



# Diastolic function changes in hypertensive patients and septal bulge

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**Background:** Hypertensive patients with basal septal hypertrophy (BSH) are known to have high filling pressures comparing to healthy controls, eventually leading to diastolic heart failure and poor outcomes.<sup>1-3</sup> **Aim:** To investigate if occurrence of basal septal hypertrophy is related to diastolic dysfunction in younger patients with uncomplicated arterial hypertension (AH) and no comorbidities compared to hypertensive patients with no BSH.

**Patients and Methods:** A total of 138 patients aged 18-65 years (mean 48.51±11.69 years), 47.8% men were enrolled. Complete 2D transthoracic echocardiography according to standardized protocol was performed, as well as deformation study using 2D speckle tracking echocardiography. All patients included in the study had a preserved left ventricular ejection fraction (mean 61.35±5.07%). Basal septal hypertrophy was defined as basal/mid septal thickness ratio >1.3, or thickness of the basal interventricular (iv) septum >2mm compared to mid iv septum, along with visual BSH notification.

**Results.** There were altogether 74 patients (53.6%) with BSH. Patients in this group were older (51.41±9.37 vs 45.16±13.19 years, p=0.006), with longer duration of AH (9.01±9.67 vs 5.95±8.51 years, p=0.009). Echocardiographic measurements revealed normal left ventricular (LV) geometry and left atrial (LA) volumes, as well as normal values of standard indices of diastolic function in the whole population. However, patients with BSH showed incipient concentric LV remodeling and relaxation impairment (RWT 0.38±0.11 vs 0.3±0.08, p<0.001; LVMI 109.15±25.33 vs 89.19±24.59g/m<sup>2</sup>, p<0.001; E/A 0.96±0.28 vs 1.16±0.39, p=0.001; LAVI 32.68±9.98 vs 30.02±11.37, p=0.05). There were no differences among groups according to global deformation measurements. Longitudinal strain was more impaired in three basal LV segments (basal iv septum -11.38±4.37% vs -14.69±2.54%, p<0.001; mid iv septum -16.44±3.54 vs -18.16±2.9%, p=0.01; basal anteroseptum -13.38±4.19 vs -15.24±3.23%, p=0.01), correlating with indices of diastolic function shown in **Table 1**.

**Conclusion.** BSH is shown to be an early sign of LV relaxation impairment, along with incipient geometry and regional longitudinal deformation changes even in younger patients and in early stages of AH.

**TABLE 1. Correlations between regional longitudinal strain and parameters of diastolic function.**

	E/A	E' sept	E/E'sept
LSBAS	r=-0.249, p=0.011	r=-0.363, p=0.001	r=0.228, p=0.021
LSBS	r=-0.329, p=0.001	r=-0.387, p=0.001	r=0.26, p=0.007
LSMS	r=-0.211, p=0.029	r=-0.311, p=0.001	r=0.224, P=0.022

LSBAS=basal anteroseptum longitudinal strain, LSBS= basal septum longitudinal strain, LSMS=mid septum longitudinal strain.

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## LITERATURE

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