

## VALVULAR OXIDATIVE STRESS IN PATIENTS WITH SEVERE PRIMARY MITRAL REGURGITATION AND ATRIAL FIBRILLATION: A PILOT STUDY

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Severe mitral valve regurgitation (MVR) is known to induce atrial fibrillation (AF) in the setting of left atrial dilation. Whether valvular oxidative stress contributes to the occurrence of AF in these patients has been scarcely investigated. We hypothesized that the regurgitant blood jet triggers valvular shear stress which will further promote increased generation of reactive oxygen species (ROS), atrial dilation and AF. Our purpose was to dissect the pathogenesis of AF in these patients by evaluating the relationship between valvular ROS production and AF. We collected the data from 20 patients with severe primary MVR and surgical indication, with and without AF. Valvular samples were harvested during the surgical procedure and analysed for ROS generation by means of confocal microscopy (dihydro-ethidium stain) and spectrophotometry (FOX assay). Nine patients (45%) had persistent and/or permanent AF and presented significantly increased ROS generation as compared to the non-AF patients. Acute incubation with angiotensin II (AngII) elicited an increase in ROS generation in all samples harvested from both AF and non-AF patients. Co-incubation with the AT1 blocker, irbesartan, mitigated the oxidative stress. In conclusion, valvular ROS generation is increased by angiotensin both in atrial fibrillation and sinus rhythm patients and its inhibition alleviated the oxidative stress. Whether the increased valvular oxidative stress contributed to the occurrence of atrial dilation/AF or to further valvular damage, remains to be established.

**Keywords:** severe mitral regurgitation; atrial fibrillation; oxidative stress