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THE SOLUBLE RECEPTOR FOR ADVANCED GLYCATION END PRODUCTS (SRAGE) IS INDEPENDENTLY ASSOCIATED WITH BLOOD PRESSURE VALUES AND HYPERTENSION IN CHILDREN.

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BACKGROUND-AIM

The advanced glycation end products-receptor for advanced glycation end products (AGE-RAGE) axis is a pro-inflammatory pathway promoting endothelial dysfunction and vascular remodelling. The soluble RAGE form (sRAGE), by blocking circulating AGE, protects against AGE-induced detrimental effects. We investigated the role of sRAGE as a marker of high blood pressure and hypertension risk in children.

METHODS

sRAGE was quantified in 284 children/adolescents referred for high-normal blood pressure (systolic and/or diastolic values >90th percentile) or hypertension (systolic and/or diastolic blood pressure > 95th percentile) and/or other cardiovascular risk factors (excess weight, dyslipidaemia and insulin resistance). In 22.2% of the sample, systolic and/or diastolic blood pressure values were above the 90th percentile. The prevalence of excess weight (overweight/obesity), central obesity (waist-to-height-ratio >50%), and insulin resistance (HOMA-index >90th percentile) was high (82.7%, 70.8%, and 70.5%, respectively).

RESULTS

Few children had altered LDL cholesterol, triglyceride, and HDL cholesterol values (15.7%, 15.4%, and 13.6%, respectively). The lowest sRAGE tertile was associated with the highest risk of having hypertension ($p=0.028$), obesity ($p<0.001$), central obesity ($p=0.007$), and insulin resistance ($p<0.001$). sRAGE levels were inversely associated with systolic blood pressure ($p<0.01$) and BMI ($p=0.022$) z-scores and waist-to-height-ratio ($p=0.001$). sRAGE values were inversely associated with the presence of hypertension ($p=0.036$) and obesity ($p=0.038$).

CONCLUSIONS

The independent relationship between sRAGE, systolic blood pressure, and hypertension in children suggests that the AGE-RAGE axis may be altered early in life, and that sRAGE could be a compelling marker for pediatric cardiovascular risk stratification.