Objective To evaluate the effect of slow versus rapid rates of advancement of enteral feed volumes upon the clinical outcomes in preterm infants with 750–1250g birth weight.

Study Design A total of 92 stable neonates with the birth weight 750–1250g and gestational age less than 32 weeks were randomly allocated to enteral feeding advancement of 20ml/kg/day (n=46) or 30ml/kg/day (n=46). The primary outcome was days to reach full enteral feeding defined as 180ml/kg/day. Secondary outcomes included rates of necrotizing enterocolitis and culture-proven sepsis, days of total parenteral nutrition, length of hospital stay and growth end points.

Result Neonates in the rapid feeding advancement group achieved full enteral volume of feedings earlier than the slower advancement group. They received significantly fewer days of parenteral nutrition, exhibited a shorter time to regain birth weight and shorter duration of hospital stay. The incidence of NEC and the number of episodes of feeding intolerance were not significantly different between the groups while the incidence of culture-proven late onset sepsis was significantly less in infants receiving a rapid feeding advancement. Excluding infants who were small for gestational age at birth, the incidence of extraterine growth restriction was significantly reduced in the rapid advancement group at 28 days and at hospital discharge.

Conclusion Rapid enteral feeding advancements in 750–1250g birth weight infants reduces the time to reach full enteral feeding and the use of TPN administration. Rapid advancement enteral feed also decreases extraterine growth restriction with improved short-term outcomes for these high-risk infants.

104 CEREBRAL AUTOREGULATION IN THE NEWBORN

Vascular pressure reactivity is the ability of vascular smooth muscle to respond to changes in transmural pressure. In the cerebral circulation this reactivity - or autoregulation - limits cerebral blood flow variation over a range of cerebral perfusion pressures ensuring adequate perfusion and oxygenation to the brain.

In adults cerebrovascular pressure reactivity can be determined by observing the response of intracranial pressure (ICP) to changes in mean arterial blood pressure. Non-invasive techniques such as transcranial Doppler ultrasound and near-infrared spectroscopy have been validated against ICP measurements, which have enabled continuous assessment of cerebral autoregulation to be investigated in newborn infants.

A number of different techniques have been described, including static and dynamic measurements and analysis in the time and frequency domain, yet despite many years of research the characteristics of cerebral autoregulation in the newborn are still not clear.

Both the presence and limits of autoregulation has been much debated although there is increasing evidence that autoregulation, while present in healthy infants, is impaired in sick term and preterm neonates and that this impairment may be a predictor of poor outcome.

In clinical practice there is a reliance on blood pressure measurements alone to make informed clinical decisions, which ignores the complex circulatory control mechanisms that exist to optimize oxygen delivery to the brain. The ability to obtain continuous quantitative information on cerebral autoregulation at the cotside would represent a significant advance in the management of these patients.