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Incidence and Risk Factors of Ventricular Arrhythmias in Patients with Acute Coronary Syndrome – Data from Latvian Acute Coronary Syndrome Registry 2011

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Introduction. Ventricular arrhythmias (VA) remain a common complication of myocardial infarction (MI), despite major improvement in treatment of patients with acute coronary syndrome (ACS). We have analysed the rate of VA in first 24 hours after hospitalisation in patients presenting with acute coronary syndrome, receiving different treatment strategies and having different risk factors.

Materials and methods. Analysis was based on the data from Latvian Centre of Cardiology (LCC) and National Register of ACS in year 2011. VA was defined as sustained/unsustained ventricular tachycardia (SuVT/NsVT) and ventricular fibrillation (VF). We compared rates of VA in patients with STEMI/Non-STEMI, after primary PCI, acute PCI or thrombolysis and without reperfusion therapy. In total, 5301 ACS patients were enrolled in this study. VA was documented in 225 patients. Correlation between the level of cardiac biomarkers (Troponin and CK-MB mass) and echo data in early hospitalisation time as possible VA prognostic factors were analysed. We studied pharmacological treatment before ACS event and the implication to VA.

Results. The incidence of ventricular tachyarrhythmias was 4.2%. In STEMI group the incidence of VA was significantly lower in PCI group after six hours than in patients receiving thrombolysis ($p < 0.05$). In first two hours VA incidence was higher in PCI group, what can be explained with earlier reperfusion changes and electrical instability. In non-STEMI group the incidence of VA was significantly lower than in STEMI group ($p < 0.01$); however, it was higher in non-invasive group compared to invasive treatment group. VA rate was significantly lower in statin users ($p < 0.05$). VA rate was significantly higher in patients with elevated biomarkers at admission ($p < 0.001$) and with left ventricular dysfunction ($p < 0.01$) but without differences in left ventricular dimension.

Total frequency of VT/VF in 578 patients with STEMI was 65 (11.2%), of these, SuVT 11 (17%), NsVT 11 (17%), VF 43 (66%). Accordingly, in 703 NSTEMI pts – VT/VF 22 (3%), SuVT 3 (14%), NsVT 6 (27%), VF 13 (59%). In 65 cases VA was detected in association with reperfusion therapy – before procedure 41 (63%), during 8 (12%), just after 16 (25%). VA in ACS patients was 225 (4.2%), but significantly higher in STEMI patients – 151 (9.5%) in comparison with non-STEMI patients 74 (2.0%).

Mortality in ACS: ACS STEMI without VA 6%, with VA 25% ($p < 0.01$); ACS NSTEMI without VA 5.2%, with VA 27% ($p < 0.01$).

Conclusions. Incidence of VA remains high in ACS patients, despite intensive treatment strategy. Ventricular arrhythmias are more often observed in STEMI pts and earlier PCI potentially improves survival rate. During acute phase, VA is a significant marker of high mortality risk. Elevated myocardial biomarkers are informative for prognosis for VA. Prior use of statins may decrease the risk of VA.