

Recovery in the early postoperative period after Fontan operation – 9 years experience of a single institution in favor of early extubation strategy.

*Simeonov L., Shishkov S., Pechilkov D., Kaneva A.
National Heart Hospital-Sofia, Bulgaria*

Background: Fontan circulation is strongly dependent on low cavopulmonary pressures and favors negative pressure ventilation. Early postoperative extubation of such patients should have a strong positive effect on stabilizing the hemodynamics and lowering the inotropic support needs. The aim of this study is to establish the differences among the patients that were successfully extubated early after operation and those who failed to do so.

Methods: Medical files of patients after Fontan operations for nine years period (2009-2017) were retrospectively analyzed. Patients with missing data from the medical files were excluded from the study. We divided the patients in two groups: first group of early extubated patients – extubated up to 12 hours after the operation, second group of later extubated patients. Preoperative and serially measured postoperative data in the first 48 hours were collected. Data were presented as medians with range or as means \pm standard deviation. A non-parametric Mann-Whitney U test integrated in the statistical software SPSS 19.0 was used. A value of $P < 0.05$ was considered significant.

Results: For a period of 9 years 73 patients were operated. 64 patients were included in the study. The median age was 3.5 years (range 1.8-9). In 62 patients (96.9%) an extracardiac conduit was used and in 2 (3.1%) a lateral tunnel was done. In 43 patients (64.1%) a fenestrated Fontan was performed and 21 (35.9%) were non-fenestrated. 20 patients (31.3%) were included in the early extubated group. Compared to later extubated group, early extubated group had higher pre-operative ejection fractions 66%(51-87) vs. 59.5%(45-86) $p=0.004$, lower initial cavo-pulmonary pressures 13mmHg(8-17) vs. 14mmHg(9-21) $p=0.04$, lower initial inotropic scores 11.89(5-24) vs. 23.6(3-57) $p=0.0001$ and shorter ICU stay 5days (2-11) vs. 6days(2-47) $p=0.01$. Within the early extubated group there was a lowering in the inotropic score in pre- and postextubation values 11.9(5-24) vs. 7.4(2.3-12.9) $p=0.0001$.

Conclusion: In the early postoperative period after Fontan operation patients that can be extubated in the first 12 hours had higher pre-operative ejection fraction, lower cavo-pulmonary pressures and lower inotropic scores after the operation. After establishing a spontaneous ventilation patients need much less inotropic support to sustain a stable hemodynamics.