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Propofol effect on cerebral oxygenation and cardiac output in children with congenital heart defects before cardiac catheterization

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Introduction: Propofol is a short-acting, intravenously administered hypnotic agent and is increasingly used in procedural sedation in children. However it decreases the sympathetic tonus and may lead to arterial hypotonia. „Electrical Velocimetry™"offers the possibility for continuous non- invasive measurement of cardiac output. Near- Infrared Spectroscopy (NIRS) can measure cerebral tissue oxygenation in the frontal neocortex. *Objective:* To evaluate the Propofol effect on cerebral oxygenation and cardiac output. *Methods:* 31 children (f:m = 18:13), Median age: 49 (5-112) months, Median weight: 15,1 (4,8- 34,3) kg. Continuous measurement of cerebral oxygenation and cardiac output was performed for 5 minutes before and after sedation with Propofol (1-2 mg/kg i.v.). Non invasive blood pressure and transcutaneous oxygen saturation (SpO2) was measured simultaneously. *Results:* Propofol sedation led to a significant decrease in mean arterial pressure (MAP) and Cardiac index (CI). Cerebral tissue oxygenation index (TOI) however increased significantly*($p<0.05$).

Measurement	before Propofol	after Propofol
Heart rate (/min)	107.6± 24.3	110.0± 23.2
MAP (mmHg)	79.0± 15.5	66.7± 11.8*
SpO2 (%)	92.5± 11.5	92.0± 9.5
TOI (%)	56.5± 10.6	58.7± 9.8*
Cardiac index (ml/min/qm)	3.2± 0.8	2.9± 0.7*

Conclusion: Propofol Sedation led to an increased cerebral tissue oxygenation despite a decrease in Cardiac index and arterial blood pressure. This may be caused by a decreased oxygen consumption of the sedated brain with intact cerebral auto regulation.