269

INFLUENCE OF DUCTUS ARTERIOSUS ON REGIONAL TISSUE OXYGEN SATURATION AFTER BIRTH

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Background and aim: In many neonates the ductus arteriosus (DA) remains open after transition after birth. Aim of the present study was to evaluate the influence of an open DA on cerebral and peripheral regional tissue oxygen saturation 15 minutes after birth.

Methods: 44 healthy term neonates after elective caesarean section and normal adaption (APGAR 9/10/10) were measured in a prospective observational study. Regional tissue oxygen saturation of the brain (rSO2brain), forearm (preductal; rSO2pre) and calf (postductal; rSO2post) were measured 15 minutes after birth with near-infrared spectroscopy (NIRS). rSO2-values were calculated out of five reapplications of the sensor at each site. Arterial oxygen saturation and heart-rate were measured continuously by pulse oximetry on the right hand (preductal) and the left foot (postductal). Blood pressure measurement and evaluation of ductus arteriosus by echocardiography were performed immediately after the NIRS measurements.

Results: 22 neonates with open DA were matched to 22 neonates with functionally closed DA. In neonates with open DA the rSO2brain (82.6%) was significantly higher compared to neonates with closed DA (76.4%). rSO2pre and rSO2post showed no significant difference between both groups.In neonates with open DA heart rate (144/min) was significantly lower compared to neonates with closed DA (152/min). Arterial oxygen saturation (pre-, and postductal) and blood pressure showed no significant difference between both groups.

Conclusion: Term neonates with open DA have 15 minutes after birth higher cerebral tissue oxygen saturation and lower heart rate than neonates with functionally closed DA.