Effect of bosentan therapy on ventricular and atrial function in adults with congenital heart disease and Eisenmenger syndrome. A prospective, multi-center study using conventional and Speckle tracking echocardiography.


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Introduction:
The effect of bosentan on the ventricular and atrial performance in patients with Eisenmenger syndrome is unclear. We aimed to evaluate the midterm effect of bosentan in Eisenmenger patients on physical exercise, ventricular and atrial function, and pulmonary hemodynamics.

Methods:
Forty adult patients before and after 24 weeks bosentan therapy underwent six minute walk test, two-dimensional speckle tracking echocardiography, plasma NT-proBNP measurement and cardiac catheterization.

Results:
After 24 weeks bosentan therapy an improvement was observed regarding the six minute walk distance from a median (quartile 1 - quartile 3) of 382.5 (312 - 430) m to 450 (390 - 510) m (p=0.0001), NT-proBNP from 527.5 (201 - 1691.25) to 369 (179 - 1246) pg/ ml (p = 0.021), right ventricular mean longitudinal systolic strain from 18 (13 - 22) to 19 (14.5 - 25) % (p=0.004), left ventricular mean longitudinal systolic strain from 16 (12 – 21) to 17 (16 – 22) % (p= 0.001), right atrial mean peak longitudinal strain from 26 (18 – 34) to 28 (22 – 34) % (p= 0.01) and right atrial mean peak contraction strain from 11 (8 – 16) to 13 (11 – 16) % (p=0.005). The invasively obtained Qp:Qs and Rp:Rs did not significantly change under bosentan therapy.

Conclusions:
In adult patients with Eisenmenger syndrome, bosentan therapy improves ventricular and atrial functions possibly by ameliorating cardiac remodeling, resulting in enhancement of physical exercise and reduction of the NT-proBNP level while the pulmonary vascular resistance does not change substantially.