

**Surprise: High incidence of vein insufficiency in children**

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Introduction: Newer studies on the onset of intra- and epifascial venous disease show four major components: 1) congenital valve lesions, 2) stress-induced valve decompensation like seen in heavy workers or athletes, 3) stasis-induced inflammatory valve degeneration, and 4) usually secondary, phlebitis. As congenital vein valve damage is the first to occur in life, it should prepare a primary pattern of individual course of venous disease. Methods: Using high frequency ultrasound systems (Siemens Juniper, Zonare One Pro, Mindray M9, 16 - 23 MHz; Vevo MD, 16 - 32 MHz), we examined 102 children and adolescents aged 6 – 18 (mean 12.5 years), 59 f, 43 m, all asymptomatic. Investigation time was limited to 15 minutes. In case of visible vein changes (protruding, more intense color, increased diameter), ultrasound started here. Otherwise, systematic screening of saphenous veins and typical perforator locations was performed.

Results: 71/102 children (58.8%), resp. 60/204 legs (34.8%) showed relevant venous pathology. Lesions were mainly located in the GSV: 60/204 (29.4%), versus primary saphenous side branch varices (3.9%), SSV (3.4%), and perforator veins (1.0%). GSV at the lower leg showed 61.0% of all GSV lesions. In the subgroup of 6-8 y/o kids, 11/23 kids (47.8%) already showed relevant pathology (Fig. 1). 42.3% of all cases were related to a single valve failure. Among these, unilateral commissural mismatch was the most frequent pattern (70.0%).

Conclusions: The unexpected high incidence of detected valve lesions in children, in particular in the younger ones, should be best explained by congenital disease. It is a merit of today's ultrasound systems that even small lesions now can be detected. Now the challenge is to learn which candidates at which age might have a preventive benefit from early detection, coaching and eventually a cost-effective therapy.

Fig. 1: Example of side branch insufficiency and GSV flow alteration in a 6 y/o girl.

