Long-term follow-up of adolescents with ambulatory prehypertension

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Aim of the study

The aim of the study was to re-evaluate a group of young adults who were diagnosed with ambulatory prehypertension (AmbPreHT) in adolescence and to compare the outcomes in the observed at the same period control group.

Material and methods

22 patients [median age: 14,4 (7.1-17.2) years] diagnosed with AmbPreHT underwent:

- anthropometric measurements
- office and ambulatory blood pressure monitoring (ABPM)
- hypertension mediated organ damage assessment (HMOD): LVMi, cIMT, PWV

Patients were re-evaluated after 7.6 (2.5-10.9) years. Data were compared to 24 normotensive controls aged 14.7 (12.9-17.8) years after similar follow-up period [7.7 (7.6-9.3) years]

Results

At the time of AmbPreHT diagnosis, none (0/22) of the participants had left ventricular hypertrophy. Increased cIMT was present in 23% (5/22) and increased PWV in 59% (13/22). In comparison, none of the control participants (0/24) demonstrated LVH or increased cIMT, while increased PWV was observed in 50% (12/24). At baseline, AmbPreHT patients also had a higher body mass index (BMI) than controls [21.5 (14.4–31.7) vs. 19.5 (13.4–31.8) kg/m²].

Over the course of follow-up, 55% (12/22) of AmbPreHT patients developed hypertension (HT); predominantly isolated systolic HT (in 5 patients 24h-BP was normal due to antihypertensive treatment). The remaining 45% (10/22) did not progress to HT; among these, 60% (6/10) normalized blood pressure, whereas 40% (4/10) maintained the AmbPreHT status. In the control group, 6 individuals developed AmbPreHT, but none progressed to HT.

At the second examination, LVH was identified in 9% (2/22) of the AmbPreHT group, increased cIMT in 23% (5/22), and increased PWV in 23% (5/22). Patients who developed HT had a significantly higher BMI compared with those who remained AmbPreHT or became normotensive [30.46 (17.59–35.91) vs. 24.81 (19.16–35.42) kg/m²]. When compared with controls, AmbPreHT patients maintained a higher BMI at follow-up [28.5 (17.6–35.9) vs. 24.6 (17.3–34.1) kg/m²]. In the control group, no participants developed LVH or increased cIMT, and increased PWV decreased from 50% (12/24) at baseline to 8% (2/24) at follow-up.

Fig. 1. Distribution of blood pressure phenotypes in AmbPreHT group vs. control group at follow up.

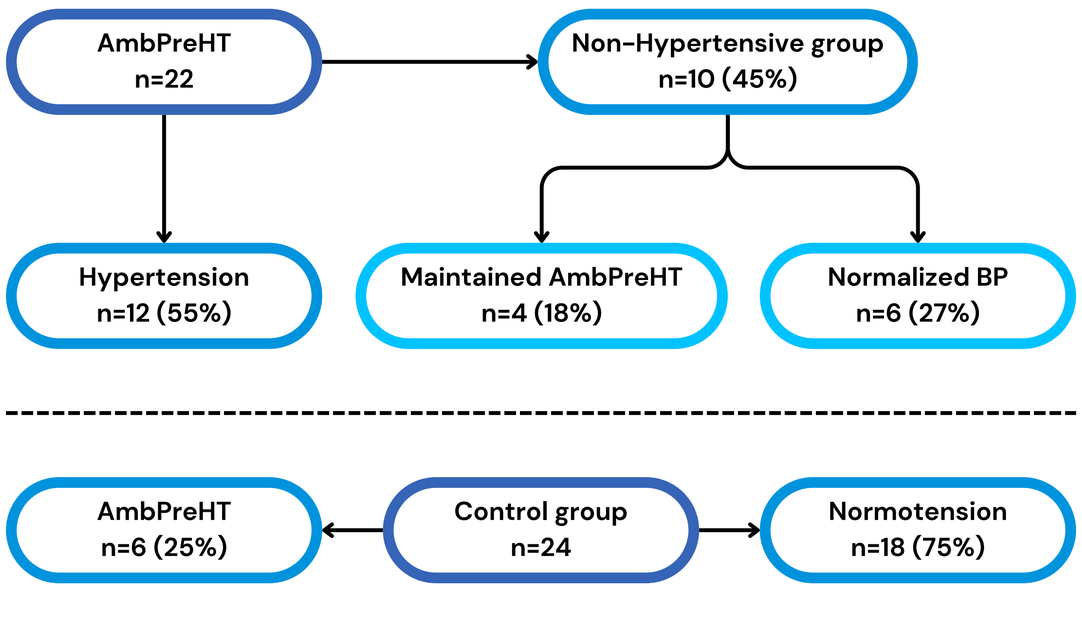
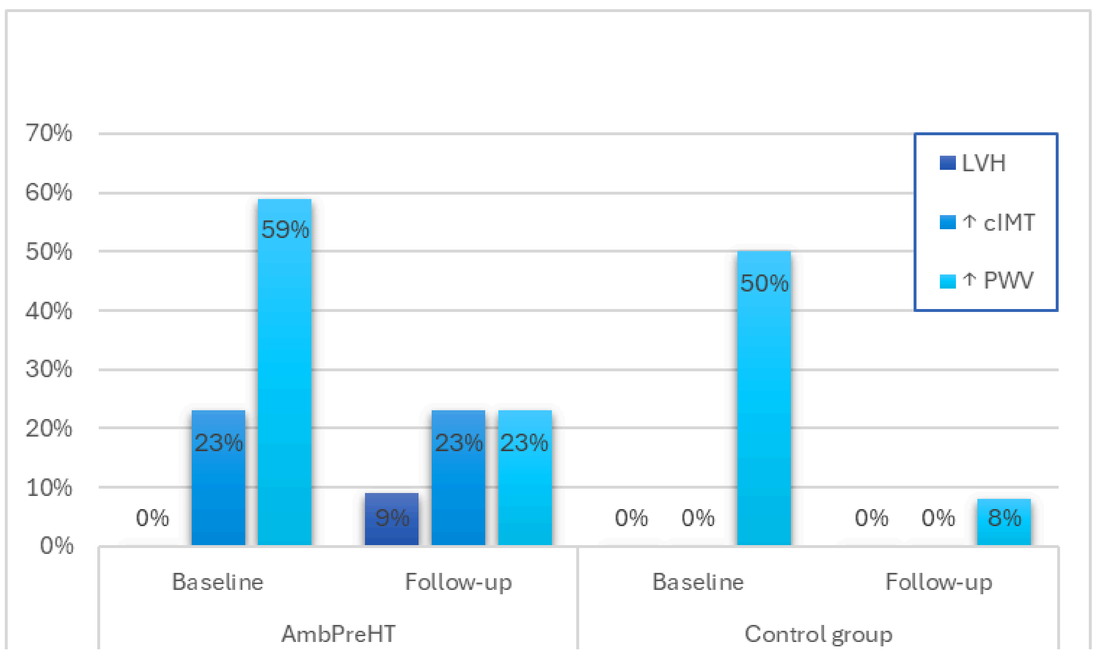


Fig. 2. Signs of hypertension-mediated organ damage in AmbPreHT vs. control group, at baseline and follow-up



Conclusions

- Adolescents diagnosed with AmbPreHT revealed significant progression to hypertension
- This group of patients may present signs of HMOD
- Our findings underscore the need of follow up of children with AmbPreHT