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Abnormal regional myocardial deformation properties in essential pediatric hypertension patients despite successful treatment: an ABPM, standard echocardiography and strain rate imaging study

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Introduction: Although there are few studies of subclinical myocardial dysfunctions in children and adolescents with essential hypertension (HTN), there is no study in successfully treated normotensive patients who had essential HTN by using two-dimensional speckle tracking echocardiography (2DSTE).

Methods: This study consisted of 45 children (5-17 years) previously hypertensive nonobese patients, but currently on medication and normotensive and 45 sex, age, and body mass index–matched healthy subjects.

Results: Left ventricular wall thickness, dimensions, systolic functions, Tissue doppler echocardiography (TDI) of patients and controls were within normal limits and statistically similar. Global longitudinal strain (GS) (-18,70±3,41 and -19,77±1,77), Global longitudinal strain rate (SR) (-1,16±0,24 and -1,25±0,20), Global longitudinal four-chamber strain (-17,88±2,67 and -19,77±1,77), and Global longitudinal four-chamber strain rate (-1,04±0,18 and -1,19±0,14) values were lower in the patient group than in the control subjects. Left ventricular septal and lateral wall longitudinal and transverse strain values according to segmental analysis showed statistically significantly lower levels of Positive systolic peak circumferential strain and End systolic longitudinal displacement of the apical lateral segment in the patient group.

Conclusions: Despite normal diastolic function, LV longitudinal function was found to be impaired in children and adolescents in the treatment of HT who have normal LV ejection fraction by 2DSTE.

	Patients	Controls	P value
GS	-18,70±3,41	-20,01±2,82	**0,03**
SR	-1,16±0,24	-1,25±0,20	**0,02**
GSRe	1,77±0,47	1,95±0,51	0,09
GSRa	0,64±0,30	0,72±0,41	0,10
VEbasL	-12,03±2,54	-12,24±2,11	0,56
VEbasR	-10,46±3,39	-10,96±2,73	0,29
VAbasL	-5,85±2,11	-6,46±2,02	0,68
VAbasR	-5,26±2,80	-4,99±2,14	0,49

GS:Global peak longitidunal strain (%), SR:Global peak systolic longitudinal strain rate (1/sec), GSRe:Global peak 'E' longitudinal strain rate (1/sec), GSRa:Global peak 'A' longitudinal strain rate (1/sec), VEbasL:left basal Peak 'E' longitudinal velocity (cm/sn), VEbasR: Right basal Peak 'E' longitudinal velocity point (cm/sn), VAbasL: Left basal Peak 'A' longitudinal velocity (cm/sn), VAbasR: Right basal Peak 'A' longitudinal velocity (cm/sn)