PROGRAM & ABSTRACTS BOOK

The 4th International Congress of Hypertension in Children, Adolescents and Young Adults (ICHCA 2026)

7-9 May 2026, Prague, Czech Republic

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Betaloc® ZOK
metoprololiumsukcinát

7 approved indications[1]

1. Treatment of angina pectoris[1]
2. Treatment of stabilized chronic symptomatic heart failure of moderate to severe degree[1]
3. Treatment of disorders of heart rhythm[1]
4. Treatment of hypertension[1]
5. Treatment of functional heart disorders with palpitations[1]
6. Maintenance treatment after myocardial infarction[1]
7. Prophylaxis of migraine[1]

1× Betaloc® ZOK metoprololiumsukcinát cardioselective beta-blocker intended for once daily administration[1]

Betaloc® ZOK metoprololiumsukcinát is indicated for the treatment of patients with hypertension aged ≥ 6 years[1]

Short Summary of Characteristics.
NAME: Betaloc® ZOK 25 mg prolonged-released tablets, **Betaloc® ZOK 50 mg** prolonged-released tablets, **Betaloc® ZOK 100 mg** prolonged-released tablets, **Betaloc® ZOK 200 mg** prolonged-released tablets. **COMPOSITION:** Each prolonged-release tablet contains metoprolol succinate 23,75 mg, respectively. of 47.5 mg or 95 mg or 190 mg (metoprolol tartrate 25 mg, 50 mg, or 100 mg, or 200 mg). **MARKETING AUTHORISATION HOLDER:** Herbacos Recordati s.r.o., generála Svobody 335, Rosice, 533 51 Pardubice, Czech Republic. **THERAPEUTIC INDICATIONS:** Treatment of hypertension, angina pectoris; Treatment of disorders of heart rhythm including especially supraventricular tachycardia; maintenance treatment after myocardial infarction; treatment of functional heart disorders with palpitations; prophylaxis of migraine. **POSOLOGY AND METHOD OF ADMINISTRATION:** The recommended dosage is 100 – 200 mg daily. The maximum daily dose of Betaloc ZOK is 400 mg. Betaloc ZOK is intended for once daily administration, preferably in the morning before meals or during meals. The tablets should be swallowed with liquid. The tablets and the divided halves should not be chewed or crushed. **CONTRAINDICATIONS:** A-V block of second or third-degree, decompensated cardiac heart failure, sinus bradycardia (<50 bpm), sick-sinus syndrome, sinoatrial block, cardiogenic shock, severe peripheral arterial circulatory disorder, hypotension (SBP < 100 mmHg), bronchial asthma, other severe obstructive lung disorders, untreated phaeochromocytoma, metabolic acidosis. Metoprolol should not be given to patients with suspected acute myocardial infarction as long as the heart rate is <50 beats/minute, the P-Q interval is > 0.24 seconds or the systolic blood pressure is <100 mmHg (13.33 kPa). **SPECIAL WARNINGS AND PRECAUTIONS:** in the treatment of patients with asthma or chronic obstructive pulmonary disease; in patients with A-V block; risk of affecting sugar metabolism or masking hypoglycemia; if metoprolol is administered to patients with pheochromocytoma, an alpha-sympatholytic should also be administered simultaneously. **INTERACTIONS**: beta1 blocking agents (e.g. eye drops) and gangliоplegik; monoamine oxidase inhibitors; calcium channel blockers; concomitant treatment with indomethacin or other prostaglandin synthetase inhibiting agents may decrease the antihypertensive effect of beta-blockers; care should be taken when combining with other antihypertensive drugs or drugs that might reduce blood pressure such as tricyclic antidepressants, barbiturates and phenothiazines. The dosages of oral antidiabetic agents may have to be readjusted in patients receiving beta-blockers. Beta-blockers increase the hypoglycaemic effect. **FERTILITY, PREGNANCY AND LACTATION:** Metoprolol should not be administered during pregnancy and lactation. In the case that a pregnant woman takes metoprolol, it is recommended to carry out suitable monitoring of the mother/fetus. **UNDESIRABLE EFFECTS** Common - bradycardia, postural disorders (very rarely accompanied by syncope), cold extremities, palpitations. **SPECIAL PRECAUTION FOR STORAGE:** Do not store about 30 °C. **DATE OF FIRST AUTHORISATION:** Betaloc ZOK 25 mg: 21. 3. 2001; Betaloc ZOK 50 mg: 20. 12. 2000; Betaloc ZOK 100 mg: 15. 4. 1998; Betaloc ZOK 200 mg: 20. 12. 2000. **DATE OF REVISION:** 15. 01. 2025. **MA NUMBERS:** Betaloc ZOK 25 mg: 58/117/01-C.; Betaloc ZOK 50 mg; 58/628/00-C; Betaloc ZOK 100 mg: 58/015/98-C; Betaloc ZOK 200 mg: 58/629/00-C. **Before prescribing the product, please carefully read the full Summary of Product Characteristics, which can be found on the website: https://prehledy.sukl.cz/prehled_leciv.html#/leciva/0231690. The medicinal product is available only with a medical prescription. The product is for internal use. The product is covered by public health insurance. 1.** SPC Betaloc ZOK January 2025**.** Material production date: March 2026. Material code: CZ-BET-2026-01-advertisement eng. This material is intended for healthcare professional and internal company purposes.

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WELCOME FROM CONGRESS CHAIRS

Dear Colleagues and Friends,

It is our great pleasure to welcome you to the fourth edition of ICHCA – International Congress of Hypertension in Children, Adolescents and Young Adults. ICHCA was founded by clinicians and researchers involved in arterial hypertension in children, adolescents, and young adults. We met first in Valencia, then twice in Warsaw. Now it's time for Prague.

Over the course of three days, you will hear numerous lectures, meet with world leaders in the field of pediatric hypertension, and discuss dozens of original papers. You will also have the opportunity to explore Prague – a city belonging to the UNESCO world heritage but also a city not only of history and art. It is simply a magical city.

We wish you new scientific experiences, new knowledge, stimulating discussions, getting new friends and colleagues, and a wonderful stay in this beautiful and extraordinary city.

Mieczysław Litwin and Tomáš Seeman

Chairs of the ICHCA 2026

GENERAL INFORMATION

Congress Dates
7-9 May 2026

Congress Venue
Hotel Occidental Praha
Na Strži 32, 140 00 Prague 4, Czech Republic
Tel: +420 296 772 111

Registration Desk
The Registration Desk is located on the 1st floor. Desk open hours

Thursday, 7 May	07:00-15:00
Friday, 8 May	08:00-14:00
Saturday, 9 May	08:30-10:30

Name badges must be worn at all times during Congress sessions and events.

Congress Sessions
The congress sessions will take place in halls located on the 1st floor

Refreshments
Coffee breaks and light buffet lunch breaks will be served in the foyer area on the 1st floor.

Congress Secretariat
secretariat@ichca.net

Thursday, 7 May 2026	
07:00-15:00	Registration
08:00-09:00	**Workshop**
	What the Nephrologist Needs to Know and What the Cardiologist Can Provide ***Carissa Baker Smith, USA*** ***Elaine Urbina, USA*** **08:00-08:30 Cardiac Structure and Function Assessment** Background: (Carissa Baker-Smith) 1. Assessing Cardiac Target Organ Damage (TOD) a. Left ventricular structure assessment b. Left ventricular function assessment i. Assessments of diastolic function ii. Assessment of systolic function 2. Reports and Data Management a. Reporting b. Data management **08:30-09:00 Stations** 1. Technique for assessing structure and function (Elaine Urbina) a. Ventricular structure and function b. Pulse wave velocity 2. Reports and Reporting; A Case-Based Approach (Carissa Baker-Smith)
09:00-09:15	Coffee Break
09:15-09:30	Congress Opening Welcome ***Tomáš Seeman, Czech Republic*** ***Mieczysław Litwin, Poland***
09:30-10:30	**Session I: Early Vascular Aging** Chair: ***Mark Mitsnefes, USA***
09:30-09:50	Early Vascular Aging in Hypertensive Adolescents, Personal View ***Mieczysław Litwin, Poland***

09:50-10:10	The Youth Vascular Consortium: Exploring Early Vascular Aging in Youth ***Elaine Urbina, USA***
10:10-10:30	(Pre-recorded) Early life origins of Early Vascular Aging and Cardiovascular Disease ***Peter Nilsson, Sweden***
10:30-11:30	**Session II: Epidemiology** Chair: ***Mieczysław Litwin, Poland***
10:30-10:50	Prevalence, Trends: Differences around the world ***Rahul Chanchlani, Canada***
10:50-11:10	New EU Reference values ***Elke Wühl, Germany***
11:10-11:30	New US Reference Values – use of EHR (Electronic Health Record). Is it feasible? ***Mark Mitsnefes, USA***
11:30-12:00	Coffee Break
12:00-13:00	**Session III: Pathophysiology** Chair: ***Tomáš Seeman, Czech Republic***
12:00-12:20	Primary – Adverse Childhood Experiences ***Daniel Feig, USA***
12:20-12:40	Primary – Genomics of Hypertension – The Road to Precision Medicine ***Sandosh Padmanabhan, UK***
12:40-13:00	APOL1, Hypertension and Chronic Kidney Disease – Unique to the African diaspora ***Brian Rayner, South Africa***
13:00-14:00	Lunch Break
	13:30-14:00 E-Poster Session 1 Moderator: ***Elaine Urbina, USA*** 13:30-13:35 Real-World Management of Pediatric Hypertension: Evidence from National Healthcare Claims Data – ***Jana Preclíková, Czech Republic***

	13:35-13:40 Impact of Blood Pressure and Body Mass Index on Left Ventricular Structure and Function in Adolescents – ***Rina Rus, Slovenia*** 13:40-13:45 Sex Differences in Children and Adolescents with Hypertension – ***Mieczysław Litwin, Poland*** 13:45-13:50 Etiology and Comorbidity of Hypertension in Preteen Children – ***Sonja Golob Jančič, Slovenia*** 13:50-13:55 Monocyte-to-Neutrophil Ratio as an Immunological Marker of Left Ventricular Hypertrophy in Children with Primary Hypertension – ***Piotr Skrzypczyk, Poland*** 13 :55-14:00 High blood pressure associated with Sturge-Weber syndrome – ***Ana Cristina Aguilar-Rodríguez, Spain***
14:00-15:00	**Session IV: Measurement of BP** **Chair: *Manish Sinha, UK***
14:00-14:20 14:20-14:40 14:40-15:00	(Pre-recorded) Validation of BP devices in Peds (electronic etc) ***Stella Stabouli, Greece*** Ambulatory Blood Pressure Monitoring (Methodology) ***Elke Wühl, Germany*** Home Blood Pressure – Update and references ***Tomas Seeman, Czech Republic***
15:00-15:30	Coffee Break
	15:20-15:30 E-Poster Session 2 Moderator: ***Terezie Sulakova, Czech Republic*** 15:20-15:25 Blood Pressure Variability and Low-Grade Inflammation in Pediatric Patients with Primary Hypertension – ***Piotr Skrzypczyk, Poland*** 15:25-15:30 White Coat Hypertension in Children: A 15-Year Experience from a Single Centre – ***Martina Filipič, Slovenia***
15:30-17:00	**Session V: Primary HT** Chair: ***Elke Wühl, Germany***

15:30-15:50	Pathophysiology of hypertension in obesity ***Mark Mitsnefes, USA***
15:50-16:10	Obesity and Metabolic Syndrome ***Tammy Brady, USA***
16:10-16:38	**Oral Presentations** 16:10-16:17 Population-Specific Oscillometric Office Blood Pressure Reference Values for Danish Children: Reducing the Risk of Misclassification – ***Lise Fischer Mikkelsen, Denmark*** 16:17-16:24 Perceived Discomfort During Office Blood Pressure Measurement in Children and Adolescents: A Cross-Sectional Study - ***Lise Fischer Mikkelsen, Denmark*** 16:24-16:31 Early Changes in Central Pulse Wave Morphology in Children with Chronic Kidney Disease – ***Louise Keehn, UK*** 16:31-16:38 The Relationship Between Kidney Size and Blood Pressure Values in Children with Autosomal Dominant Polycystic Kidney Disease - ***Lukas Obryscki, Poland***
16:38-16:58	Hypertension mediated organ injury ***Carissa Baker-Smith, USA***
17:00-18:00	Networking Get Together at the Hotel Bar (Cash Bar)

Friday, 8 May 2026	
08:00-14:00	Registration
09:00-10:00	**Session VI: Secondary HT** Chair: ***Daniel Feig, USA***
09:00-09:20	Hypertension in Renoparenchymal Kidney Disease and Renoprotection ***Tomas Seeman, Czech Republic***
09:20-09:40	Renovascular Hypertension in Children - Pediatric Perspective ***Lukasz Obrycki, Poland***
09:40-10:00	Endocrine Causes of Hypertension ***Jiri Widimsky, Czech Republic***
10:00-11:00	**Session VII: HT in Special Situations** Chair: ***Rahul Chanchlani, Canada***
10:00-10:20	Hypertension in Pregnancy ***Renata Cifkova, Czech Republic***
10:20-10:40	Cardiovascular Causes of Hypertension ***Mieczysław Litwin, Poland*** ***Adam Kolesnik, Poland***
10:40-11:00	Hypertension in Diabetes Mellitus ***Terezie Sulakova, Czech Republic***
11:00-11:30	Coffee Break
11:30-13:00	**Session VIII: Treatment on Primary HT** Chairs: ***Jospeh Flynn, USA***
11:30-11:50	Diet in HT: Sugar, Salt / DASH diet "Dangerous White Powders:" Sugar and Salt ***Daniel Feig, USA***
11:50-12:10	Tailoring treatment to phenotype in primary hypertension: what do we know and what next? ***Manish Sinha, UK***
12:10-12:30	Contraception in adolescents and hypertension ***Brian Rayner, South Africa***
12:30-13:00	

	Oral Presentations 12:30-12:37 Experience with Home-Based vs. Ambulatory Blood Pressure Monitoring Among Teens and Guardians- ***Goutham Rao, USA*** 12:37-12:43 Microrna-16 As a Potential Indicator of Cardiac Strain Abnormalities in Children with Primary Hypertension – ***Michal Szyszka, Poland*** 12:43-12:50 Cardiac Remodelling as Assessed by MRI in Hypertensive Adolescents and Young Adults: a Single Centre Cross Sectional Study – ***Emily Haseler, UK***
13:00-14:00	Lunch Break
	13:30-14:00 E-Poster Session 3 Moderator: ***Tammy Brady, USA*** 13:30-13:35 Arterial Hypertension Treatment Peculiarities for Children and Adolescents in Lithuania - ***Kamilė Čeponytė, Lithuania*** 13:35-13:40 Home (HBPM) versus 24-hour ambulatory blood pressure monitoring (ABPM) for diagnosis of hypertension in African American adolescents – ***Goutham Rao, United States*** 13:40-13:45 Fibromuscular Dysplasia in Children – A Single-Center Experience – ***Michal Szyszka, Poland*** 13:45-13:50 A complex case of renal artery stenosis in a 3-year-old patient with neurofibromatosis type 1 and secondary hypertension – ***Piotr Skrzypczuk, Poland*** 13:50-13:55 Arterial Hypertension in The Czech Register of Renal Biopsies in Children Between 1994 and 2024 – ***Alexander Kolský, Czech Republic*** 13:55-14:00 Underestimated Hypertension in 2-years Old Girl with Adrenal Cushing Syndrome - ***Khrystyna Slivinska-Kurchak, Ukraine***
14:00-15:00	**Session IX: Public Health** Chair: ***Brian Rayner, South Africa***

14:00-14:20	Social Determinants of Hypertension and its Control ***Carissa Baker-Smith, USA***
14:20-14:40	Effects of New Adult Guidelines EU and USA on Public Health ***Joseph Flynn, USA***
14:40-15:00	**Oral Presentations** 14:40-14:47 Feasibility of Community Pharmacy–Based Blood Pressure Screening for Adolescents: A Canadian Pilot Study – ***Diya Patel, Canada*** 14:47-14:54 Global research priority-setting exercise on the measurement, diagnosis and management of hypertension in adolescence – ***Prerna Banati, Switzerland*** 14:54-15:01- ALERT-BP: Machine Learning for Early Detection of Pediatric Hypertension Across Canadian Cohorts – ***Devanshi Desai, Canada***
15:00-15:30	Coffee Break
15:30-16:30	**Session X: Transition** Chair: ***Carissa Baker-Smith, USA***
15:30-15:44	**Oral Presentations** 15:30-15:37 Cardiovascular Determinants of Blood Pressure at Age 10 years: a Generation R Study – ***Emily Haseler, UK*** 15:37-15:44 Childhood Hypertension and Risk of Long-Term Morbidity and Mortality: A Nationwide Danish Cohort Study - ***Lise Fischer Mikkelsen, Denmark***
15:44-16:04	Ready Steady Go Hello: Delivering Patient Empowerment, Shared Decision-Making and Transition Across the Life Course - ***Arvind Nagra, UK***
16:04-16:24	(Pre-recorded) Strategies aimed to improve outcomes in teenagers and young adults transitioning to adult care. ***Paul Harden, UK***
16:24-16:54	**E-Poster Session 4** Moderator: ***Ruan Kruger, South Africa*** 16:24-16:29 Pseudo - resistant hypertension in a 17-year-old female patient with Munchausen syndrome – ***Adam Bujanowicz, Poland***

	16 29-16:34 Subclinical inflammation and arterial damage in children with primary hypertension and white coat hypertension – ***Adam Bujanowicz, Poland*** 16:34-16:39 Hyponatremic-hypertensive syndrome as a rare manifestation of renovascular hypertension - a case series - ***Adam Bujanowicz, Poland*** 16:39-16:44 Distribution of 24-Hour Ambulatory Blood Pressure in South Asian Children Living in Canada: Preliminary Findings from the ASHA Study – ***Diya Patel, Canada***
16 :45	END OF DAY 2

Saturday, 9 May 2026	
08:30-10:30	Registration
09:00-10:00	**Session XI: Research in HT** Chair: ***Lukasz Obrycki, Poland***
09:00-09:30	What's new in hypertension research over past 12-24 months ***Joseph Flynn, USA***
09:30-10:00	New Hypertension Research Projects ***Ruan Kruger, South Africa***
10:00-10:30	Coffee Break
10:30-11:30	**Session XII: Complex Cases** Panel: *All Faculty*
10:30-10:35	Severe Reno-Vascular Hypertension with Left Ventricular Hypertrophy in an Infant with a Smad3 Mutation ***Mieczysław Litwin / Lukasz Obrycki, Poland***
10:35:10:45	*Discussion*
10:45-10:50	Beyond the Office: Home Blood Pressure Monitoring Identified Severe Renovascular Hypertension in a Two-Year-Old Boy ***Jana Preclíková, Czech Republic***

10:50-11:00	*Discussion*
11:00-11:05	Surgical and Endovascular Management of renal artery stenosis in a solitary functioning kidney in Alagille Syndrome ***Sajini Herath, UK***
11:05-11:15	*Discussion*
11:15-11:20	An Interesting Case of Hypertension in a Young Adolescent ***Cheentan Singh, UK***
11:20-11:30	*Discussion*
11:30-11:40	**Congress Closing Remarks** *Tomáš Seeman, Czech Republic*

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Session V

Population-Specific Oscillometric Office Blood Pressure Reference Values for Danish Children: Reducing the Risk of Misclassification

Mrs Lise Fischer Mikkelsen[1,2], Professor Henrik Enghusen Poulsen[3,4], Mikkel Porsborg Andersen[5,6,7], Professor Søren Hagstrøm[8,9], Professor Konstantinos Kamperis[2,10], Jørgen Kim Kanters[11,12], Christina Ellervik[13,14,15,16], Luise Borch[1,2]
[1]Department of Pedriatrics and Adolescent Medicine, Gødstrup Hospital, Gødstrup, Denmark, [2]Department of Clinical Medicine, Aarhus University, Aarhus, Denmark, [3]Department of Endokrinology, Copenhagen University Hospital Bispebjerg Frederiksberg Hospital, Copenhagen, Denmark, [4]Department of Clinical Medicine, Health Science Fakulty, University of Copehagen, Copenhagen, Denmark, [5]Copenhagen University Hospital – Steno Diabetes Centre Copenhagen, Herlev, Denmark, [6]Prehospital Centre, Region Zealand, Næstved, Denmark, [7]Department of Health Science and Technology, Aalborg University, Aalbrog, Denmark, [8]Department of Clinical Medicine, Aalborg University, Aalbrog, Denmark, [9]Department of Pediatric and Adolescent Medicine, Aalborg University Hospital, Aalborg, Denmark, [10]Department of Pediatrics and Adolescent Medicine, Aarhus University Hospital, Aarhus, Denmark, [11]Laboratory of Experimental Cardiology, Department of Biomedical Sciences, University of Copenhagen, Copenhagen, Denmark, [12]Center of Biosignal Research, University of California, San Francisco, USA, [13]Department of Clinical Biochemistry, Zealand University Hospital, Køge, Denmark, [14]Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark, [15]Department of Laboratory Medicine, Boston Children's Hospital, Boston, USA, Bostion, USA, [16]Department of Pathology, Harvard Medical School, Boston, USA

Background:
Paediatric blood pressure(BP) reference values are central to the diagnosis and management of hypertension. Current international guidelines rely on reference values based on U.S.-based, multiethnic cohorts. This study aimed to establish population-specific oscillometric office BP reference values for Danish children and adolescents and to evaluate the applicability of international reference models in this population.

Methods:
We included 1,771 Danish children aged 4–15. Children with chronic disease, use of relevant medication, or non-Danish ethnicity were excluded. BP was measured using

a validated oscillometric device. Quantile regression models were developed to generate systolic and diastolic BP percentiles (5th–95th), stratified by age and sex, based on normal-weight children (n=1,512). Model performance was compared with U.S.-based reference values. External validation analyses were conducted using NHANES 2015–2016 data.

Results:
We developed novel age- and sex-specific oscillometric BP reference models for ethnically Danish children and adolescents. Exclusion of height from multivariable models resulted in only minimal reductions in explanatory power. Application of U.S.-based reference values to the Danish cohort led to systematic underestimation of high BP (≥95th percentile). Sensitivity for detecting high BP using international reference models ranged from 38% to 69% when using the novel Danish population-specific model as a reference.

Conclusion:
Population-specific oscillometric office BP reference values substantially improve the accuracy of paediatric BP assessment. Simplified models based solely on age and sex offer a clinically pragmatic alternative for routine implementation. Continued reliance on international, multiethnic reference values may result in misclassification and underdiagnosis of hypertension in distinct paediatric populations.

Perceived Discomfort During Office Blood Pressure Measurement in Children and Adolescents: A Cross-Sectional Study

Mrs Lise Fischer Mikkelsen[1,2], Dr Ann-Kristine Mandøe Svandsen[1,2], Dr Sofie Axelgaard[1,2], Malene Klinkby Lind[1], Malene Nørskov[1], Christina Ellervik[3,4,5,6], Luise Borch[1,2]
[1]Department of Pediatrics and Adolescent Medicine, Gødstrup Hospital, Gødtrup, Denmark, [2]Department of Clinical Medicine, Health, Aarhus University, Aarhus, Denmark, [3]Department of Clinical Biochemistry, Zealand University Hospital, Køge, Denmark, [4]Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark, [5]Department of Laboratory Medicine, Boston Children's Hospital, Boston, USA, [6]Department of Pathology, Harvard Medical School, Boston, USA

Background:
Clinical guidelines recommend routine blood pressure (BP) screening in children and adolescents; however, the evidence remains debated, partly because potential harms have not been systematically evaluated. In line with WHO screening principles,

screening programs should ensure that benefits outweigh harms. No previous studies have quantified discomfort associated with BP measurement in children.
Methods: This cross-sectional study included 127 Danish children (64 boys, 63 girls) aged 5–17years attending a paediatric outpatient clinic in 2025. All participants underwent standardised oscillometric office BP measurement and rated perceived discomfort using the Wong-Baker FACES Pain Rating Scale (0–10). Age, sex, and prior experience with BP measurement were recorded. Associations were analysed using Spearman's correlation and Kruskal–Wallis tests with Dunn's post hoc comparisons. Differences according to prior experience were examined using Wilcoxon rank-sum tests and rank-based analysis of covariance.

Results:
Most participants reported minimal discomfort: 63% reported "No Hurt" and 28% "Hurts Little Bit", with no reports of "Hurts Worst". Discomfort differed significantly across age groups ($p<0.001$). Adolescents aged 14–17 years reported significantly lower discomfort than all younger age groups, while no differences were observed between children aged 5–7, 8–10, and 11–13 years. Children undergoing their first BP measurement reported higher discomfort scores than those with prior experience, but this association was not significant after adjustment for age.

Conclusion:
Oscillometric office BP measurement is well tolerated by children and adolescents. These findings support the feasibility of systematic paediatric blood pressure screening and address concerns regarding potential harms, in line with principles for implementing screening programs.

Early Changes in Central Pulse Wave Morphology in Children with Chronic Kidney Disease

Ms Louise Keehn[1], Dr Haotian Gu[1], Professor Phil Chowienczyk[1], Professor Manish Sinha[2]
[1]King's College London, London, United Kingdom, [2]Evelina London Children's Hospital, Guys and St Thomas NHS Foundation Trust, London, United Kingdom

Background:
Chronic kidney disease (CKD) in childhood is associated with adverse changes in cardiovascular structure and function. The aim of this study was to examine differences in central pulse wave morphology between children with CKD compared to healthy controls.

Methods:
Children with CKD and healthy controls who attended for measurements of applanation tonometry and echocardiography for the HOT-KID study were included (n =230, 44% female, mean age 11.1±3.2years). Central arterial pulse waveforms were obtained with the SphygmoCor system. Central blood pressures (BP), central augmentation index (cAIx) and left ventricular mass index (LVMi) were compared among three groups: children with CKD and eGFR ≥60ml/min/1.73m2 (CKD Group 1, n=129), children with CKD and eGFR <60 ml/min/1.73m2 (CKD Group 2, n=45) and healthy controls (n=56). Differences between groups were compared with analysis of covariance.

Results:
Age, peripheral BP and central BP were similar across groups. CKD Group 2 had significantly lower height and weight z-scores than the other groups (P<0.001 and P=0.013 respectively).
When adjusted for height and weight z-scores, cAIx was significantly higher in CKD Groups 1 and 2 compared to healthy controls, 7.38%±1.05 and 10.19%±1.82 vs 2.75%±1.60 respectively, P=0.008). There was no significant difference in mean LVMi between the three groups (P=0.063).

Conclusions:
Changes in pulse wave morphology can be seen in children with CKD compared to healthy controls, even without significant differences in LVMi. Central pulse wave morphology may be a sensitive marker to detect early changes in ventricular – vascular coupling prior to ventricular remodelling in children with CKD.

The Relationship Between Kidney Size And Blood Pressure Values In Children With Autosomal Dominant Polycystic Kidney Disease

Dr Krzysztof Skoczynski[1], Mrs Marta Brzeska[1,2], Mr Maksymilian Sikorski[1,2], Mrs Agata Blazejczyk[1,2], Mr Andrzej Bielanowicz[1,2], Mr Krzysztof Dabrowski[1,2], Dr Jan Koziej[1], Prof Janusz Feber[3,4], Prof Mieczyslaw Litwin[1], Assoc Prof Łukasz Obrycki[1]
[1]Department of Nephrology, Kidney Transplantation and Hypertension, Children`s Memorial Health Institute, Warsaw, Poland, [2]Faculty of Medicine, Collegium Medicum, Cardinal Stefan Wyszyński University, Warsaw,Poland, Warsaw, Poland, [3]Division of Nephrology, Department of Pediatrics, The Children's Hospital of Eastern Ontario, Ottawa, Canada, [4]Department of Pediatrics, University of Ostrava, Ostrava, Czech Republic

Purpose:
To assess the relationship between kidney size and blood pressure (BP) in children with autosomal dominant polycystic kidney disease (ADPKD).

Methods:
Study included 139 children with ADPKD (median age 9.9±5.3 years; 52% boys). PKD1 mutations were identified in 50 patients (36%) and PKD2 in 7 (5%). We analyzed antropometric data, BP, kidney size assessed by USG and MRI. Hypertension was diagnosed using office BP and ambulatory blood pressure monitoring (ABPM).

Results:
Median kidney length (KL)-SDS measured by USG was 1.25 [0.43–2.49], and kidney volume (KV)-SDS was 1.94 [0.99–3.22]. Corresponding MRI values were 1.58 [0.44–2.70] and 2.63 [1.83–4.01]. KL >97.5th percentile was observed in 32.5% patients. Enlarged KV affected 47.5% patients in USG and 61.5% in MRI.
Patients with PKD2 mutations presented milder disease (0–5 cysts per kidney) comparing with other genetic backgrounds with >10 cysts per kidney (p=0.027). Hypertension was diagnosed in 28.5% patients. Kidney size parameters were significantly associated with BP. Patients with KV >97.5th percentile had significantly higher 24-hour MAP compared with those with normal KV (median 89.2 [85.6–93.8] vs 82.5 [78.9–86.7] mmHg; p<0.001). KL showed weak-to-moderate correlations with 24-hour MAP, stronger for MRI than USG (R=0.37, p=0.019 vs R=0.29, p=0.011). The strongest association was observed for KV-SDS measured by USG (R=0.61, p=0.0045), while KV assessed by MRI also correlated with MAP (R=0.35, p=0.0087).

Conclusion:
Kidney size is significantly associated with BP in children with ADPKD regardless of kidney size assessment method. KV correlates with BP better than KL, with USG-derived KV showing the strongest association.

Session VIII

Experience with Home-Based vs. Ambulatory Blood Pressure Monitoring Among Teens and Guardians

Dr Sarah Ronis[1,2], Danielle Robinson[3], Isaac Alexander[3], David Imre[3], Dr Kelsey Ufholz[4], Dr Goutham Rao[3,4]
[1]Department of Pediatrics, Case Western Reserve University, Cleveland, USA, [2]UH Rainbow Center for Child Health & Policy, Cleveland, USA, [3]Department of Family Medicine and Community Health, University Hospitals, Cleveland, USA, [4]Department of Family Medicine, Case Western Reserve University, Cleveland, USA

Background/Purpose: As part of an ongoing trial assessing the diagnostic accuracy of home-based screening for pediatric hypertension (HBPM) vs. gold standard 24-hr ambulatory blood pressure monitoring (ABPM) in a higher-risk population, we sought to describe participant experiences with and attitudes towards the two modalities.

Methods:
Teens 13- <18 years who self-identified as African American without prior history of hypertension and their legal guardians were recruited from pediatric primary care encounters. Immediately following the 3-day HBPM protocol and again after completing the ABPM protocol, both teens and their consenting guardians completed structured questionnaires adapted from Little et al (BMJ 2002). A random subset of participants were also invited to complete interviews exploring factors influencing the feasibility and acceptability of implementing the HBPM protocol into routine care (Figure 1).

Results:
To date, 60 teen-guardian pairs ("dyads") have contributed all primary data elements. Teens were 68% female, 44% had BMI >85%ile, with asthma the most common comorbidity (10%). Seven teens (11%) had hypertension. Dyads were well-aligned in their experience ratings, favoring the HBPM protocol over ABPM. Regardless of modality, teens more often reported experience of disturbance, discomfort and uncertainty with the measurement protocols, while their guardians more often reported that the effort to get accurate measurements was worthwhile (Table 1). 18 dyads also provided narrative feedback through interviews, the analysis of which will be presented.

Conclusions:
Experience with the HBPM was more favorably rated than ABPM by both teens and guardians. HBPM may be a feasible method to identify hypertension in higher-risk teens.

Tables, graphs and images (1)

Figure 1: Flow of Study Activities

Tables, graphs and images (2)

Table 1: Summary of Experience Ratings. Values are median [interquartile range] and mean unless otherwise stated

Item	HBPM-Teen	ABPM-Teen	HBPM-Guardian	ABPM-Guardian	HBPM-Dyad***	ABPM-Dyad***
Disturbance and Discomfort						
It made me anxious	2[1,2]; 2.12	2[1,2]; 2.02	1[1,2]; 1.64	1[1,2]; 1.68	0[0,1]; 0.49	0[0,1]; 0.33
It disturbs home life or everyday activities	2[1,2];1.90	2[1,3]; 2.45	1[1,2]; 1.78	2[1,2]; 1.97	0[0,1]; 0.14	0[0,1.25]; 0.48
It disturbs sleep	2[1,2];2.07	2[1,5]; 3.30	1[1,2]; 1.58	2[1,3]; 2.38	0[0,1]; 0.51	0[0,3]; 0.92
It disturbs school	1[1,2];1.77	2[1,2]; 2.06	1[1,2]; 1.49	2[1,2]; 1.98	0[0,1]; 0.29	0[-1,3]; 0.7
I/my teen was uncomfortable	2[1,2];2.23	2[1,5]; 3.25	1[1,2]; 1.71	2[1,4]; 2.53	0[0,1]; 0.54	0.5[0,2]; 0.72
Self consciousness						
I felt self-conscious	2[1,2];2.18	2[1,2]; 2.02	--	--	--	--
I was more aware of my teens blood pressure	--	--	6[5,7]; 5.22	6[5.75,7]; 5.57	--	--
Uncertainty						
I felt unsure what to do	2[1,2.25]; 2.13	2[1,3]; 2.33	1[1,2]; 1.44	2[1,2]; 1.55	0[0,1]; 0.71	0[0,1]; 0.78
There is a lot of waiting around	2[1,3]; 2.22	2[1,4]; 2.77	1[1,2]; 1.41	1[1,2]; 1.78	0[0,1]; 0.83	0[0,2]; 0.98
It worried me knowing the blood pressure	2[1,2]; 2.07	2[1,2]; 2.08	1[1.2]; 1.69	1[1,2]; 1.77	0[0,1]; 0.39	0[-1,1]; 0.32
It was difficult to remember to do it	2[1,4.25]; 2.73	2[1,2]; 1.95	1[1,2]; 1.64	1[1,2]; 1.78	1[0,2]; 1.08	0[-0.25,1]; 0.17
Accuracy						
It was worth the effort to get accurate readings	6[4,6]; 5.10	6[4,7]; 5.00	6[6,7]; 5.64	6[6,7]; 6.07	0[-1,1]; -0.47	0[-2,0]; -1.07
Control and Efficiency						
I felt in control	6[4,6];5.08	6[4,6.25]; 5.08	6[6,7]; 5.76	6[6,7]; 5.93	-1[-1.5,0]; -0.61	0[-2.0]; -0.85
It is a good way to save time at appointments	6[5,6]; 5.58	6[5,6.25]; 5.45	6[4.5,7]; 5.39	6[5,7]; 5.58	0[-1,1]; 0.19	0[-1,1]; -0.13
Analysis						
Mean scale score*	2.28(0.67)	2.51(0.82)	1.87(0.66)	2.02(0.70)	0.27(0.76)	0.18(0.86)
Difference in scale score vs. ABPM**	-0.23(0.74)	--	-0.15(0.61)	--	0.09(0.78)	--

Ratings: 1=disagree strongly; 2=disagree; 3=disagree slightly; 4=unsure or not applicable; 5=agree slightly; 6=agree; 7=agree strongly.

*Mean(SD). Scoring reversed for positive items (control, good use of time, worth the trouble, and aware of teen's BP (guardians only)). Lower scores are interpreted as more favorable experience.

** Mean(SD).

*** Dyadic data reported as teen – guardian.

Microrna-16 As a Potential Indicator of Cardiac Strain Abnormalities in Children with Primary Hypertension

Mr Michal Szyszka[1], Dr. Radoslaw Pietrzak[2], Ms. Klaudia Obsznajczyk[2], Ms Karolina Skubisz[3], Dr Ceren Eyileten[4], Dr Piotr Skrzypczyk[5]
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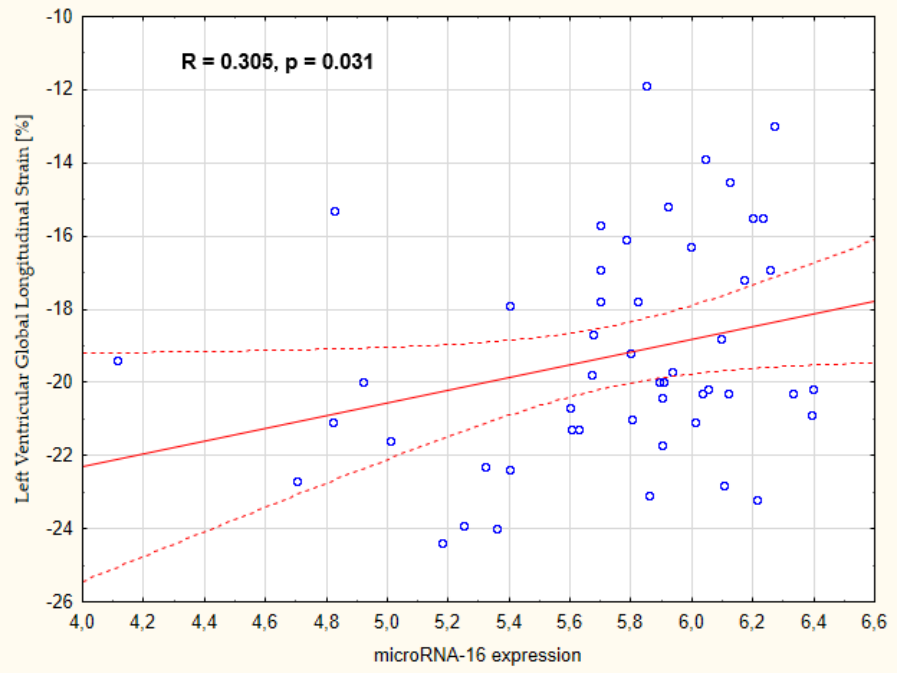
Background:
The role of circulating microRNAs in the pathophysiology of cardiac remodeling in primary hypertension (PH) is not fully understood. Left ventricular global longitudinal strain (LV-GLS) is a sensitive marker of subclinical systolic dysfunction and can be used to monitor early cardiac involvement in cardiovascular and renal diseases. The study aimed to evaluate expression levels of microRNA-16, -21, -27a, -27b, -133a, and -145 in untreated children with PH and examine their associations with LV-GLS. Methods: 50 children with PH (15.4 ± 1.9) and 57 normotensive controls (15.3 ± 1.6) were evaluated for circulating microRNA expression levels and echocardiographic parameters, including LV-GLS. Comprehensive anthropometric, biochemical, blood pressure, and arterial indices were also assessed.

Results:
Among the analyzed microRNAs, microRNA-16 exhibited a positive association with LV-GLS (R=0.31, p=0.031), whereas microRNA-27b demonstrated a negative association (R= -0.33, p<0.001). Compared with controls, hypertensive children exhibited significantly higher (i.e., less negative) LV-GLS (-19.28 ± 3.02 vs. -20.99 ± 3.11), indicating early systolic dysfunction occurring already at an early stage of the disease. In multivariable analysis conducted in PH children group, 24-hour heart rate, red blood cell count, and microRNA-16 expression were revealed as independent determinants of LV-GLS.

Conclusion:
The findings suggest that microRNA-16 may contribute to systolic heart dysfunction in the early stages of primary hypertension in children, while microRNA-27b may protect against the loss of left ventricular global longitudinal strain in the pediatric

population. They also highlight the potential value of LV-GLS as an additional marker of early cardiac involvement in this group of patients.

Tables, graphs and images (1)



Cardiac Remodelling as Assessed by MRI in Hypertensive Adolescents and Young Adults: a Single Centre Cross Sectional Study

Dr Emily Haseler[1,2], Mrs Louise Keehn[1,2], Dr Kuberan Pushparajah[1], Dr Pier Giorgio Masci[1], Prof Manish Sinha[1,2], Prof Phil Chowienczyk[1]
[1]Kings College London, London, United Kingdom, [2]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Background:
Cardiac hypertension mediated organ damage has been well characterised in young people with hypertension using echocardiogram but not cardiac MRI (CMR).

Methods:
Participants aged 10-30 years were prospectively recruited into an observational cross-sectional study. Hypertensive untreated participants were recruited from paediatric and adult hypertension clinics and compared with normotensive controls. Hypertension was defined using standard clinical guidelines. CMR was used to determine cardiac geometry and aortic dimensions using a 1.5 Tesla Siemens Scanner. Blood pressure was measured at the time of CMR using a validated oscillometric device. Left ventricular (LV) volumes and mass were derived during a short-axis stack sequence, aortic properties from a cine sequence of the ascending and descending aorta at the level of the pulmonary trunk, and T1 and T2 mapping from a single non-contrast short axis slice at the mid-ventricle level.

Results:
Results from 92 participants are presented in Table 1. Normotensive and hypertensive participants were similar in age and sex with higher BMI in hypertensives. Indexed left ventricular mass (LVMI), markers of LV wall thickness and global longitudinal strain were higher in hypertensives compared to normotensives. T1/T2 mapping showed increased T1 and decreased T2 signal in the intraventricular septum, consistent with early extracellular remodelling. The ascending aorta was larger and exhibited reduced distensibility in hypertensives.

Conclusion:
Overweight, hypertensive young people display similar patterns of cardiac remodelling on CMR to what has been described with echocardiogram. Changes in T1/T2 signal merit further investigation as potential biomarkers of cellular level remodelling in this cohort.

Tables, graphs and images (1)

Table 1: Comparison of key demographics, body size and haemodynamic parameters between hypertensive and normotensive participants

Means (±SD)	Normotensive (n=41)	Hypertensive (n=51)	P value
Age (years)	20.9 (±6.0)	21.6 (±5.5)	0.54
Sex (% female)	46.3	56.1	0.28
Ethnicity			
White (%)	61.0	62.7	0.14
Asian (%)	29.3	15.7	
Black (%)	9.8	21.6	
Height (cm)	164.6 (±11.5)	173.0 (±10.9)	0.11
Weight (kg)	66.3 (±19.8)	81.4 (±18.7)	**<0.001**
BMI (kg/m^2)	22.7 (±4.8)	26.9 (±5.5)	**<0.001**
Systolic BP (mmHg)	116.0 (±12.8)	139.4 (±12.7)	**<0.001**
Diastolic BP (mmHg)	66.1 (±9.1)	81.3 (±12.9)	**<0.001**
LVMI (g/m^2)	29.7 (±8.7)	36.1 (±6.5)	**<0.001**
RWT	0.176 (±0.014)	0.203 (±0.020)	**<0.001**
LV mass : volume ratio	0.531 (±0.054)	0.611 (±0.062)	**<0.001**
Septal wall thickness (mm)	6.24 (±1.07)	7.45 (±1.00)	**<0.001**
Lateral wall thickness (mm)	5.58 (±0.91)	6.64 (±0.85)	**<0.001**
Septal T1 relaxation time (ms)	978 (±39)	1033 (±101)	**<0.001**
Septal T2 relaxation time (ms)	48.0 (±8.1)	44.4 (±4.2)	**0.014**
Global longitudinal strain (%)	-18.6 (±2.5)	-16.4 (±5.5)	**0.02**
Ascending aortic cross sectional area (cm^2)	3.90 (±1.2)	5.00 (±1.6)	**<0.001**
Ascending aortic distensibility (10^{-3} $mm\ Hg^{-1}$)	9.01 (±3.8)	6.59 (3.0)	**0.002**

Session IX

Feasibility of Community Pharmacy–Based Blood Pressure Screening for Adolescents: A Canadian Pilot Study

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Background:
Hypertension in adolescents is an emerging global health concern and contributes to elevated cardiovascular risk in adulthood. Despite increasing prevalence, routine blood pressure (BP) measurement in youth remains infrequent in primary care settings.

Objectives:
To evaluate the feasibility of opportunistic BP screening for adolescents in a community pharmacy using an adapted May Measurement Month (MMM) protocol.

Methods:
A cross-sectional pilot study was conducted in a Canadian community pharmacy. Adolescents aged 13–17 years completed demographic, medical, and lifestyle questionnaires and underwent three standardized BP measurements using validated automated office BP devices. Feasibility was assessed through recruitment success, implementation of the screening protocol, and completeness of BP data. Descriptive statistics summarized demographic and clinical characteristics.

Results:
Twenty-four adolescents participated (mean age 15.2 ± 1.55 standard deviation (SD) years; 54% female), and 70% reported no previous BP measurement. Nineteen participants had complete BP datasets. Mean systolic BP was 116.9 ± 8.36 (SD) mmHg and mean diastolic BP was 77.6 ± 5.98 (SD) mmHg. No participants met systolic hypertension criteria (≥130 mmHg), however, 42% had diastolic BP ≥80 mmHg, consistent with isolated diastolic hypertension patterns described in youth. The screening protocol was successfully implemented within routine pharmacy workflow.

Conclusions:
Community pharmacy–based BP screening for adolescents is feasible and can identify individuals with elevated BP who may benefit from further assessment. These

findings support the potential role of pharmacies in expanding access to early cardiovascular risk detection in youth and justify larger studies to refine screening pathways.

Global research priority-setting exercise on the measurement, diagnosis and management of hypertension in adolescence

Dr Prerna Banati[1], Dr Maria Vedechkina[1], Ms Olu Odole-Akinyemi[2], Prof Rukshana Shroff[3], Prof Kalpana Sabapathy[4], Prof Carissa Baker-Smith[5], Prof Mark Mitsnefes[6], Prof Rahul Chanchlani[2]
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The rising prevalence of hypertension in adolescents has been recognized as a significant public health concern given its association with adult hypertension, target organ damage including early onset of cardiovascular and kidney diseases, and increased health care utilization. Despite these consequences, the adolescent hypertension evidence base remains fragmented and underdeveloped compared with adult populations.

To address this gap, the World Health Organization (WHO) commissioned a research priority-setting exercise focused on hypertension in adolescents using a mixed-methods Child Health and Nutrition Research Initiative (CHNRI) approach. Between September 2025 and January 2026, a diverse group of stakeholders proposed and scored research questions using standardized criteria.

A total of 249 participants from 52 countries – including academics, policy makers, practitioners and young people — participated. 54% of responses originated from low and middle-income countries (LMICs). 56% reported their primary affiliation with academia; 27% reported primary affiliation with government. 13% of respondents were under 35. Thirty-eight research priorities were identified, spanning epidemiological analyses, discovery research, intervention evaluations, implementation science as well as health and social systems research. Top-ranked priorities included (1) population-level variation in prevalence, risk and protective factors; (2) biological mechanisms, biomarkers, and therapeutic targets; and (3) strategies to improve treatment adherence and the effectiveness of behavioral, lifestyle, and combination interventions including in school settings.

This WHO research priority setting exercise identified global priorities for adolescent hypertension research. These priorities provide a roadmap to guide research investment, generation of high-quality evidence, and the development of global guidelines to improve outcomes for adolescents worldwide.

ALERT-BP: Machine Learning for Early Detection of Pediatric Hypertension Across Canadian Cohorts

Mr Eashan Monga[1], Dr. Charles Keown-Stoneman[5], Dr. Sonia Anand[2], Dr. Gita Wahi[2], Dr. Russell de Souza[2], Dr. Katherine Morrison[2], Dr. Catherine Birken[3], Dr. Jonathon Maguire[4], Dr. Kozeta Miliku[5], Dr. Padmaja Subbarao[3], Dr. Manish Sinha[6], Dr. Sujane Kandasamy[2], Dr. Tammy M. Brady[7], Dr. Shrikant Bangdiwala[2], Dr. Stuart Turvey[8], Dr. Janis Dionne[8], Dr. Laura Anderson[2], Dr. Rahul Chanchlani[2]
[1]Stanford University, Stanford, United States, [2]McMaster University, Hamilton, Canada, [3]The Hospital for Sick Children (SickKids), Toronto, Canada, [4]St. Michael's Hospital (Unity Health), Toronto, Canada, [5]University of Toronto, Toronto, Canada, [6]Guy's & St Thomas' NHS Trust, London, United Kingdom, [7]Johns Hopkins University School of Medicine, Baltimore, United States, [8]BC Children's Hospital, Vancouver, Canada

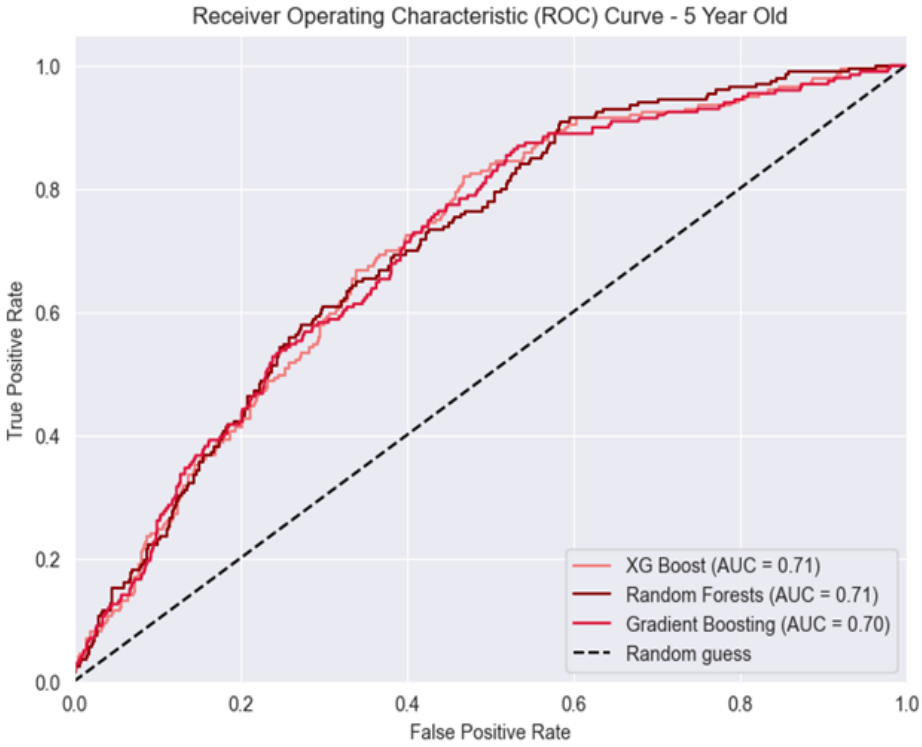
Background:
Pediatric hypertension is an emerging public health concern, affecting approximately 3-5% of children/adolescents. Early-onset hypertension is a strong predictor of adult cardiovascular disease and chronic kidney disease. Yet, blood pressure (BP) screening in children remains inconsistently implemented due to time constraints, equipment availability, and measurement feasibility. Machine learning approaches leveraging routinely collected clinical and sociodemographic data may enable scalable risk stratification to identify children most likely to benefit from targeted BP assessment.

Methods:
We harmonized data from four Canadian cohorts (Canadian Healthy Infant Longitudinal Development [n=1,691], South Asian Birth Cohort [n=342], Family Atherosclerosis Monitoring In early LIfe [n=655], The Applied Research Group for Kids! [n=1,644]; n=4,332, 14.5% with BP ≥95th percentile at one visit), using prompt engineering to align data dictionaries to address data heterogeneity. We defined hypertension risk as BP ≥95th percentile per the 2017 American Academy of Pediatrics guidelines. We trained three machine learning models, XGBoost, Random Forest, and Gradient Boosting, to determine predictors most associated with high BP at age 5. Models used gestational age, household income, ethnicity (Hispanic, European, South Asian, Arab, East/South-East Asian, African, Indigenous, Mixed, Other, Unknown), maternal education, mother's age at birth, gestational weight gain, birth weight, child's age, height, and sex.

Results:
XGBoost achieved similar performance (AUC=0.71, sensitivity=0.69) to Random Forest and Gradient Boosting, with gestational age, household income, and ethnicity as top predictors.

Conclusions:
Machine learning models using prenatal and sociodemographic data can identify high-risk children with good sensitivity, potentially enabling targeted screening. Next steps include externally validating our models.

Tables, graphs and images (1)



Session X

Cardiovascular Determinants of Blood Pressure at Age 10 years: a Generation R Study

Dr Emily Haseler[1,2], Dr Arwen Kampuis[3], Prof Romy Gaillard[3], Prof Vincent Jaddoe[3], Prof Manish Sinha[1,2], Prof Phil Chowienczyk[1]
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Background:
We aimed to determine the contributions of heart rate (HR), stroke volume (SV), cardiac output (CO), and systemic vascular resistance (SVR) to blood pressure (BP) in children, and how these relate to sex, body size, and adiposity.

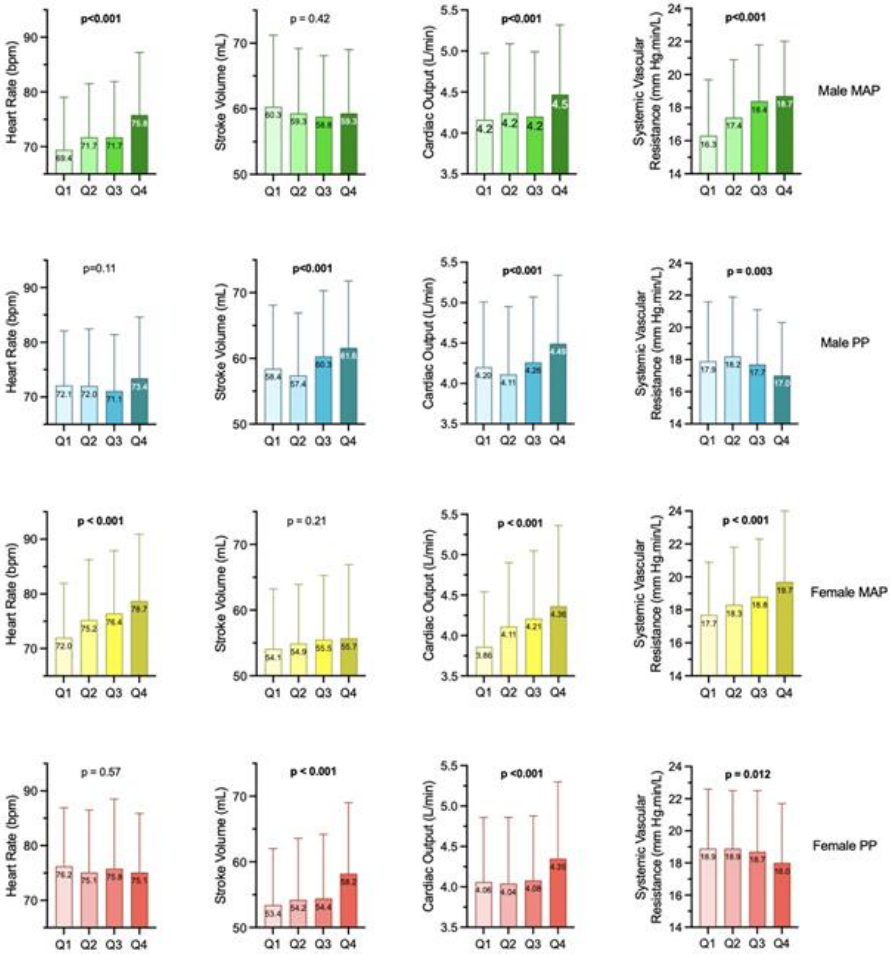
Methods:
Cross-sectional analysis at age 10 years in the population-based Generation R cohort. BP was measured using a validated automatic sphygmomanometer. Abdominal and cardiac MRI and dual-energy X-ray absorptiometry (DXA) were used to assess ventricular volumes, pericardial/visceral fat, and total body composition. Mean arterial pressure (MAP), CO, and SVR were derived from ventricular volumes and established hemodynamic equations. Cardiovascular properties were examined across height-adjusted MAP and pulse pressure (PP) quartiles. Regression analyses assessed associations between cardiovascular properties and measures of adiposity.

Results:
We included 2,033 children (940 males, 1,093 females; mean BMI 17.5 ± 2.5 kg/m²; 60.8% Western European). In both sexes, increasing height-adjusted MAP quartile was associated with higher CO, HR, and SVR (all $p < 0.001$), but not SV (Figure 1). In contrast, higher PP quartile was associated with increased SV and CO and decreased SVR (all $p < 0.001$). Adjusting for adiposity did not significantly alter cardiovascular differences across quartiles of height adjusted BP.

Conclusion:
Determinants of “static” and “pulsatile” BP at the age of 10 years are similar in boys and girls, with HR and SVR determining MAP, and SV determining PP. The relationship with adiposity is complex; in this predominantly healthy population cohort, adiposity does not appear to be a key determinant of the haemodynamic differences observed.

Tables, graphs and images (1)

Figure 1: Variations in cardiovascular determinants of BP between height adjusted quartiles of MAP (green and yellow) and PP (blue and red) in boys (green and blue) and girls (yellow and red).



Childhood Hypertension and Risk of Long-Term Morbidity and Mortality: A Nationwide Danish Cohort Study

Dr Lise Fischer Mikkelsen[1,2], Prof Henrik Enghusen Poulsen[11], Mikkel Porsborg Andersen[3], Prof Christian Torp-Pedersen[3], Prof Søren Hagstrøm[4,5], Prof Konstantinos Kamperis[2,6], Jørgen Kim Kanters[7,8], Assoc Prof Luise Borch[1,2], Assoc Prof Chrsitina Ellervik[9,10]

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Background:
Hypertension in childhood is known to track into adulthood, and evidence on long-term clinical outcomes has been evolving in recent years. This study examined the association between childhood hypertension subtypes – primary and secondary - and long-term risks.

Methods:
We conducted a nationwide, matched cohort study using Danish health registers from 1996 to 2024. Children and adolescents aged 6 months to 17 years diagnosed with hypertension were identified and matched by exposure density 1:10 with controls by sex and age. Hypertension was defined using register-based data on diagnoses and redeemed antihypertensive prescriptions. Cases were classified as primary or secondary hypertension using diagnostic codes and comorbid conditions. Participants were followed from index date until death, emigration, or end-of-study. Outcomes included cardiovascular disease, chronic kidney disease, and all-cause and cause-specific mortality. Conditional Cox regression models estimated hazard ratios adjusted for birth weight and parental educational level.

Results:
The cohort included 1,400 children with hypertension (329 primary, 1,071 secondary) and 14,000 matched controls, with a mean follow-up of 20.1 years. Both primary and secondary childhood hypertension were associated with substantially increased risks

of cardiovascular disease, chronic kidney disease, and premature death compared to controls. Risks were highest for secondary hypertension.

Conclusion:
Childhood hypertension, primary and secondary separately, is associated with markedly increased long-term morbidity and premature mortality. These findings underscore the clinical significance of paediatric hypertension and support early identification, monitoring, and management to reduce lifelong health risks.

E-Poster Session 1

Real-World Management of Pediatric Hypertension: Evidence from National Healthcare Claims Data

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[1]Faculty Of Biomedical Engineering, Czech Technical University in Prague, Kladno, Czech Republic

Perceived Background/Purpose:
Administrative healthcare data represent a powerful resource for monitoring quality of care, patient pathways, and system performance at the population level. The CTU Health Data Lab (Faculty of Biomedical Engineering, Czech Technical University in Prague) has long focused on developing analytical methods and indicators for evaluating real-world healthcare delivery. Building on previous work in care pathway analysis and treatment adherence, we have recently initiated a new research stream focused on pediatric hypertension based on data from the Institute of Health Information and Statistics of the Czech Republic (ÚZIS).

Methods:
Using data from the National Registry of Reimbursed Health Services, which covers the entire publicly insured population, we can identify pediatric patients with suspected or confirmed hypertension based on diagnostic codes and characteristic combinations of diagnostic procedures and treatments. Patient pathways can be reconstructed from sequences of outpatient visits, hospitalizations, ambulatory blood pressure monitoring, and prescriptions. Regional availability of diagnostic procedures and specialist follow-up is assessed to identify potential access barriers.

Results/Conclusion:
Our initial findings demonstrate the feasibility and value of national administrative data for identifying gaps in pediatric hypertension management and for informing targeted quality improvement strategies. This poster presents the first outputs of an ongoing project, and we actively seek collaboration with clinical specialists to refine clinical definitions, validate pathways, and jointly develop meaningful quality indicators for pediatric cardiovascular prevention.

Impact of Blood Pressure and Body Mass Index on Left Ventricular Structure and Function in Adolescents

Mrs Rina Rus[1]
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Background
The aim of this study was to assess the impact of blood pressure (BP) and body mass index (BMI) on heart structure and function in adolescents.

Methods:
Data from adolescents with suspected arterial hypertension (AH) were reviewed. Collected data included age, sex, BMI, average systolic and diastolic BP (SBP and DBP), recorded with ABPM. Echocardiographic measurements included interventricular septal thickness (IVSD), posterior wall thickness (LVPWD), and left ventricular internal diameter (LVDD) at end-diastole. Left ventricular ejection fraction (EF), left ventricular mass index (LVMI), and left ventricular mass (LVM) were calculated. The E/A and E/e' ratios were evaluated.

Results:
104 adolescents aged 12 to 18.5 years were included (29 girls, 75 boys). AH was confirmed in 59 adolescents (45 with isolated systolic hypertension), 34 had prehypertension and 11 had normal BP. LVMI over 38.6 g/m2.7 was found in 1/11 normotensive, 9/34 prehypertensive, and 28/59 hypertensive adolescents.

Increased SBP and BMI had a significant impact on increased IVSD and LVPWD thickness, increased LVMI, and increased LVM ($p < 0.001$; $p < 0.001$). There was a significant increase in E/A at lower BMI ($p = 0.001$) and a significant increase in E/e' at higher BMI ($p < 0.001$). We found no significant influence of DBP on IVSD, LVPWD, LVDD, or E/e'. There was significantly lower EF ($p = 0.039$) and E/A ($p = 0.031$) at higher DBP.=0,031) at higher DBP.

Conclusion:
Our findings confirm a considerable impact of BMI and elevated BP on heart structure, and a slight impact on heart function.

Sex Differences In Children And Adolescents With Hypertension

Mr Maksymilian Sikorski[1], MD Krzysztof Skoczyński[1], MD Jan Koziej[1], Mr Kacper Mitoraj[1], Mr Andrzej Biełanowicz[1], Ms Agata Błażejczyk[1], Mr Krzysztof Dąbrowski[1], Ms Marta Brzeska[1], Prof Janusz Feber[2], Prof Mieczysław Litwin[1], Prof Łukasz Obrycki[1]
[1]Children's Memorial Health Institute, Warsaw, Poland, [2]Children's Hospital of Eastern Ontario, Ottawa, Canada

Purpose:
To assess sex differences in clinical characteristics of arterial hypertension (HT) in children and adolescents.

Methods:
1260 children (484 girls) with HT diagnosed by office BP were analyzed. Assessments included anthropometry, BP and ABPM, biochemical testing, evaluation of hypertension-mediated organ damage (HMOD).

Results:
Secondary HT was more frequent in females than males (56.2% vs 47.3%; p=0.003).

Males had higher triglycerides (TG), uric acid, glucose, and insulin, while females showed higher eGFR, total cholesterol, HDL, and LDL. Females had higher 24-hour systolic (2.18 vs 1.83) and diastolic (1.22 vs 0.61) BP-SDS (p<0.001).
Hypertension phenotypes differed by sex (p<0.001). Isolated systolic hypertension (ISH) predominated in males (38.2% vs 23.6%), whereas isolated diastolic hypertension (IDH) and systo-diastolic hypertension (SDH) in females (8.2% vs 1.7% and 36.9% vs 32.3%).

LVMi was higher in males (36.48 vs 32.08 $g/m^{2.7}$; p<0.001), but left ventricular hypertrophy (LVH) was more frequent in females (13.4% vs 10%; p=0.001). cIMT-SDS did not differ, while PWV-SDS was higher in females (2.11 vs 1.77; p=0.022).

In multivariable analyses, LVH was independently associated with BMI-SDS in boys (OR 1.55; p=0.006). In girls, LVH was predicted by younger age (OR 0.85; p=0.002), higher BMI-SDS (OR 1.69; p=0.003), and HT phenotype: IDH and SDH (OR 9.43 and 4.27; p=0.005). Increased cIMT was independently associated with younger age (OR 0.90; p=0.012) and BMI-SDS (OR 1.38; p=0.016) in boys; in girls with 24-hour SBP (OR 1.05; p=0.004).

Conclusion:
Pediatric hypertension shows sex-specific differences in HT phenotype, metabolic profile, HMOD; supporting sex-specific risk stratification and prevention strategies.

Etiology and Comorbidity of Hypertension in Preteen Children

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Background:
Hypertension is increasingly recognized among children, particularly adolescents. The etiology and presentation depend crucially on the child's age. Our study aimed to evaluate children with hypertension aged 6 to 11 years, therefore preadolescent school children. In infancy, secondary causes clearly predominate; we wanted to evaluate whether secondary causes remain the predominant cause of hypertension in this children subgroup.

Methods:
We retrospectively analyzed data from 784 children with consistently elevated blood pressure confirmed by ambulatory blood pressure monitoring. Among these, we analyzed the frequency of hypertension presence and etiology in children aged 6 to 11 years, along with anthropometric measures, target organ damage, and laboratory results.

Results:
Of 784 children with hypertension, 22.2% of children belonged to the group aged from 6 to 11 years. In 18%, the cause was secondary, most commonly renal. In primary hypertension, overweight was frequently present and significantly affected clinical presentation: elevated fasting hyperinsulinemia, increased liver enzymes, pathologic lipids, slightly higher proteinuria and homocysteine, higher frequency of metabolic dysfunction-associated steatotic liver disease, and left ventricular hypertrophy.

Conclusions:
The occurrence of secondary hypertension in childhood between 6 and 11 years is still significantly predominant mostly from diseases of renal etiology. In cases of primary hypertension, overweight is the most critical risk factor. Target organ damage is significantly associated with being overweight, which exacerbates cardiovascular risk in middle childhood. Some of the comorbidities associated with obesity are less pronounced in preteen children than in adolescence, offering an early opportunity to implement preventive measures.

Monocyte-to-Neutrophil Ratio as an Immunological Marker of Left Ventricular Hypertrophy in Children with Primary Hypertension

Ms Katarzyna Jankowska[1], Dr Radosław Pietrzak[2], Mr Michał Szyszka[3], Mr Adam Bujanowicz[3], Dr Anna Stelmaszczyk-Emmel[4], Prof Bożena Werner[2], Dr Piotr Skrzypczyk[1]
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Background:
Activation of the immune system and subclinical inflammation participate in the pathogenesis of primary hypertension (PH) and the formation of hypertension-mediated organ damage. Our study aimed to investigate the relationship between subclinical inflammation and left ventricular hypertrophy (LVH) in pediatric patients with PH.

Methods:
In 34 untreated children with PH (15.1 ± 2.1 years), we investigated markers of subclinical inflammation (high-sensitivity CRP, interleukin 18, and complete blood count-derived indices), parameters of the left ventricle from 2D-echocardiography, office and ambulatory blood pressure, and selected clinical and biochemical parameters.

Results:
LVH was revealed in 12 (35.3%) patients, and abnormal relative wall thickness (RWT) was found in 6 (17.6%) children. Left ventricular mass index [g/m2] correlated positively with MNR ($r = 0.495$, $p = 0.005$ and $r = 0.433$, $p = 0.011$). RWT correlated positively with neutrophil count ($r = 0.356$, $p = 0.039$ and $r = 0.347$ $p = 0.044$) and with monocyte count ($r = 0.378$, $p = 0.027$ and $r = 0.365$, $p = 0.034$). Patients with LVH had significantly lower NLR (1.430 ± 0.409 vs. 1.797 ± 0.521, $p = 0.043$) and higher MNR ratios (0.171 ± 0.031 vs. 0.144 ± 0.037, $p = 0.042$). The ROC analysis demonstrated good diagnostic profiles for mean platelet volume (MPV), NLR, and MNR as predictors of LVH. In multivariate analysis, MNR was the only significant predictor of LVH (OR: 1.329, 95CI: 1.007-1.756).

Conclusion:
Monocyte-to-neutrophil ratio may be an easily accessible marker of left ventricular hypertrophy in children with primary hypertension.

High blood pressure associated with Sturge-Weber syndrome

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Introduction: Sturge-Weber syndrome (SWS), or encephalotrigeminal angiomatosis, is a rare congenital neurocutaneous disorder characterized by the presence of capillary and venous vascular malformations affecting the face (port wine stain), eye, and leptomeninges caused by a mutation in the GNAQ gene.

Purpose:
To present an interesting case of vascular hypertension with an unusual presentation.

Results:
A 17-year-old male with Sturge-Weber syndrome and stage 1 hypertension secondary to high-flow left renal vascular malformation, requiring treatment with amlodipine and diagnostic arteriography, with the need for embolization. The patient is currently stable, with adequate blood pressure control and preserved renal function.

Conclusion:
Hypertension is not a main feature of Sturge-Weber syndrome. Recent studies suggest that extensive mutations in the GNAQ/GNA11 pathway could be associated with cases of early-onset hypertension, broadening the spectrum of systemic vascular complications of this syndrome and highlighting the importance of a joint assessment by different specialties to improve the long-term prognosis of these patients.

E-Poster Session 2

Blood Pressure Variability and Low-Grade Inflammation in Pediatric Patients with Primary Hypertension

Ms Katarzyna Dziedzic-Jankowska[1], Mr Michał Szyszka[2], Mr Adam Bujanowicz[2], Dr Anna Stelmaszczyk-Emmel[3], Dr Piotr Skrzypczyk[1]
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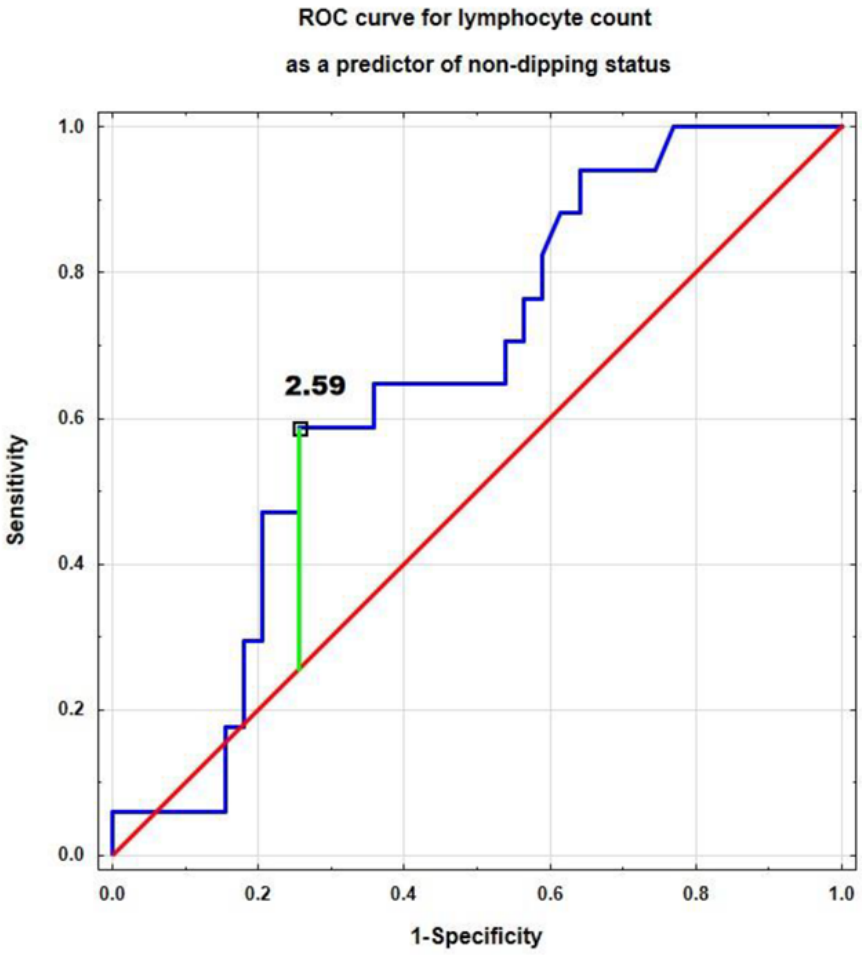
Background:
Increased blood pressure variability (BPV) is associated with increased cardiovascular risk. Study aimed to analyze the relation between BPV and low-grade inflammation in children with PH.

Methods:
In 56 treatment-naive patients with PH (15.1 ±2.1 years) and 30 healthy children (14.9 ±1.4 years), we evaluated BPV: BP dipping, standard deviation (SD) of ambulatory blood pressure measurements (ABPMs), pulse pressure (PP)/systolic BP ratio (24h PP/SBP), rate-pressure index (24h RPI), 24h weighted BPV (24h WSBPV, 24h WDBV, 24h WMAPV), coefficient of variation (24h CoVSBP, 24h CoVDBP, 24h CoVMAP). We also analyzed indices of subclinical inflammation (markers derived from complete blood count, high-sensitivity C-reactive protein (hsCRP), interleukin 18), and BP parameters.

Results:
Patients with PH had significantly higher hsCRP, neutrophils, monocytes, and platelets, neutrophil-to-lymphocyte (NLR), platelet-to-mean platelet volume (PMPVR), and lower monocyte-to-neutrophil (MNR) ratios, and higher BPV: 24h ABPM SBP SD, 24h ABPM MAP SD, 24h RPI, 24h WSBPV, 24h WDBV, 24h WMAPV, and 24h CoVSBP. Low-grade inflammation markers correlated with BPV indices in both groups. In multivariate analysis, MNR predicted 24h ABPM MAP, 24h RPI, and 24h WDBPV; monocyte count - 24h RPI, and hsCRP 24h WDBV. ROC analysis revealed a good diagnostic profile for lymphocyte count as a positive determinant of non-dipping status in PH.

Conclusions:
BPV is higher in children with PH compared to healthy peers and is associated with low-grade inflammation. MNR may be the most helpful indicator of BPV, whereas high lymphocyte count predicts the best non-dipping status in these patients.


ROC curve for lymphocyte count
as a predictor of non-dipping status
2.59
Sensitivity
1-Specificity
0.0
0.2
0.4
0.6
0.8
1.0

White Coat Hypertension in Children: A 15-Year Experience from a Single Centre

Dr Mirjam Močnik[1], Mrs Martina Filipič, Dr Sonja Golob Jančič[1], Mladen Crnobrnja[1], Prof Dr Nataša Marčun Varda[1,2]
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Background:
White coat hypertension is defined by elevated blood pressure (BP) at the doctor's office and regular readings at home. We confirm it with regular ambulatory blood pressure monitoring (ABPM). The prevalence of white coat hypertension is variable; however, studies indicate that up to half of children referred for evaluation of elevated office BP have, in fact, white coat hypertension. Recommendations include their follow-up, since many progress to an abnormal ABPM. Our study aimed to determine the prevalence of white coat hypertension among children referred as having abnormally high BP.

Methods:
We have retrospectively extracted the children who have been referred to our department between 2008 and 2023 with an underlying diagnosis of primary hypertension (ICD-10 code I10). We examined whether referred children had ABPM done and analyzed its results.

Results:
During 15 years, 1598 children were referred to our center as having primary hypertension. 1437 had ABPM done, and 784 (54.6%) had at least once pathological ABPM; meanwhile, the other part had all the ABPMs (at least one, in some cases several) normal.

Conclusions:
Our study confirms a high prevalence of coat hypertension among children. The need for their follow-up has been emphasized; however, long-term consequences on cardiovascular health in children remain unclear.

E-Poster Session 3

Arterial Hypertension Treatment Peculiarities for Children and Adolescents in Lithuania

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Background:
The rising prevalence of pediatric arterial hypertension (AH) and it‘s contribution to premature cardiovascular mortality, requires timely and appropriate management. This work aimed to assess the treatment practices of pediatric AH in Lithuania in real-life settings.

Methods:
A cross-sectional analysis of reimbursed antihypertensive medications prescribed to children aged 0–17 years in Lithuania during 2023 was performed. Pediatric population size and registered AH cases were extracted from State Data Agency. Anonymized data from National Patients Fund was categorized by primary or secondary AH, drug generic names, patient age groups, number of treated patients, and counts of prescriptions per patient and per drug.

Results:
Of 508 666 children living in Lithuania in 2023, 1446 were diagnosed with AH (1038 primary and 408 secondary). Pharmacotherapy was provided to 46.3% of primary and to 51.7% of secondary AH patients. Most patients (80.3%) received monotherapy. Irrespective of age or disease aetiology, angiotensin-converting enzyme inhibitors (ACEi) (66.3% primary; 53% secondary) were the most frequently prescribed agents, followed by beta-adrenoceptor blockers (30.5% primary; 30.8% secondary) and calcium channel blockers (10.3% primary; 24.6% secondary). Diuretics (0.4% primary; 4.2% secondary), ‘‘other‘‘ drugs (0.2% primary; 4.2% secondary) and combination of drugs (7.4% primary; 2.8% secondary) were rarely used.

Conclusion:
Data showed that not all secondary AH patients received treatment. No statistical difference between primary and secondary AH treatment was found. Though, ACEi were the most popular medication used, still overuse of beta-blockers and underuse of diuretics were found.

Home (HBPM) versus 24-hour ambulatory blood pressure monitoring (ABPM) for diagnosis of hypertension in African American adolescents

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Background:
Pediatric hypertension is grossly underdiagnosed. Diagnostic criterria require office-based measurements taken on separate days - often impractical for many families. In Europe, home BP monitoring has shown to be feasible among children. Our purpose was to implement home BP monitoring among a high- risk population of American children (African American adolescents) for diagnosis of hypertension, and evaluate its acceptability, feasibility, and accuracy (compared to 24 hour ABPM).

Methods:
Adolescents age 13-17 without a prior diagnosis of hypertension and who self-identified as African American were recruited from primary care practices. Participants were issued a home BP device and completed a 3-day HBPM followed by a 24 hour ABPM protocol. Parents and adolescents completed surveys to assess their experience with each method. A subset of parents and adolescents completed telephone interviews to gain more insights.

Results:
As of 6 January 2026, 832 teens were identified who met screening criteria. 317 have enrolled. 200 teens completed the HBPM protocol; 64 have completed ABPM. 20 teens met criteria for hypertension based on HBPM (10%) and 8 based on ABPM (12.5%). We have collected end of study surveys from 99 teens and 124 parents/guardians. We have also completed interviews among 13 teens and 20 parents/guardians. We have not yet analyzed the accuracy of HBPM versus ABPM, nor surveys or interviews, but will complete a preliminary analysis by May 2026.
Conclusions: HBPM for diagnosis of hypertension is much more feasible than ABPM among African American teens. Hypertension is very common in this population.

Fibromuscular Dysplasia In Children – A Single-Center Experience

Mr Michal Szyszka[1], Dr Piotr Skrzypczyk[2], Mr Adam Bujanowicz[1], Ms Anna Ofiara[1], Mr Agnieszka Tutka[2], Ms Anna Maria Wabik[2], Dr Remigiusz Krysiak[3], Dr Jarosław Żyłkowski[4], Dr Rafał Maciąg[4], Mr Magdalena Januszewicz[4], Asocciate Professor Małgorzata Pańczyk-Tomaszewska[2], Prof Małgorzata Mizerska-Wasiak[2]
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Backround:
Fibromuscular dysplasia (FMD) is a non-atherosclerotic, non-inflammatory stenotic disease of the arteries, most commonly affecting the renal, carotid, and cerebral vessels, and is the leading cause of renovascular hypertension in children.

Methods:
We conducted a retrospective analysis of eleven pediatric patients with FMD who were treated at a tertiary care center. We reviewed their clinical, imaging, and procedural data.

Results:
In the years 2016-2025, 11 patients with FMD were admitted to the center (4 boys, 7 girls). Age at diagnosis ranged from 0.83 to 15.75 years (mean 8,2±4,9 years). All patients were referred to the ward due to arterial hypertension (10/11 of 2nd degree). Patients presented various symptoms: hypertensive crisis with heart failure, headaches, vomiting, hyperactivity, polydipsia and polyuria. All patients had normal renal function, 6/11 hypokalemia, 2/11 hyponatremia, and 6/11 metabolic alkalosis; all had hyperreninemia with secondary hyperaldosteronism. Intervention treatment was performed in 9/11 patients - in 2 patients, nephrectomy was necessary, in 2 patients – embolization of the vessel, in 5 - angioplasty. Before the procedure, the patients required 1-5 antihypertensive drugs (average 3±2) , after the procedure, antihypertensive treatment was discontinued in 4 patients, and the number and dose of drugs were reduced in the remaining patients. One patients who initially underwent angioplasty subsequently required aorto-renal bypass grafting.

Conclusions:
Renal artery stenosis should be excluded in all pediatric hypertensive patients, regardless of age and symptoms. Patients with FMD require an individually selected therapeutic plan.

A complex case of renal artery stenosis in a 3-year-old patient with neurofibromatosis type 1 and secondary hypertension.

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Background:
Renal artery stenosis is a recognized but uncommon cause of secondary hypertension in children with neurofibromatosis type 1 (NF1). Diagnosis and management may be challenging and unusual vascular complications may occur during treatment.

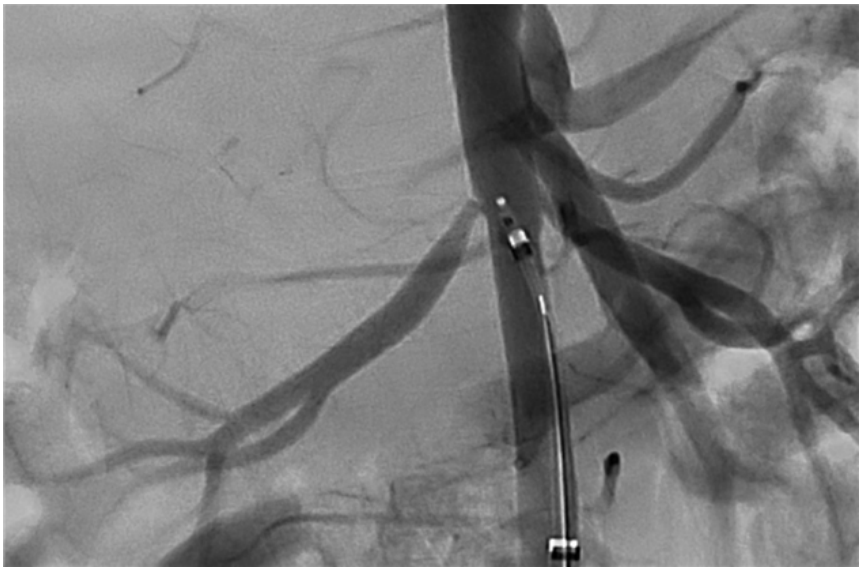
Methods:
We report the case of a 3-year-old girl with NF1 referred for severe arterial hypertension resistant to pharmacological therapy.

Results:
Ambulatory blood pressure monitoring revealed systolic values above the 99th percentile. Laboratory evaluation demonstrated hyperreninemia, secondary hyperaldosteronism, and elevated urinary albumin-to-creatinine ratio, while echocardiography showed no abnormalities. Doppler ultrasound revealed asymmetry in renal size and abnormal flow parameters in the right renal artery and its segmental branches, including markedly prolonged acceleration time. Computed tomography angiography confirmed significant right renal artery stenosis with post-stenotic dilatation and areas of cortical hypoperfusion. The patient underwent percutaneous transluminal renal angioplasty (figure 1), resulting in effective dilation of the stenotic segment. Follow-up Doppler ultrasound identified a vascular fistula with turbulent flow from the renal periphery toward the hilum, consistent with activation of collateral circulation (figure 2). This abnormal flow pattern spontaneously resolved within days, along with normalization of renal arterial flow parameters. Blood pressure subsequently normalized with reduced doses of antihypertensive medication.

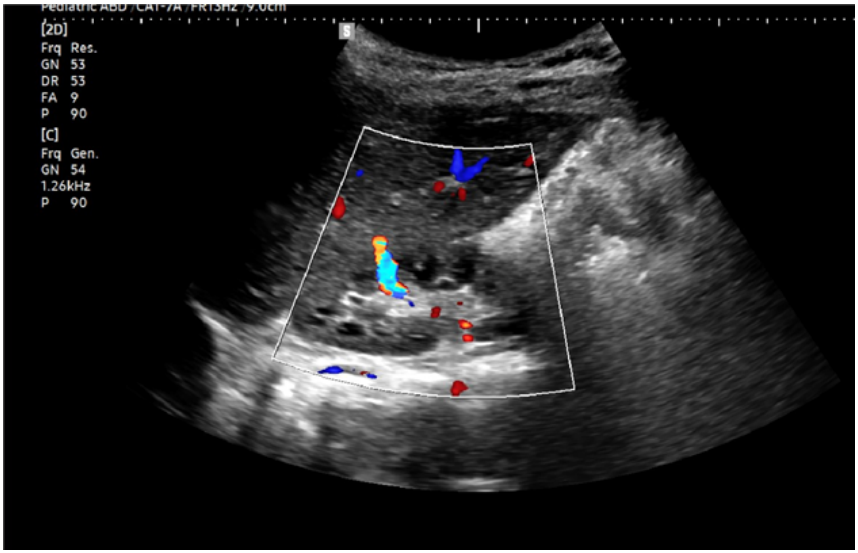
Conclusion:
This case highlights the complexity of renovascular hypertension associated with NF1 and illustrates a rare, self-limiting vascular complication following endovascular treatment. Timely diagnosis using multimodal imaging and targeted endovascular intervention enabled effective blood pressure control. Heightened clinical vigilance

and a multidisciplinary approach are crucial for optimal management of secondary hypertension in pediatric patients with NF1.

Tables, graphs and images (1)



Tables, graphs and images (2)



Arterial Hypertension in the Czech Register Of Renal Biopsies In Children Between 1994 And 2024

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Introduction:
The authors present an analysis of children who underwent renal biopsy (RB). These are the results of the Czech Renal Biopsy Registry (CRRB), which has been organized by the Czech Nephrology Society since 1994. The study includes virtually all RBs of native kidneys in children under 18 years of age that have been performed to date in eight pediatric centers in the Czech Republic. Between 1994 and 2024, a total 3,089 were in children and adolescents under 18 years of age. Since 2001, the CRRB has also reported absolute BP values at the time of RB.

Results:
At the time of RB, 26.4% of children had arterial hypertension (HT), of whom 49% were treated for arterial hypertension. Boys with HT accounted for 58.6% of the cohort. The average age of children with HT was 11.5±5.1 years, while that of normotensive children was 12.3±4.6 years. Glomerular filtration rat e (GFR) in children with HT was 1.5±0.8 ml/s/1.73m2, and in normotensive children it was 1.62±0.6, $p<0.05$. Proteinuria in HT was 3.5±4.0 g/24h, in normotensive patients 2.1±3.5, $p<0.001$. The highest incidence of HT was in C1q nephropathy (82.6%, n=23), focal segmental glomerulosclerosis (38.2%, n=51), IgA vasculitis (30.4%, n=138), tubulointerstitial nephritis (25.5%, n=106), IgM nephropathy (23.0%, n=196), minimal change disease (21.4%, n=687) and IgA-GN (17.3%, n=687).

Conclusions:
Arterial hypertension is a significant risk factor for the progression of glomerulonephritis. This condition is associated with lower GFR and higher proteinuria.

Underestimated Hypertension in 2-years Old Girl with Adrenal Cushing Syndrome

Dr Khrystyna Slivinska-Kurchak[1], Dr Andriy Dvorakevych[1], Dr Yulia Svoren-Barabash[1], Dr Sofiia Holyk[1], Dr Khrystyna Kachur[1]
[1]Danylo Halytskyj Lviv National Medical University, +380, Ukraine

Adrenal Cushing syndrome is rare in early childhood and poses significant diagnostic and therapeutic challenges as well as cardiovascular risks associated with hypertension (HTN)

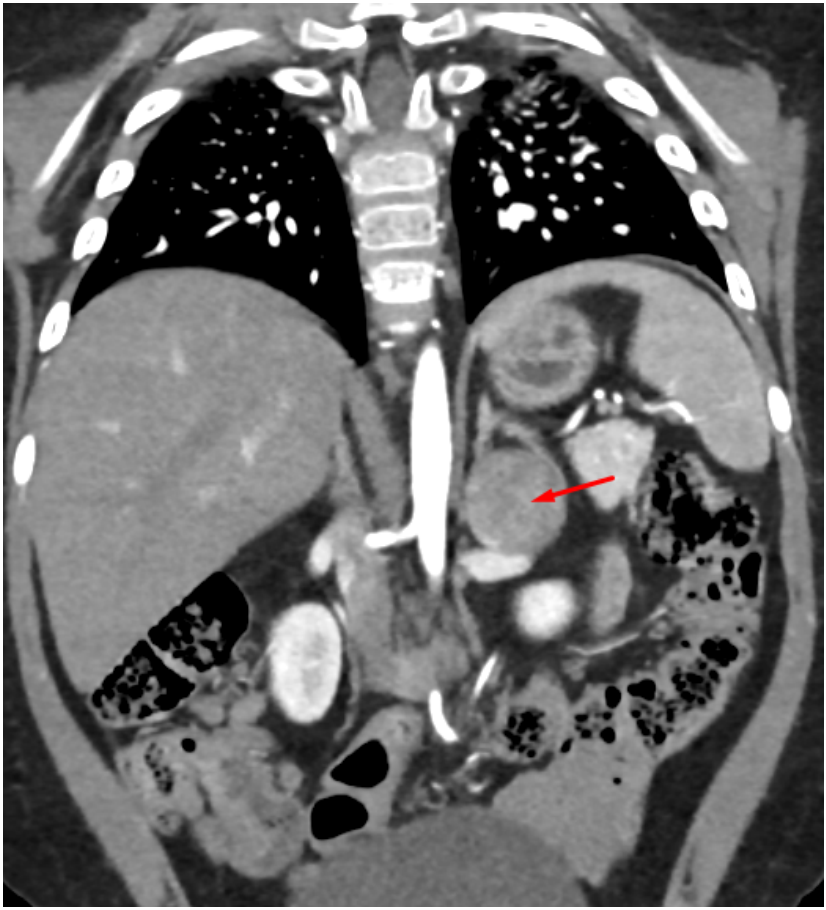
Objective:
To report a case of adrenal adenoma in a 2-year-old girl with underestimated HTN.
Methods: Clinical, biochemical, and radiological findings leading to the diagnosis are described along with intraoperative detection of severe HTN and postoperative management.

Results:
A 2-year-old girl was referred to an endocrinologist due to rapid weight gain (44th to 99th percentile within one year), growth deceleration (35th to 2nd percentile), acne, pubic and axillary hair, body odor, emotional lability. Blood pressure (BP) was considered normal in primary care due to inappropriate cuff size.

Biochemistry:
24-hour urinary free cortisol 319 µg/m²/day, basal ACTH <5 pg/mL, and DHEA 67.4 µg/dL. Abdominal ultrasound and contrast-enhanced CT revealed a homogeneous left adrenal mass 23 × 24 mm. Preoperative echocardiography showed left ventricular hypertrophy (LV mass 50 g/m², relative wall thickness 0.48).
Invasive blood pressure monitoring during surgery recorded BP up to 160/110 mmHg, responsive to urapidil; BP reduction triggered tachycardia (170–180/min).
The patient underwent left adrenalectomy via Da Vinci robotic system.
Postoperatively, HTN and tachycardia persisted, requiring ACE inhibitor, calcium channel blocker, and non-selective beta-blocker. Over six months weight, and DBP normalized, with lowe beta-blocker dose.

Conclusion:
In this case, unrecognized HTN led to early left ventricular hypertrophy at just 2 years of age due to inaccurate measurement of BP. Systematic cardiovascular assessment in adrenal Cushing syndrome is essential to prevent early cardiac remodeling.

Tables, graphs and images (1)



E-Poster Session 4

Pseudo - resistant hypertension in a 17-year-old female patient with Munchausen syndrome

Mrs Anna Maria Wabik[1], Prof Piotr Srzypczyk, Dr Adam Bujanowicz[1]
[1]Medical University Of Warsaw, Warsaw, Poland

Introduction:
Munchausen syndrome is a rare, serious mental disorder (malingering) in which the patient deliberately simulates, exaggerates, or induces somatic symptoms to force hospitalization, testing, and care. Resistant hypertension is defined as blood pressure that remains above the target pressure despite the use of three or more antihypertensive drugs (including a diuretic) at maximum tolerated doses. Munchausen syndrome is included in the list of causes of pseudo-resistant hypertension.

Case report:
A 14-year-old girl was hospitalized due to a diagnosis of hypertension. Hypertension was confirmed, secondary causes were excluded, and no hypertension-mediated organ damage was revealed. Due to poor blood pressure control in subsequent years, the patient required up to four antihypertensive drugs (telmisartan, amlodipine, bisoprolol, indapamide). At the age of 17, edema of the lower extremities was observed, followed by an episode of hypotension requiring treatment in the intensive care unit. Laboratory test revealed very high renin and low aldosterone concentration. While diagnosing the causes of hypotension, it was established that the patient had repeatedly consulted ChatGPT about adverse events of overdosing on her antihypertensive medications. Munchausen syndrome and later depression were diagnosed, the patient was started on sertraline, and currently has normal blood pressure and does not require antihypertensive treatment.

Conclusions:
Munchausen syndrome is a possible cause of pseudo-resistant hypertension also in children.
The first step in identifying patients with Munchausen syndrome should be to collect a detailed medical history and perform a physical examination, using repetition to identify inconsistencies.

Subclinical inflammation and arterial damage in children with primary hypertension and white coat hypertension

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[1]Medical University Of Warsaw, Warsaw, Poland

Background:
Adult studies indicate that subclinical inflammation is involved in the development of primary hypertension (PH) and in arterial damage.

Methods:
The study included 35 children with PH, 24 with white coat hypertension (WCH), and 30 healthy children in a control group (CG) assessed for subclinical inflammation (hsCRP, interleukin-18, and blood count markers), office, 24-hour ambulatory, and central blood pressure (cBP), and arterial damage: cIMT, common carotid artery elasticity, and pulse wave analysis and velocity.

Results:
Compared with the CG, patients with PH had higher levels of hsCRP, neutrophils, monocytes, and platelets, as well as higher neutrophil-to-lymphocyte (NLR), monocyte-to-neutrophil, and platelet-to-mean platelet volume ratios. Central systolic blood pressure (AoSBP), cIMT, and common carotid artery diameter (Dmax) did not differ between PH and WCH and were higher than in CG (AoSBP: 111.4±9.7, 108.2±8.3, 94.5±6.7mmHg, cIMT: 0.467±0.070, 0.458±0.061, 0.410±0.034mm, Dmax: 6.65±0.69, 6.59±0.73, 6.02±0.677mm, $p<0.001$). PWV was higher in children with PH than in CG (5.49±0.89 vs. 4.94±0.90m/s, $p=0.044$). In the whole group, AoSBP correlated with hsCRP ($r=0.22$, $p=0.039$), neutrophils ($r=0.28$, $p=0.008$), monocytes ($r=0.23$, $p=0.032$), NLR ($r=0.35$, $p<0.001$) and monocyte-to-lymphocyte ratio – MLR ($r=0.27$, $p=0.010$), Dmax correlated with neutrophils ($r=0.28$, $p=0.008$), lymphocytes ($r=0.24$, $p=0.023$) and monocytes ($r=0.22$, $p=0.036$), and PWV with NLR ($r=0.22$, $p=0.039$).

Conclusion:
1. Children with PH have elevated inflammatory markers compared to healthy children.
2. Children with PH and WCH have comparable cBP and arterial damage.
3. There is a positive relationship between cBP, arterial damage, and subclinical inflammation.
4. NLR may be an easily accessible marker of arterial stiffness.

Hyponatremic-hypertensive syndrome as a rare manifestation of renovascular hypertension - a case series

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Background:
Hyponatremic hypertensive syndrome is a rare but distinctive manifestation of renal ischemia caused by unilateral renal artery stenosis. It is characterized by severe arterial hypertension accompanied by hyponatremia, hypokalemia, metabolic alkalosis, and polyuria, resulting from complex interactions between the ischemic kidney and the contralateral functioning kidney. Owing to its rarity and potentially life-threatening course, early recognition and appropriate management are crucial. The purpose of this report is to highlight the clinical presentation, diagnostic challenges, and therapeutic outcomes in pediatric patients.

Case report:
We describe two female patients, aged 4 and 9 years, who presented with severe hypertension and electrolyte disturbances secondary to unilateral right renal artery stenosis. Both patients exhibited typical biochemical features, including hyponatremia, hypokalemia, metabolic alkalosis, and elevated renin and aldosterone concentrations. Imaging studies confirmed significant unilateral renal artery stenosis due to fibromuscular dysplasia, with renal asymmetry. In the younger patient, progressive clinical deterioration and complete renal artery occlusion necessitated nephrectomy, resulting in resolution of hypertension and electrolyte abnormalities. In the older patient, percutaneous transluminal renal angioplasty was successful, leading to normalization of blood pressure, restoration of renal size symmetry, and sustained clinical remission at one-year follow-up.

Conclusion:
Hyponatremic hypertensive syndrome should be considered in any child with severe hypertension accompanied by hyponatremia and hypokalemia. Prompt diagnosis and definitive treatment of the underlying renal artery stenosis, either by revascularization or nephrectomy when appropriate, can be curative and prevent severe morbidity. These cases underscore the importance of early recognition and individualized management strategies in pediatric renovascular hypertension.

Tables, graphs and images (1)

Table 1. Characteristics of 2 presented patients with hyponatremic-hypertensive syndrome

No.	Age of diagnosis	Symptoms	Location of the stenosis	Renin serum concentration	Aldosterone serum concentration	Potassium serum concentration	Sodium serum concentration	Treatment
1	3 years, 3 months	Polydipsia, polyuria	Right renal artery trunk	↑	↑	↓	↓	Resection of the right kidney
2	9 years, 3 months	Polydipsia, polyuria, loss of appetite, weakness, nausea	Right renal artery trunk	↑	↑	↓	↓	Percutaneous transluminal angioplasty of the right renal artery

Distribution of 24-Hour Ambulatory Blood Pressure in South Asian Children Living in Canada: Preliminary Findings from the ASHA Study

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Background/Purpose:
South Asian children have high cardiometabolic risk, including obesity, diabetes, and early-onset hypertension. Accurate and early identification of hypertension in South Asian children is a necessary aspect of cardiovascular disease prevention. Ambulatory blood pressure monitoring (ABPM) is considered the gold-standard for pediatric blood pressure (BP) measurement. However, its utilization is limited due to the lack of validated normative reference data in diverse, multiethnic pediatric populations. This study aims to establish South Asian–specific normative 24-hour ABPM distributions and describe ABPM patterns in Canadian South Asian children.

Methods:
This ongoing observational study aims to recruit healthy 1,600 non-overweight/obese South Asian children aged 5–17 years from Ontario and British Columbia, Canada. ABPM is performed using standardized American Heart Association guidelines. Mean 24-hour, daytime, and nighttime systolic and diastolic blood pressure are calculated. Demographic, anthropometric and lifestyle data are collected by questionnaire and actigraph.

Results:
Development of South Asian–specific normative ABPM reference values is ongoing and is projected to be completed in 2027. Preliminary descriptive analysis included 731 participants (mean age 12.5 ± 3.5 years; 48.6% male; mean height 152.9 ± 17.9 cm). Mean 24-hour SBP, DBP, and MAP were 101.1 ± 8.9 mmHg, 61.7 ± 4.9 mmHg, and 75.7 ± 5.4 mmHg, respectively. Daytime SBP averaged 104.8 ± 9.1 mmHg, while nighttime SBP averaged 94.0 ± 9.0 mmHg. Mean systolic nocturnal dipping was 10.6 ± 5.3%, with 42.0% classified as non-dippers.

Conclusion:
These preliminary findings describe ABPM distributions in Canadian South Asian children. Continued recruitment will support population-specific normative ABPM values.