



The out-of-hospital cardiac arrest in patients with acute myocardial infarction and pre-existing aortic stenosis.



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Introduction

Pre-existing significant aortic stenosis (sAS) in patients with out-of-hospital cardiac arrest (OHCA) may lead to ineffective chest compressions due to pathophysiology and hemodynamic of stenosis, reducing the probability of return of spontaneous circulation, and the resuscitation may be complicated.

Objectives

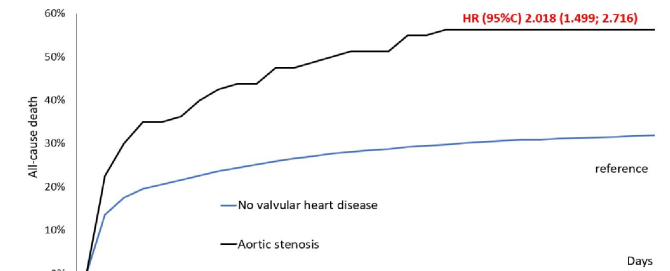
Our study was primarily aimed to examine the influence of sAS on the risk of OHCA in patients with acute myocardial infarction (AMI-OHCA), on the complicity of resuscitation and survival.

Methods

The analysis was performed by creating a complex algorithm and methodology to obtain BigData on a national level by merging three National Registries. Complicity of resuscitation was defined as the necessity of mechanical ventilation up to hospital admission. The association between AS, patient characteristics and mortality was analyzed using logistic regression, multivariate model was used for adjusting for co-founders.

Results

Our dataset included all patients with AMI-OHCA in the country (2017-2021), N=4,414, of whom 1.8% patients had pre-existing sAS and were followed up at the medical institutions. The incidence of sAS was 1.7% in those who suffered OHCA and 1.8% in AMI patients without this complication, p=0.66. The AMI-OHCA patients were divided into three groups – those who died during OHCA (N=238, AS in 4.2%), those who were admitted after OHCA on mechanical ventilation (N=3,255, AS in 1.8%) and spontaneously ventilating patients (N=921, AS in 1.2%). Multivariate analysis showed that sAS presents a significant risk of pre-hospital mortality of AMI-OHCA patients, OR 3.4 (95%CI 1.20;9.58), p=0.02. Additionally, the in-hospital, 30-day, and long-term prognosis of AMI-OHCA patients is adversely affected by sAS with OR 2.47 (95%CI 1.38;4.41), 2.83 (95%CI 1.61;4.95), and 1.81 (95%CI 1.38;2.38) vs. non-VHD respectively, p<0.01 for all.



Conclusion

Pre-existing sAS have a significant adverse influence on the survival of AMI-OHCA patients and is a significant risk factor of pre-hospital mortality. Therefore, patients with AS should be carefully screened for coronary artery disease, antithrombotic therapy should be considered, and the earlier planning of valvular intervention after AMI should be evaluated.

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