

"CORTISOL-CORTISONE RATIO AND MMP-9 EMERGING AS RISK FACTORS ASSOCIATED WITH PEDIATRIC HYPERTENSION"



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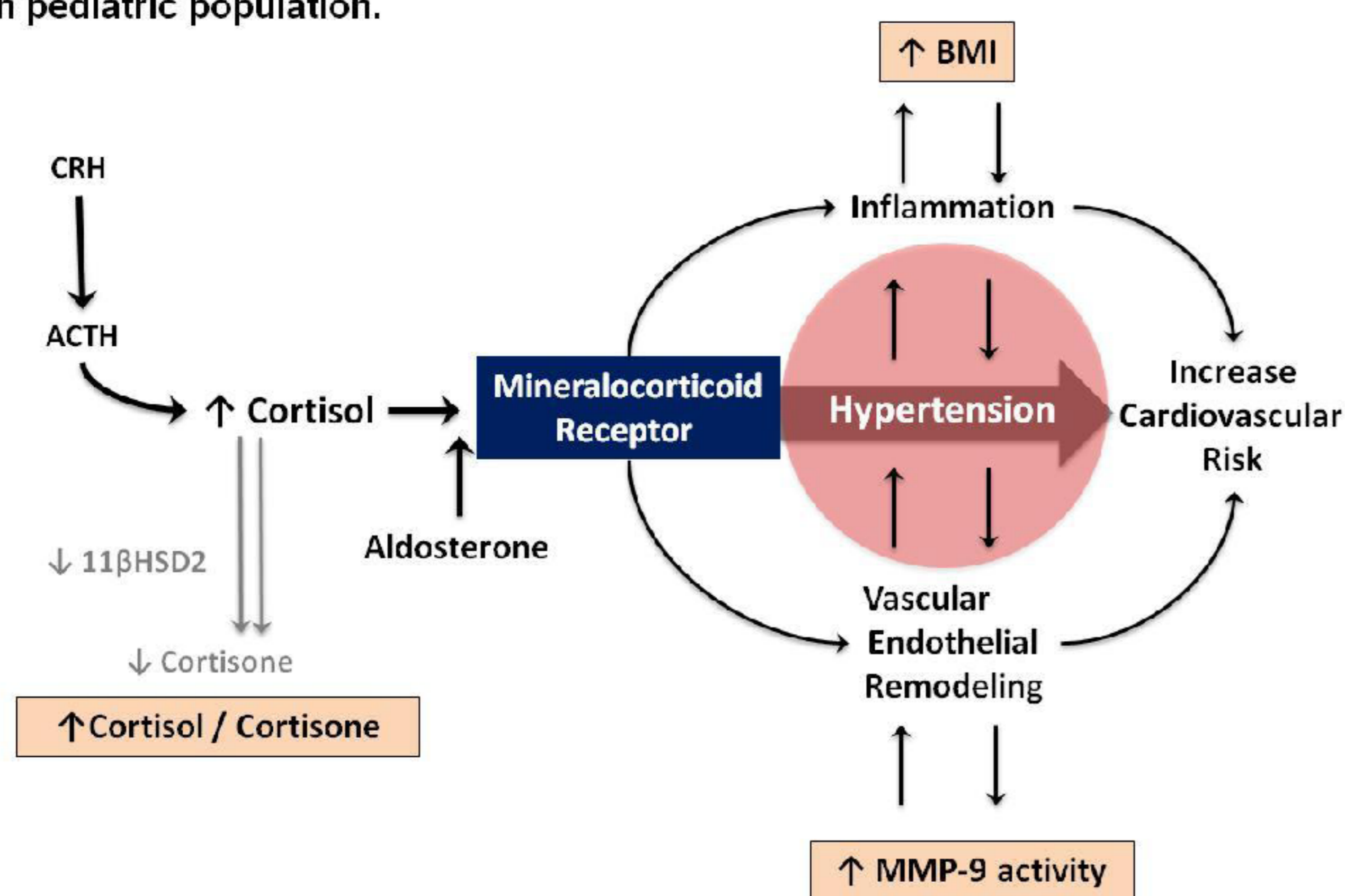
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OBJECTIVES

Background: Paediatric hypertension is increasing and has been associated with obesity and insulin resistance. Recently, cortisol/cortisone ratio and the metalloproteinase 9 (MMP-9), which is a marker of vascular remodeling, have been syndicated as new risk factors associated with hypertension.

Objective and hypotheses: To analyze the association between pediatric hypertension with clinical, biochemical, inflammation, and vascular remodeling biomarkers

Schematic diagram of the hypothesis rationale: 11 β HSD2 activity, body mass index and vascular remodeling are key elements related with blood pressure in pediatric population.

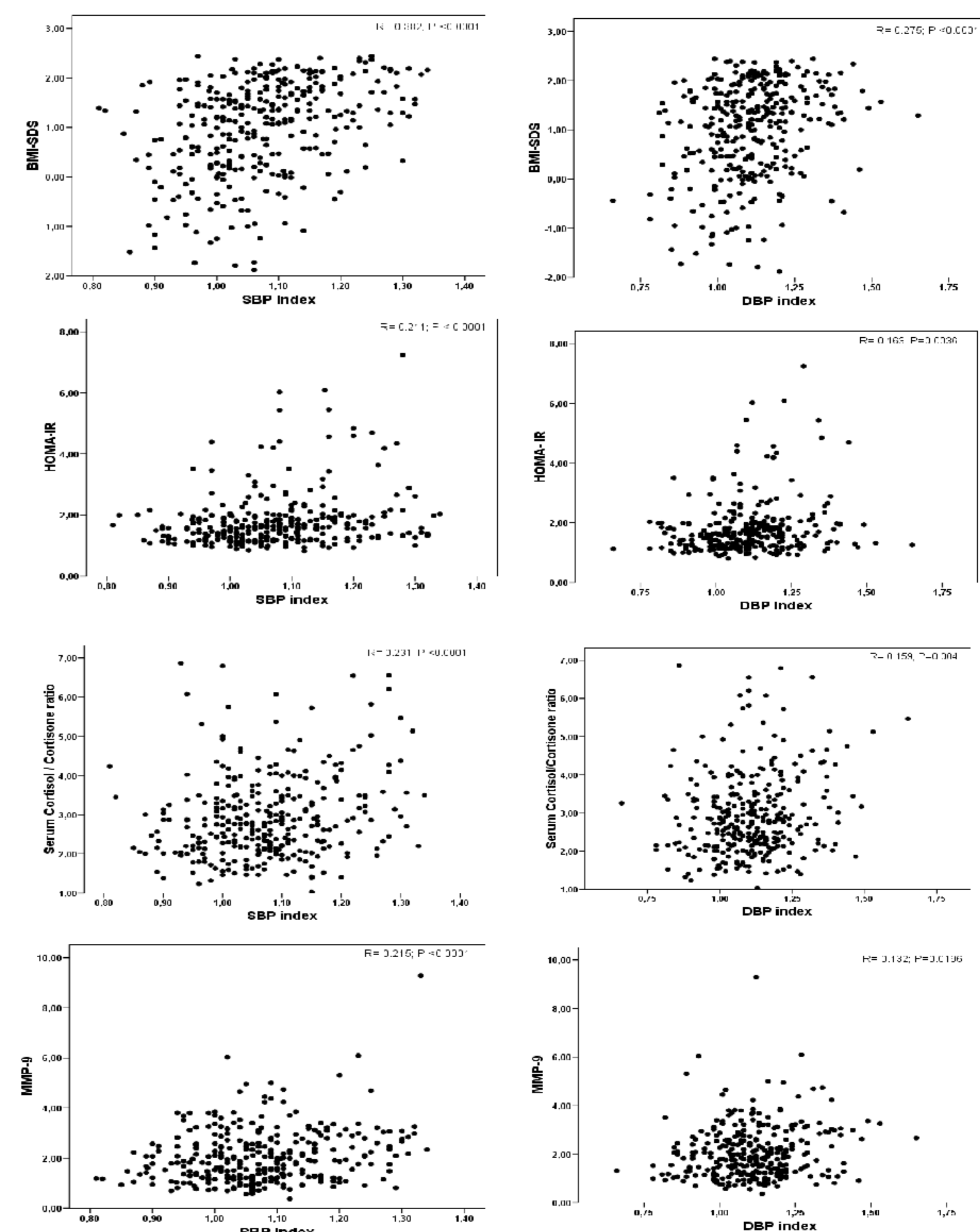


METHODS

- A cross sectional study was designed. We selected 320 subjects (4 to 16 years old, female 49.4%), anthropometric parameters, serum aldosterone (SA), plasma renin activity (PRA), cortisol, cortisone, HOMA-IR, hsCRP, adiponectin, IL-6, TNF- α , PAI-1, MMP-2 and MMP-9 activities were measured.
- We calculated SA/PRA ratio (ARR > 10, as screening of hyperaldosteronism) and serum cortisol/cortisone ratio as 11 β -HSD2 activity estimation.
- The systolic and diastolic blood pressure indexes were calculated (SBPi and DBPi= observed / 50th percentile blood pressure).

RESULTS

- According the Fourth Report of Task Force and JNC7, 59 children were hypertensive. Cortisol and cortisol/cortisone ratio were higher in hypertensive ($p < 0.001$).
- No hyperaldosteronism was found. A positive linear correlation was observed between SBPi and DBPi with: BMI-SDS, HOMA-IR, cortisol/cortisone ratio and MMP-2, MMP-9 activities. However, correlations with SA, PRA and ARR were not significant.
- The variables associated with hypertension in the multivariate logistic model were: serum cortisol/cortisone ratio (OR: 4.73; CI=2.32 – 9.65), BMI-SDS (OR: 3.74; CI=1.91 – 7.32), MMP-9 (OR: 3.48; CI=1.79 – 6.78) and HOMA-IR (OR: 2.20; CI=1.10 – 4.38).
- The other variables we did not correlate with blood pressure.



CONCLUSIONS

Novel biomarkers such serum cortisol/cortisone ratio and MMP-9 activity emerged associated with paediatric hypertension. Further studies are needed to know the role of these markers in hypertensive patients.

