A Systematic Diagnostic And Therapeutic Approach For The Treatment Of Patients After Cardio-pulmonary Resuscitation: A Prospective Evaluation Of 212 Patients During 5 Years

Purpose

There is a need for a systematic treatment protocol for patients after resuscitation.

Methods

A systematic diagnostic approach including ECG, echocardiogram, urgent cardiac catheterization ("STEMI-like" workflow), pulmonary angiography, CT scans, pre-defined laboratory findings, IABP, hypothermia and cMRI prospectively during the last 5 years was in our cardiology department evaluated. The primary endpoint was the Cerebral Perfomance Category Scale (CPCS).

Results

From January 2008 to December 2012, 212 patients were included into our protocol. Mean age was 66.7 years, 71.2 % were male, the mean ejection fraction was 42.9 %, the mean time from first medical contact to start of catheterization/intervention was 76.6 minutes. Ventricular fibrillation (VF) was observed in 99 patients reflecting 46.7 %.

A significant coronary artery stenosis (defined as % stenosis > 60 %) was found in n=130 (61.3 %) and a percutaneous coronary intervention (PCI) was performed in 101 patients (47.6 %). An acute coronary syndrome (ACS) was diagnosed in 100 patients (47.2 %), 91 patients (42.9 %) had a cardiomyopathy, and 7 patients (3.3 %) had evidence for a Tako-Tsubo cardiomyopathy.

Rare diagnoses were patients with pulmonary embolism (n=8, 3.8 %), a long QT syndrome (n= 4, 1.9 %), an early repolarization syndrome (n= 2, 0.9 %), hypertrophic cardiomyopathy (n= 1, 0.5 %) and aortic dissection (n=1, 0.5 %).

A mechanical recanalization of a large thrombus of the pulmonary artery was performed in one patient.

An extracardiac cause for cardiac arrest was observed in 12 patients (5.7 %) and mostly secondary to stroke (cerebral infarction/bleeding).

Results: endpoints

The survival rate was n=76 (35.9 %), a CPCS of 1/2 was established in 67 patients (31.8 %). In patients being treated with a PCI, a significant difference in mortality was found for patients with TIMI flow 2/3 vs 0/1 (65.4 % vs. 95.7, $p< 0.05$). The difference in mortality with respect to intra-aortic balloon pumping vs. no pumping was not statistically significant (70.0 % vs. 63.6 %, $p=0.6$). Hypothermia was able to reduce mortality significantly (52.7 % vs 68.2 %, $p<0.05$).

Conclusion

A systematic diagnostic and therapeutic algorithm using a “STEMI-like” workflow is feasible, safe and can improve prognosis.