

Central Blood Pressure and Augmentation Index in the Pediatric Age-Group

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Objectives:

Non-invasive approach in the measurement of arterial compliance has made this method applicable for the examination of larger populations. In adults arterial compliance already emerged as an important marker of vascular health. However, there is a lack of information in children. Therefore, this study aimed to determine Augmentation Index (AIx) and aortic systolic blood pressure (aSBP) in the pediatric age-group.

Patients and methods:

From February 2011 to November 2011 we examined 249 healthy children with a median age of 12.7 years (128 girls, Inter quartile range (IQR): 11.8 - 14.1 years) and with a slightly increased BMI-SDS of 0.78 (-0.37 - 2.08). Measures of arterial compliance were obtained after 5 minutes rest in supine position based on an oscillometric method (Mobil-O-Graph, IEM, Stolberg Germany) using circumference depending cuffs at the upper arm.

Results:

Median aSBP was 101 mmHg (95 - 108 mmHG). Aortic systolic blood pressure was associated with higher BMI-SDS ($r=.415$; $p<.001$) and was also higher in older subjects ($r=.330$; $p<.001$).

Augmentation index in the whole study group was 12% (9 - 20%). No associations to BMI-SDS ($p=.891$) or age ($p=.865$) could be found.

Conclusions:

Children with higher BMI-SDS seem to be at early risk to manifest higher aSBP. Cut-off values for aSBP and the role of the augmentation index has to be clarified in further research.