Fundusze Europejskie dla Rozwoju Społecznego
Rzeczpospolita Polska
Dofinansowane przez Unię Europejską

Long term follow-up of adolescents with white coat hypertension

Kacper Mitoraj [1,2], Krzysztof Skoczyński [1], Jakub Pilip [1,2], Maksymilian Sikorski [1,2], Małgorzata Podymniak-Grzeszykowska [1], Jan Koziej [1], Aldona Wierzbicka[3], Anna Świąder-Leśniak[4], Marta Świderska[5], Janusz Feber [6], Mieczysław Litwin[1] , Łukasz Obrycki [1]

[1]Children's Memorial Health Institute, Department of Nephrology, Kidney Transplantation and Hypertension, Warsaw, Poland
[2]Cardinal Stefan Wyszynski University, Faculty of Medicine, Collegium Medicum, Warsaw, Poland
[3]Children`s Memorial Health Institute, Department of Biochemistry and Experimental Medicine, Warsaw, Poland
[4]Children`s Memorial Health Institute, Laboratory of Anthropology, Warsaw, Poland
[5]Children`s Memorial Health Institute, Department of Pediatric Surgery and Organ Transplantation, Warsaw, Poland
[6]The Children's Hospital of Eastern Ontario, Division of Nephrology, Department of Pediatrics, Ottawa, Canada

Aim of the study

The aim of the study was to re-evaluate young adults who were diagnosed with white coat hypertension (WCH) during adolescence

Material and methods

The study included 58 participants - 34 patients diagnosed with WCH during adolescence and 24 normotensive controls.

All patients underwent complete hypertension diagnosis evaluation including:

- Anthropometric measurements
- Office blood pressure and ABPM measurements
- Biochemical tests
- Hypertension-mediated organ damage (HMOD) assessment (LVMi, cIMT, PWV)

Results

At the time of WCH diagnosis, left ventricular hypertrophy (LVH) was present in 4/34 (11.8%), increased cIMT in 4/34 (11.8%) and increased PWV in 19/34 (55.9%). In the control group those findings were 2/24 (8%), 0/9, and 14/24 (58.3%), respectively. After follow-up, 21/34 (61.8%) maintained WCH or normalized BP, while 13/34 (38.2%) developed sustained hypertension (SH).

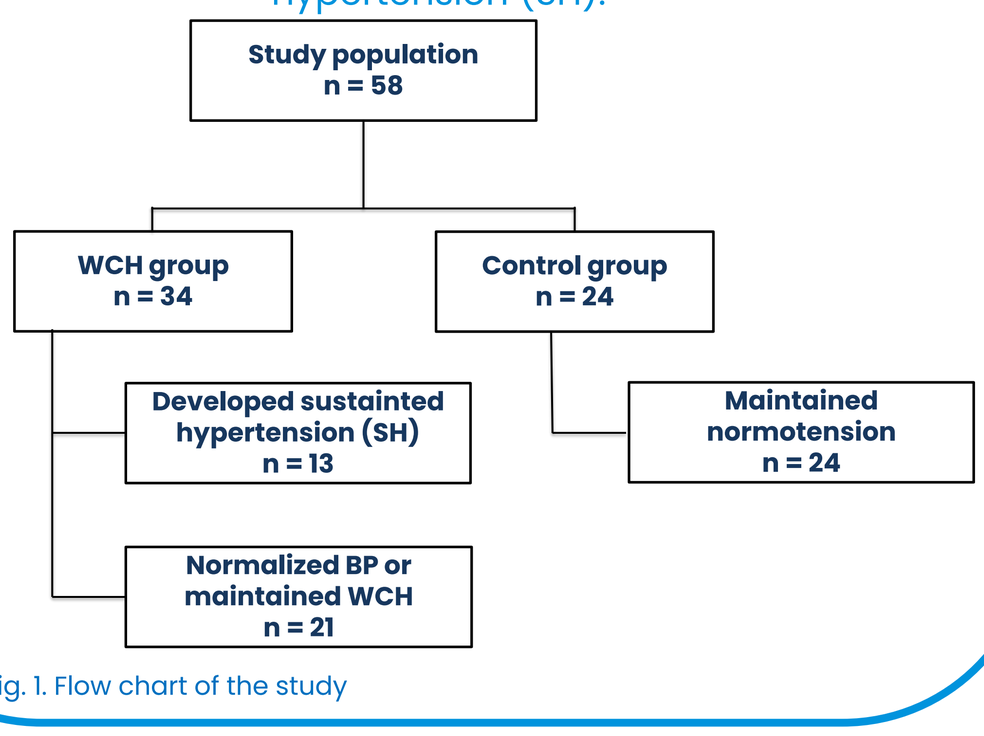

Fig. 1. Flow chart of the study

At follow-up, LVH was present in 3/21 (14.3%), increased cIMT in 1/21 (4.8%) and increased PWV in 3/21 (14.3%) of WCH/normotensive group, and in 3/13 (23.1%), 0/13 (0%), and 4/13 (30.8%) of SH patients, respectively. In the control group those values were 0/24 (0%), 0/24 (0%), and 2/24 (8.3%).

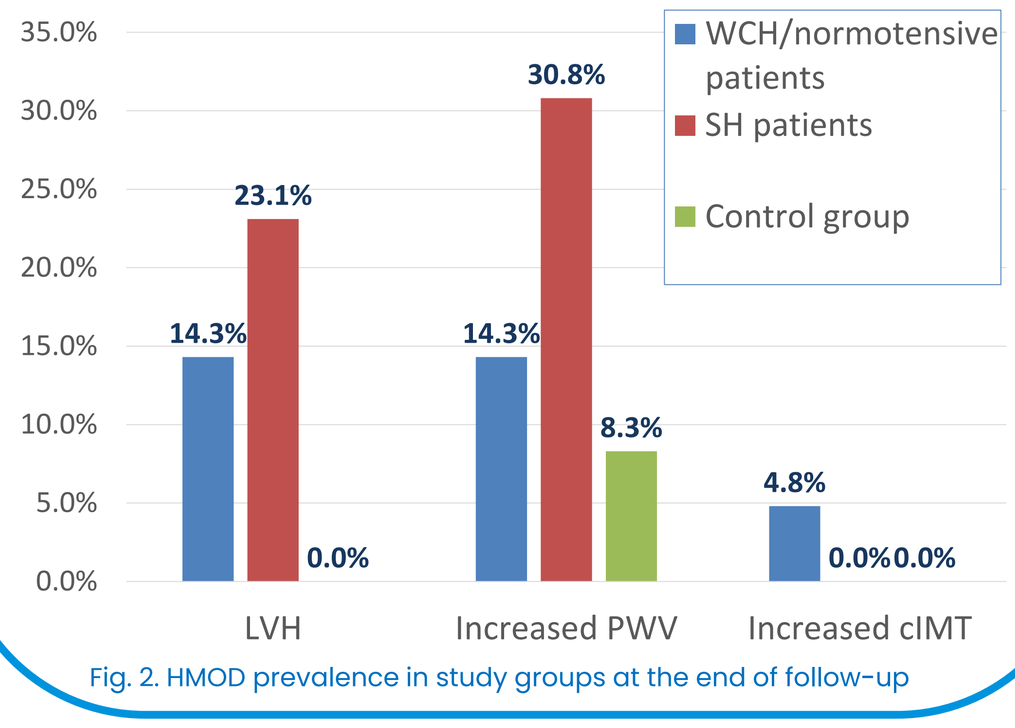

Fig. 2. HMOD prevalence in study groups at the end of follow-up

SH group showed greater increases in waist circumference, LDL cholesterol, fasting glucose, central systolic blood pressure (cSBP), augmentation pressure (AugPress), PWV, cIMT, and LVMi compared to WCH/normotensive group. However, the only significant difference between baseline and follow-up was found for increase of LVMi values (35.38 to 42.63 g/m^{2,7} vs 33.90 to 35.78 g/m^{2,7}in the WCH/normotension group; $p<0.05$).

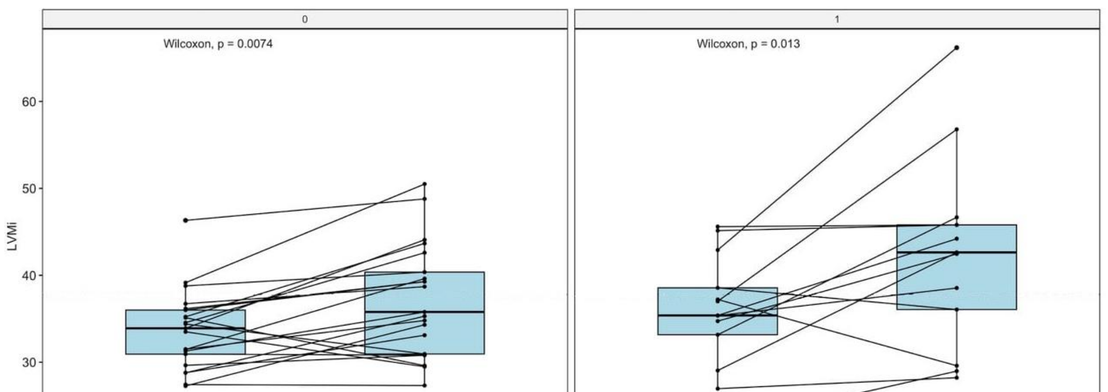

Fig. 3. LVMi value change between baseline and follow-up

Patients who maintained WCH or normalized BP exhibited significantly lower ABPM systolic blood pressure (SBP) and AugPress values both at baseline ($p=0.004$, $p=0.061$, respectively) and at follow-up ($p=0.040$, $p=0.009$, respectively). These differences were more pronounced at follow-up:

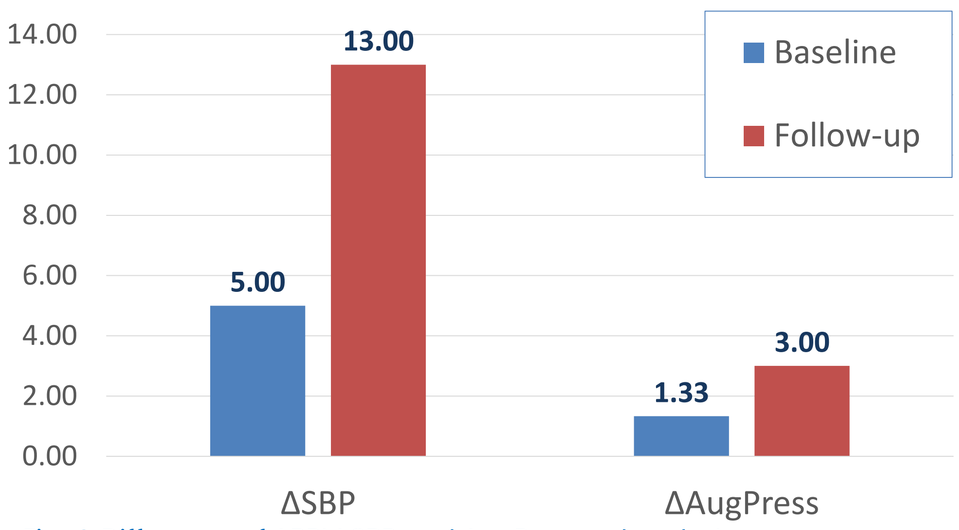

Fig. 4. Difference of ABPM SBP and AugPress values between WCH/Normalized BP group and SH group at baseline and at follow-up

Conclusions

- A substantial proportion of adolescents diagnosed with WCH progress to SH in young adulthood.
- Some of those patients presented with concurrent development of HMOD.
- Our study suggests a potential prognostic value of selected parameters, including ABPM SBP, AugPress, PWV, and LVMi in predicting development of SH and HMOD.