Measurement of Cerebral Blood Flow Velocity in Infants with Doppler Ultrasound

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Brain ultrasound is a non-invasive assessment commonly used in clinics to examine the anatomic structures and hemodynamic characteristics of the nervous system in infants. In recent years, physical therapists have played an increasingly important role in the neonatal intensive care unit to provide early evaluation and early intervention to infants who are at risk of developmental delay. The work requires understanding of various medical assessments. Of particular importance is brain ultrasound. This review article is aimed for three purposes: (1) to introduce the measurement of neonatal cerebral blood flow velocity by Doppler ultrasound including the principle, methodology and psychometric properties; (2) to describe the hemodynamic features of infants with various diseases (i.e., respiratory distress syndrome, seizure, patent ductus arteriosus, intraventricular hemorrhage, asphyxia and periventricular leukomalacia) and their relations with developmental outcome; and (3) to discuss the limitations of current application and the potentialities for further research. The reviewed information will help physical therapists understand the maturation and prognosis of the cranial physiologic function by the means of Doppler ultrasound so to design appropriate intervention programs. (FJPT 2008;33(2):129-136)

Key Words: Newborn, Ultrasonography, Doppler, Hemodynamics, Blood flow velocity

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