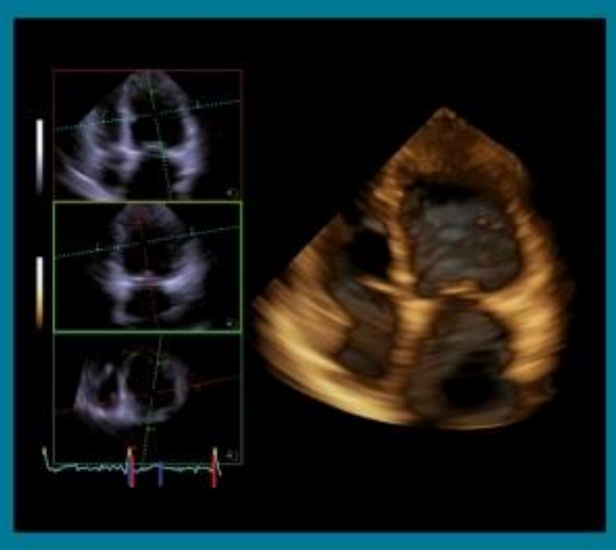

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VENTRICULO-ARTERIAL IMPEDANCE DIFFERENTLY IMPACT 2D STRAIN PARAMETERS IN PATIENTS WITH AORTIC STENOSIS

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Introduction: ventriculo-arterial impedance (ZV_a) is recognised as influencing exercise tolerance, syncope onset and prognosis in aortic stenosis (AS) patients.

Aim of the present study is to show the impact of a progressive increase in ZV_a of different left ventricular strain parameters.

Methods: 218 patients (mean age: 79.9±8.6 years, males: 54%) with severe AS (aortic surface <1 cm^2 or <0.6 cm^2/m^2) underwent standard echocardiography and 2D speckle tracking echocardiography to characterize aortic valve gradients, biventricular function, ZV_a and strain parameters.

Results: according to ZV_a quartiles the population was divided in four groups: Group A ($ZV_a \leq 3.43$ mmHg/ml/m^2), Group B ($3.43 < ZV_a \leq 4.1$ mmHg/ml/m^2), Group C ($4.1 < ZV_a \leq 5.1$ mmHg/ml/m^2), Group D ($ZV_a > 5.1$ mmHg/ml/m^2). Progressive increase in ZV_a was associated with a progressive alteration of all strain parameters. GLS and GCS were affected earlier, whereas a significant reduction of GRS appeared only in patients with the higher ZV_a values (Table 1).

Table 1	Group A	Group B	Group C	Group D	ANOVA *p value*
GLS (%)	-14.4 ±4.0	-13.3±3.4	-12.4±3.5*	-10.6±3.2***,▪,▲	<0.0001
GCS (%)	-12.4±5.2	-8.3±4.7**	-9.2±3.7**	-7.7±3.5***	<0.0001
GRS (%)	29.8±16.1	25.0±12.9	26.6±17.1	20.7±13.18**	0.09

*p <0.05 vs group A, **p ≤0.01 vs group A, ***p ≤0.0001 vs group A, ▪ p ≤0.0001 vs group B, ▲ p≤ 0.01 vs group C

Conclusions: In patients with severe AS, a mild to moderate increase in ZV_a induces a rapid decrease in longitudinal subendocardial fibres function as demonstrated by the impairment in GLS and GCS. Mid-wall circumferential fibres function is significantly affected only at very elevated ZVa values. Further studies are necessary to clarify if these functional alterations may be reversed after AS surgical treatment or if they are representatives of a more advanced, irreversible left ventricular disease.