

Prevalence of cardiac amyloidosis in patients undergoing transcatheter edge-to-edge mitral valve repair

Donà C¹, Nitsche C¹, Koschutnik M¹, Koschatko S¹, Dannenberg V¹, Kammerlander A¹, Goliasch G¹, Bartko P¹, Schneider M^{1,2}, Traub-Weidinger T³, Hacker M³, Hengstenberg C¹, Mascherbauer J^{1,4}

1 Medizinische Universität Wien - Innere Medizin II, Klinik für Kardiologie

2 Charité Berlin - Innere Medizin

3 Medizinische Universität Wien - Universitätsklinik für Radiologie und Nuklearmedizin

4 Karl Landsteiner Universität - UK St.Pölten, Abteilung für Innere Medizin III

Background

Cardiac amyloidosis (CA) is associated with severe aortic stenosis, however, its prevalence in patients with severe mitral regurgitation in elderly patients is unknown.

Methods

Patients scheduled for transcatheter edge-to-edge mitral valve repair (TMVR) were prospectively screened for CA using 99m technetium-3,3-diphosphono-1,2-propanodicarboxylic acid (DPD) bone scintigraphy and subsequent serum as well as urine free light-chain quantification in case of a positive DPD scan, defined as visual cardiac uptake based on the Perugini grading scale.

Results

Out of 100 patients undergoing TMVR, 28 patients (28.0%) had a positive DPD-scan (DPD+). 14 patients (14.0%) showed Perugini grade I enhancement, 9 patients (9.0%) grade II enhancement, and in 5 patients (5.0%), grade III enhancement was present.

28 patients suffered from TTR and two from AL-amyloidosis (one patient had a combination of TTR and AL-amyloidosis). When compared to patients with a negative scan (DPD-), DPD+ patients presented with similar baseline characteristics such as age (DPD- vs DPD+ 76y/o vs 77y/o, $p=0.44$), gender (female; 62.7% vs 50.0%, $p=0.25$), coronary artery disease (59.7% vs 42.9%, $p=0.13$), previous valve surgery (25.4% vs 14.3%, $p=0.24$) and atrial fibrillation (68.7% vs 78.6%, $p=0.33$). Also, NYHA functional class and EuroScore II were similar (NYHA \geq III; 85.1% vs 82.1%, $p=0.72$, and EuroScore II $9.9\pm 9.8\%$ vs $7.0\pm 4.8\%$, $p=0.21$, respectively). On echocardiography, DPD+ patients presented with more pronounced left and right ventricular hypertrophy (interventricular septum: 15mm vs 13mm, $p<0.01$) but similar left ventricular ejection fraction (44.9% vs 42.3%, $p=0.34$). At 3-months after TMVR, DPD+ patients showed significant improvement in BNP serum levels when compared to DPD- patients (DPD+ vs DPD-: $+315\pm 2569$ pg/ml vs -2404 ± 8696 pg/ml, $p=0.03$), while NYHA functional class remained unchanged (NYHA improvement ≥ 1 class: 57.6% vs 50.0%, $p=0.52$)

Conclusion

In this single centre experience, CA was highly prevalent among elderly patients with severe mitral regurgitation scheduled for TMVR. TMVR in CA patients resulted in significant improvement of NT-pro BNP levels. Future studies need to clarify the prognostic relevance of CA in this specific patient population.

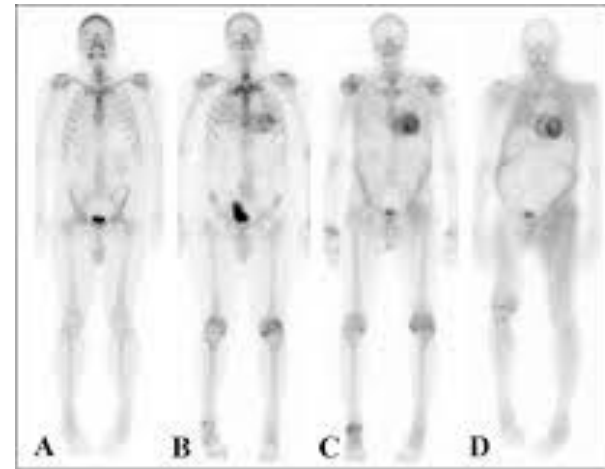


Figure 1. DPD scans demonstrating various Perugini Grades (A-D equals 0 to 3)

Declarations: none.