation of the data was performed by the SPSS program. There was no statistically significant difference in terms of neutrophil-to lymphocyte ratio, monocyte-to-high density lipoprotein cholesterol ratio and the platelet-to-lymphocyte ratio between the groups. Mean platelet volume and platelet distribution width values were decreased ($p<0.05$), total platelet count, red cell distribution width (RDW) and systemic immune inflammation index values were increased ($p<0.01$) in MO group. Both hepatokines were increased in the same group; however, increases were not statistically significant. In this group, also a strong correlation was calculated between FGF-21 and RDW when controlled by age, hematocrit, iron and ferritin ($r=0.425$; $p<0.01$). In conclusion, the association between RDW, a hematologic inflammatory marker, and FGF-21, an inflammation-related hepatokine, found in MO group is an important finding discriminating between OB and MO children. This association is even more powerful when controlled by age and iron-related parameters.

Keywords : childhood obesity, fetuin A , fibroblast growth factor-21, hematologic markers, red cell distribution width

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