

The Impact of Fetal Diagnosis on Duct-Dependent Congenital Heart Lesions

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Introduction: Previous retrospective studies show mixed results for the benefit of fetal diagnosis in congenital heart disease (CHD). The objective of this study was to examine acuity of illness on presentation of prospectively enrolled neonates born with duct-dependent CHD.

Methods: Neonates were prospectively enrolled at a single centre and a nested retrospective cohort study examining neonates between January 1, 2009 and October 31, 2009 was conducted. Inclusion criteria were: Neonates with a fetal or postnatal diagnosis of duct-dependent CHD; >36 weeks of gestational age and > 2 kg at birth; and CHD requiring intervention within the neonatal period. Exclusion criteria were: major extracardiac congenital or genetic anomalies. The primary outcome was initial lactate at CHD diagnosis in hospital. Other outcomes evaluated were initial pH and creatinine, age of prostaglandin initiation, age of transfer to a tertiary care centre for surgical management, highest dose of prostaglandin, days to initial intervention, and length of ICU stay pre-intervention. Mean values of outcomes were compared using an unpaired t-test. Data are presented as mean with SD.

Results: 100 neonates were reviewed; 30 with fetal diagnosis and 28 with postnatal diagnosis fulfilled criteria. Occurrence of transposition of the great arteries and obstructive left and right heart lesions was similar in the 2 groups. The 2 cohorts were also similar in birth weight and gestational age and in APGAR scores. At admission, lactate was significantly lower in the fetal cohort (3.6 ± 2 vs. 5.7 ± 4.4 mmol/L, $p < 0.05$), while initial pH, creatinine and age of prostaglandin initiation were not statistically different. The fetal cohort received less prostaglandin to maintain ductal patency (0.03 ± 0.04 vs. 0.06 ± 0.04 mcg/kg/min, $p = 0.004$). Patient age of transfer for surgical management was earlier in the fetal cohort (1.1 ± 0.6 vs. 4.9 ± 6 , $p < 0.001$) as was the time of surgical intervention (5.5 ± 3.1 vs. 8.8 ± 7.1 days, $p = 0.02$) but this did not affect length of ICU stay.

Conclusions: Fetal diagnosis of duct-dependent CHD was associated with lower lactates at admission, lower prostaglandin dosages to maintain ductal patency, as well as earlier age of transfer for intervention and earlier intervention. However, this did not shorten the length of ICU stay.