DETERMINANTS OF PRIMARY HYPERTENSION IN CHILDREN AND ADOLESCENTS

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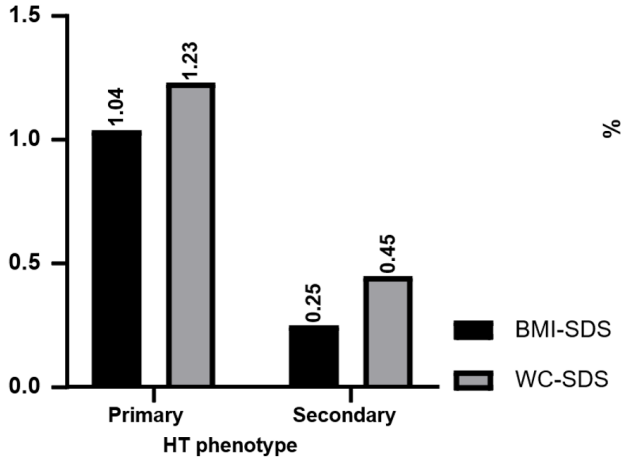
Objective: The aim of our study was to assess determinants of primary hypertension (PH) in patients diagnosed with hypertension (HT) based on office blood pressure (BP) measurements and hospitalized between 2012 and 2022 at the Department of Nephrology, Kidney Transplantation and Hypertension of the Children's Memorial Health Institute in Warsaw, Poland.

Material and methods: A retrospective analysis of 2,008 children aged 0–18 years (mean age: 12.3 ± 4.9 years) diagnosed with HT based on office BP was conducted. Patients were categorized into white coat hypertension (WCH), PH, or secondary hypertension (SH) groups using office (BP) measurements, 24-hour ambulatory BP monitoring (ABPM), and comprehensive clinical evaluation. Anthropometric, hemodynamic, and biochemical data were analyzed to identify determinants of PH.

Results:

- HT confirmed in 1,260 patients (after excluding 200 with kidney transplants and 548 with WCH),
- 49.3% of patient had PH and 50.7% had SH,



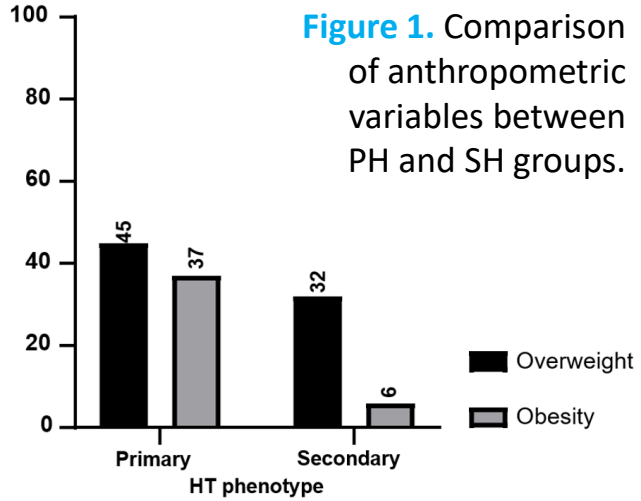


Figure 1. Comparison of anthropometric variables between PH and SH groups.

- PH emerged as the leading cause of HT after the age of 13, comprising 66.9% of confirmed HT cases in patients aged 13–18 years,
- Significant anthropometric and biochemical differences were observed between groups, anthropometric parameters linked to overweight, obesity, and metabolic syndrome risk were higher in the PH group,
- Multivariate regression analysis identified age > 12.5 years, obesity (BMI-SDS ≥ 1.65), and serum uric acid > 4.8 mg/dL as significant determinants of PH

Conclusions: Our study provides detailed insights into pediatric hypertension etiology and trends. We confirmed the importance of anthropometric assessment in diagnosing PH and showed, based on multivariate regression analysis, that serum uric acid is strongly associated with PH in children and adolescents.

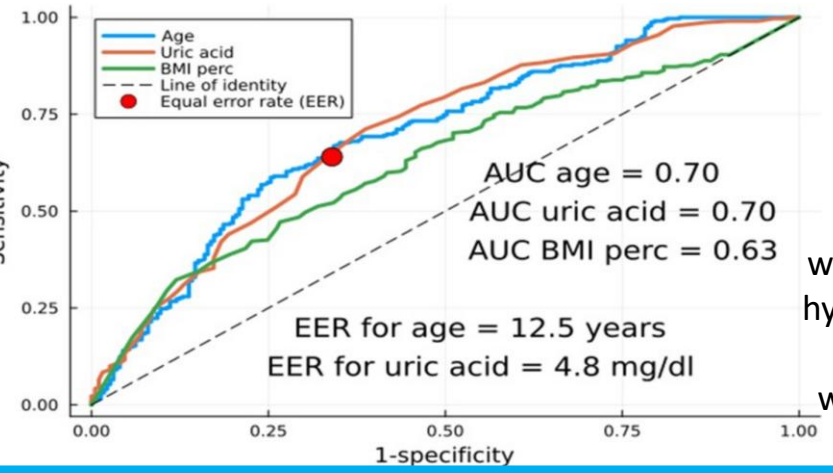


Figure 2. Factors associated with primary hypertension in patients with normal GFR.