Impact of left atrial appendage closure on neurohormones secretion at long-term follow-up

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Introduction: Neuro-hormones such as the atrial natriuretic peptide (ANP), brain natriuretic peptide (BNP) and endothelin (ET) have been reported to increase the risk of stroke in atrial fibrillation (AF). Recently, emerging left atrial appendage (LAA) occlusion is performed to prevent the incidence of thrombosis, but little is known how the secretion of neuro-hormone after LAA occlusion. The study was to evaluate the effect of LAA occlusion on the secretion of ANP, BNP and ET levels at a long-term follow up.

Methods: Twenty-one patients with AF underwent percutaneous LAA occlusion and twenty-three patients with AF and mitral stenosis underwent mitral valve replacement with surgical LAA excision. ANP, BNP, and ET in the blood serum were measured at prior-procedure, 24-hour, 3-months, 6-month and 12-month post-procedure.

Result: Compared to prior-procedure (ANP: 0.33±0.02; BNP: 103.2±61.4), when LAA was occluded percutaneously, ANP and BNP levels slightly increased at 24-hour post-procedure (ANP: 0.34±0.04 mg/ml, P=0.50; BNP: 104.1±59.2 pg/ml, P=0.40), but significantly decreased at 12-month post-procedure (ANP: 0.29±0.04 ng/ml; BNP: 83.6±59.1 ng/ml, P<0.05). In contrast, where LAA was excised by surgery, ANP and BNP Levels were significantly decreased at both 24-hour (ANP: 0.31±0.02 ng/ml; BNP: 114.5±65.7 pg/ml, P<0.05) and at 12-month (ANP: 0.27±0.03 ng/ml; BNP: 55.4±21.9 pg/ml, P<0.05), compared to those levels at prior-procedure, as well as LAA occluded percutaneously (P<0.05 at 24-hour, P<0.01 at 12-months). Furthermore, the levels of those neurohormones were significantly correlated with hypertension, ejection fraction and using of diuretic at 12 months follow up. No statistical change has been noted in ET level at any time period in both groups at all time points.

Conclusion: The secretion of ANP and BNP from LAA were significant decreased after LAA occlusion of 12-month. In contrast to surgical excision, percutaneous LAA occlusion partially preserved the secretion of neuro-hormones.