

Congenital Anomalies Presenting to a Tertiary Neonatal Intensive Care Unit: A Descriptive Study

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Abstract:

Congenital anomalies are becoming an increasingly important contributor towards paediatric morbidity as a consequence of improved survival and higher standards of care. To examine the various congenital anomalies admitted to a tertiary neonatal intensive care unit, focusing on sociodemographic factors, resources utilized, and short-term outcome.

A retrospective study was undertaken through examining medical records of all babies admitted with congenital anomalies to the Neonatal Intensive Care Unit (NICU) of John Hunter Children's Hospital, NSW, from 2005 to 2015. Socio-demographic details and antenatal risk factors were evaluated. A descriptive analysis was done on the various presenting anomalies and their secular trends. The duration of intensive care as well as average cost were inspected. Finally, an evaluation was done on the short-term outcome of these babies in terms of mortality, discharge from NICU or transfer to another hospital.

There were 891 admissions with congenital anomalies, with a prevalence rate of 76.15 per 1000 admissions. The male to female ratio was

1.5:1. Most mothers were aged between 25 and 29 years of age, and in most this was their first pregnancy. There was an increase in trend of admissions over the years. Most congenital anomalies involved the cardiovascular system, followed by digestive system anomalies. The mean length of stay was 19.71 days. The majority of deaths were in association with a cardiovascular anomaly. A significant proportion of babies were transferred to other hospitals for specialized or continued care.

Seizures are frequent in the neonatal period. They can be idiopathic, be caused by organic brain anomalies or by metabolic disturbances. Objective: Evaluation of the etiologic diagnosis and clinical evolution of the newborns with neonatal seizures admitted at one tertiary neonatal intensive care unit. Material and Methods: Retrospective review of the clinical files of the newborns with neonatal seizures, during a period of eight years. Results: Neonatal seizures occurred in 91 cases. Seventy nine (86.8%) received anticonvulsant therapy during clinical seizure. Image and/or electrophysiological studies were performed in the majority of newborns (86.8%). Etiology was identified in 51.6% of the 91 cases studied, being

the more frequent situations: central nervous system bleeding (11 cases), hypoxic-ischemic encephalopathy (10 cases) and electrolytes disturbances (7 cases). Mortality rate was 16.5%. The newborns followed in our hospital had good neurodevelopment, in 70.2% of cases but in 10.6% was detected important neurodevelopment impairment, including cerebral palsy. Conclusions: Anomalies in the cranial ultrasound and in the electroencephalography were correlated with clinical evolution. They still are first line exams in the initial approach to this pathology.

Background & aim Congenital heart malformation (CHM) is one of the most frequent and important abnormalities in newborns. In this study we retrospectively analyzed the frequency and distribution of the congenital heart diseases in our NICU. **Method** Newborns hospitalized in NICU between 2005 and 2011 were retrospectively analyzed. Gestational age, birth weight, consanguinity, type of congenital heart disease extracted from the computerized database. CHMs were classified as follows; left-to-right shunt, obstructive, cyanotic with decreased pulmonary flow, cyanotic with increased pulmonary flow and others. **Results** A total of 706 newborns were diagnosed as congenital heart disease during 7-year study period among the 7450 admission (9.5%). Consanguinity rate was 22.3% and 30.4% of these were first degree relatives. 42.7%, 17.3%, 13%, 11.6% were left-to-right shunt, obstructive, cyanotic with decreased pulmonary flow, cyanotic with increased pulmonary flow and others, respectively. Most frequent heart malformations were ASD (25.5%), VSD (12.6%), Aortic coarctation (10.8%), PDA (9.5%), TGA (8.8%), pulmonary atresia (8.2%), AVSD (4.1%), hypoplastic left heart (3.8%), pulmonary stenosis (3.1%), TOF (2.5%). 37 % of the newborns had at

least one congenital malformation in other organ systems. Conclusion ASD, VSD and aortic coarctation were most common congenital heart disease followed in our NICU.

To explore associations with fractures reported in a tertiary neonatal intensive care unit (NICU). Babies admitted to NICU from 1998 to 2007 in Cardiff, UK, with fractures during admission were identified. Clinical information was extracted from inpatient records. Results were reported as median (ranges). Seventy-one fractures were recorded in 27 (boys = 16) infants with a gestational age of 28 (23.6-40.4) weeks and birthweight of 920 g (485-4875). Fractures were recognized at 57 (1-128) days of age. Neonates with fractures without clear aetiologies (n = 17) were more preterm (p < 0.001), were born lighter (p < 0.001), required multiple medical interventions, were more commonly osteopenic (p < 0.001), had fractures detected later (p < 0.001) and had more posterior rib fractures (p = 0.009). Rib fractures were detected later than other sites (p = 0.002). Associations with rib fractures included osteopenia (p = 0.04), longer oxygen therapy (p = 0.018), length on total parental nutrition (p = 0.03), later achievement of full enteral feeds (p = 0.038), sepsis (p = 0.038) and surgical procedures (p = 0.004). Posterior rib fractures were more common in babies born more preterm (25.1 vs. 29.4 weeks, p = 0.003) and requiring diuretics (p = 0.027). Fractures in premature infants are associated with a variety of predisposing factors. Clinicians evaluating the cause of rib and multiple fractures in preterm neonates shortly after discharge need to take these factors into consideration.

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