Complete blood count-derived inflammation indexes are useful in predicting metabolic syndrome in children and adolescents with severe obesity.

A. Marra, A. Bondesan, D. Caroli, A. Sartorio

Journal of Clinical Medicine 13: 2120, 2024.

Background**:** Childhood obesity is a globally increasing pathological condition leading to longtermhealth issues such as cardiovascular diseases andmetabolic syndrome (MetS). This study aimed to determine the clinical value of the Complete Blood Count-derived inflammation indexesMonocyte/HDLC ratio (MHR), Lymphocyte/HDL-C ratio (LHR), Neutrophil/HDL-C ratio (NHR), and SystemInflammation Response Index (SIRI) to predict the presence of metabolic syndrome and its association with cardiovascular riskmarkers (HOMA-IR, TG/HDL-C, and non-HDL-C) in children and adolescents with obesity.

Methods**:** The study included a total of 552 children/adolescents with severe obesity (BMI: 36.4 [32.7-40.7] kg/m^2; 219males, 333 females; age: 14.8 [12.9-16.3] years),whowere further subdivided based on the presence or absence of metabolic syndrome (MetS+ andMetS respectively).

Results**:** TheMHR, LHR, and NHR indexes ($p < 0.0001$), but not SIRI ($p = 0.524$), were significantly higher in theMetS+ compared to theMetS− subgroup, showing a positive correlation with the degree ofMetS severity ($p < 0.0001$). Furthermore, MHR, LHR, and NHR were positively associated with cardiometabolic risk biomarkers (HOMA-IR:MHR $p = 0.000$, LHR $p = 0.001$, NHR $p < 0.0001$; TG/HDL-C:MHR, LHR, NHR $p < 0.000$; non-HDL-C:MHR, LHR $p < 0.0001$, NHR $p = 0.000$). Finally, the ROC curve analysis demonstrated that among the analyzed indexes, onlyMHR, LHR, and NHR had diagnostic value in distinguishing MetS patients among children and adolescents with obesity (MHR: AUC = 0.7045; LHR: AUC = 0.7205; NHR: AUC = 0.6934; $p < 0.0001$).

Conclusions: In conclusion, theMHR, LHR, and NHR indexes, but not the SIRI index, can be considered useful tools for pediatricians to assess the risk ofMetS and cardiometabolic diseases in children and adolescents with obesity and to develop multidisciplinary intervention strategies to counteract the widespread disease.