

## MP2-8

### Non-invasive assessment of arterial function in overweight and obese children and adolescents

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Background: Overweight (OW) and obesity (O) are pandemic all over the World. Obesity may cause early atherosclerosis enhancing cardiovascular (CV) risk. Arterial function parameters (AFPs) predict the CV risk in adults. We may suppose the alteration of these parameters in OW and O children and adolescents, as well.

Aims: To determine the frequency of OW and O in a large population of children and adolescents; to find differences in AFPs measured in patients and healthy subjects.

Patients and Methods: 6,824 (3,673 boys) healthy children and adolescents aged 3-18 years were examined. OW, O and systolic/and-or diastolic hypertension were defined by the relevant guidelines. The AFPs (aortic pulse wave velocity [PWV<sub>ao</sub>], aortic augmentation index [Aix<sub>ao</sub>], aortic systolic blood pressure [SBP<sub>ao</sub>]) were measured by a non-invasive, occlusive-oscillometric, invasively validated device. Four patient groups were created in both gender (OW, OW with increased systolic blood pressure [OW+ISBP], O, O+ISBP). Results were compared to those measured in sex and age matched control groups.

Results: 518 (14.1%) OW and 274 (7.5 %) O boys, 397 (12.6%) OW and 174 (5.5%) O girls, totally 915 (13.4%) OW and 448 (6.6%) O children and adolescents were found. PWV<sub>ao</sub> was increased in all patient groups, but significant differences were found only in groups of OW+ISBP and O+ISBP in both genders (5.8 m/s vs. 6.2 m/s, 5.6 m/s vs. 6.2 m/s in boys; 5.7 m/s vs. 6.2 m/s, 5.7 m/s vs. 6.1 m/s in girls;  $p < 0.001$ ). No differences were found regarding Aix<sub>ao</sub>. SBP<sub>ao</sub> were increased in all patient's groups significantly (OW boys: 101.8-104.3 mmHg, OW girls: 101.0-103.4 mmHg ( $p < 0.001$ ), OW+ISBP boys: 102.6-121.6 mmHg, OW+ISBP girls: 100.2- 120.0 mmHg ( $p < 0.0001$ ), O boys: 100.6-103.2 mmHg, O girls: 99.3-102.4 mmHg ( $p < 0.001$ ), O+ISBP boys: 101.3-120.3 mmHg, O+ISBP girls: 101-119.6 mmHg ( $p < 0.0001$ ).

Conclusions: Total prevalence of overweight and obesity was 20.0% in our population. PWV<sub>ao</sub> was increased in all patient groups. SPB<sub>ao</sub> was significantly increased in all patient groups. SPB<sub>ao</sub> may serve as a surrogate marker in the procedure of CV risk stratification in OW and O children and adolescents. On the other hand, the increased SPB<sub>ao</sub> indicates increased CV risk for these patients.