

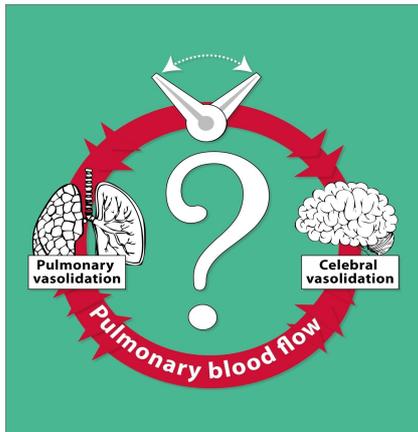


# Inhaled Nitric Oxide after Superior Cavopulmonary Anastomosis – Effects on Cavopulmonary Pressure and Oxygen Saturation

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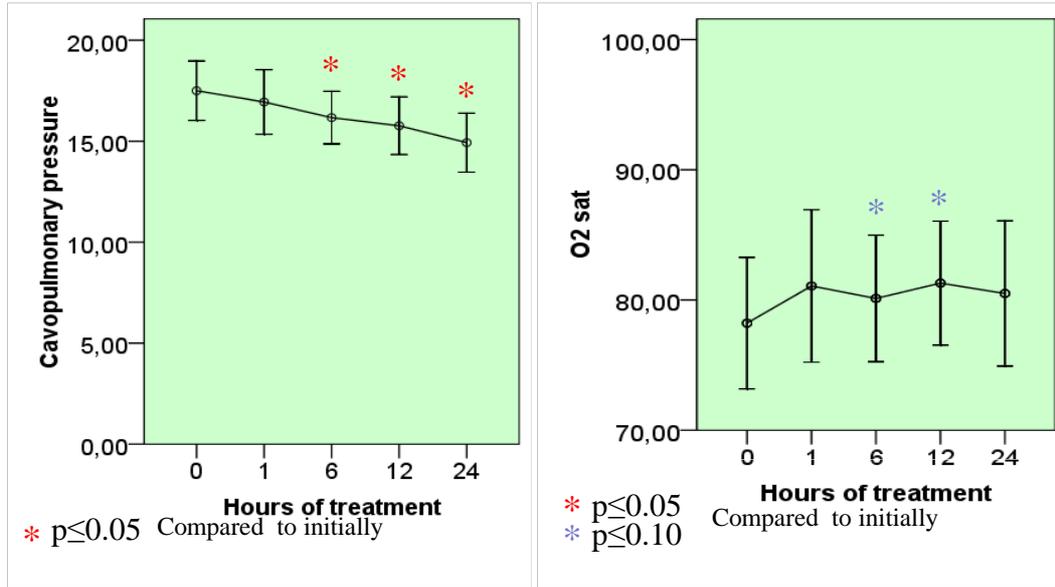
**1.Introduction.** The superior cavopulmonary anastomosis circulation is unique in placing the upper body systemic circulation and the pulmonary circulation in series. The effective pulmonary flow and the oxygenation depend on the resistances of both circulations (fig 1). Possible clinical problems in patients early after superior cavopulmonary anastomosis include low arterial oxygen saturation and/or high cavopulmonary pressure. Mild hypercapnea in order to lower cerebral vascular resistance was proposed for managing hypoxemia in such patients. The role of selective pulmonary vasodilation after superior cavopulmonary anastomosis remains unclear. This study aims to investigate the hemodynamic effects of inhaled nitric oxide (iNO) in children early after superior cavopulmonary anastomosis.

Figure 1. Determinants of pulmonary blood flow



### 3.Results:

Figure 2. Effects of iNO on cavopulmonary pressure and O2 saturation



### 2. Methods.

- Study inclusion criteria:**
  - Normoventilated patients treated with iNO after superior cavopulmonary operations – 18 patients (table 1).
- Study exclusion criteria:**
  - Anatomical reason for elevated cavopulmonary pressure.
- Indications for iNO:**
  - Cavopulmonary pressure >15 mm Hg;
  - O2 sat < 80%.
- iNO therapy:**
  - Beginning – at admission-30th post-operative hour;
  - Median dose –20 (10-20) ppm;
  - Duration – 24 (7 - 240) hours.
- Monitoring:**
  - O2 sat, pCO2 and cavopulmonary pressure were recorded initially and at the 1<sup>st</sup>, 6<sup>th</sup>, 12<sup>th</sup> and 24<sup>th</sup> hour.
- Statistics:**
  - Changes in O2 sat and cavopulmonary pressure after iNO - paired samples t-test.
  - Correlation analysis – pCO2 and O2sat
  - Data presentation: medians with range. A value of p≤0.05 was considered significant.

### 4. Conclusions:

Patients after superior cavopulmonary anastomoses with cavopulmonary pressures above 15 mm Hg and/or arterial oxygen saturation below 80 % may benefit from iNO inhalation. We observed significant reduction of the cavopulmonary pressure for 24 hours after initiating the treatment. There was also a tendency for elevation of the arterial oxygen saturation, which was unrelated to changes in pCO2.

Table 1. Patients`diagnoses and operations:

Type of CHD or operation	Number of patients
Debalanced AVSD	6
Complex TGA	6
“Single” ventricle variants	5
HLHS	1
No additional pulmonary blood flow	11
Additional pulmonary blood flow	7

Figure 3. Correlation between pCO2 and O2 saturation

