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**Aminoterminal pro B-type natriuretic peptide concentrations in newborns: congenital heart disease or respiratory failure due to neonatal lung disease?**

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Background: NT-pro-BNP has been shown to differentiate between heart and lung disease in adult and pediatric patients with respiratory distress. The aim of this study was to evaluate whether NT-pro-BNP could differentiate between congenital heart disease (CHD) and respiratory failure due to lung disease or perinatal asphyxia in newborns admitted to our NICU.

Methods: From Feb 2009 to Oct 2011 ninety-five neonates were recruited for this single-center prospective study. Inclusion criteria were CHD or acute respiratory failure with need of mechanical ventilation or nasal-CPAP. At admission all neonates underwent physical examination, chest x-ray, and echocardiography. Plasma NT-pro-BNP levels were evaluated on day of life (DOL) 1,2,3, and 5. Exclusion criteria were <37 weeks of gestation (n=1), syndrome or other major extracardiac malformations (n=2), coincidence of CHD and asphyxia (n=2), missing parental consent (n=4), missing NT-pro-BNP levels on DOL3 (n=6). Finally, 80 patients could be included in the statistical analysis, 40 were diagnosed with CHD (fetally diagnosed:31, postnatally diagnosed:9), 25 with lung disease and 15 with asphyxia.

Results: Median NT-pro-BNP concentrations were 2607, 5154, 10012 pg/ml on DOL1, 13636, 5604.5, 4119 pg/ml on DOL2, 18469, 3955, 3139 pg/ml on DOL3, and 16946, 2838, 2985 on DOL5 in the CHD, lung disease, asphyxia group, respectively. Compared to the lung disease group NT-pro-BNP concentrations were significantly higher in the CHD group on DOL 2,3, and 5. On day DOL1 the difference did not reach significance. The CHD group compared to the asphyxia group revealed on DOL1 significantly higher NT-pro-BNP concentrations in the asphyxia group. However, on DOL2 and on DOL3 NT-pro-BNP concentrations were significantly higher in the CHD group. On DOL5 NT-pro-BNP concentrations did not show a significant difference between the CHD and asphyxia group.

Conclusions: NT-pro-BNP differentiates between congenital heart disease (CHD) and lung disease in neonates older than 24 hours. In presence of perinatal asphyxia NT-pro-BNP concentrations are elevated secondary to asphyxia and differentiation between heart and lung disease is not possible any more.