

Background

In patients with acute pulmonary embolism (APE) treated with, either catheter directed therapy or anticoagulation alone, the effects of treatment on hemodynamics remain uncertain.

Methods

This is a single center, non-randomized interventional study. We qualified patients with high-risk and intermediate-high risk APE hospitalized in PERT reference center and assigned them to two groups: undergoing catheter directed therapy (percutaneous pulmonary embolectomy – Indigo Lightning Flash 16Fr or 12Fr system (Penumbra Inc, USA)) with concomitant heparin anticoagulation, or treated with heparin anticoagulation only. Patients were qualified to CDT based on current best experience of the center. All patients throughout the first 24 hours of hospitalization had continuous invasive blood pressure monitoring from radial artery access. Hemodynamic parameters of left ventricle from pulse wave were calculated by HemoSphere or HemoSphere Alta Monitors (BD, USA). Every 8 hours sensors were calibrated, and from subsequent record of 6 minutes a mean of parameters was used in the study.

Results

Among 37 patients in this study, 24 were included in the CDT group and 13 in heparin alone treatment group. Initially only pulse pressure variation PPV parameter presented significant difference between groups. In the following 24 hours significant changes between treatment groups were observed in following parameters: cardiac index CI ($p=0,028$), stroke volume index SVI ($p=0,008$), systemic vascular resistance index SVRI ($p=0,014$), pulse pressure variation PPV ($p=0,033$), , in favor of the CDT group. The rest of the measured parameters: pulse rate PR, systolic arterial pressure SYS, stroke volume variation SVV, did not present such variability.

Conclusions

Invasive hemodynamic monitoring provides additional parameters which improve earlier in APE patients than SYS and PR. Appliance of CDT was associated with faster improvement in some of them within the high and intermediate-high risk APE patients compared to only heparin treatment.

