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Early postnatal body weight changes in the extremely low birth weight infants (ELBW, birth weight < 1000 g): Clinical implications and determinants

Background: Early postnatal body weight changes (Δ bw) and their clinical implications are poorly understood in preterm infants. We investigated the relationships between Δ bw and body fluid metabolism dependent morbidities in ELBW infants, the population which has highest incidences of such morbidities. Δ bw were evaluated as maximum weight loss ($M\Delta$ bw); and as daily body weight changes from birth weight ($D\Delta$ bw) during the first 15 days of life. The mother-infants' variables relevant to body fluid balance, namely, oxygen dependence on day 28 (BPD28), patent ductus arteriosus (PDA), intraventricular-periventricular hemorrhage (IVH), antenatal steroid (ANS) and gestational age (GA) were correlated with $M\Delta$ bw and $D\Delta$ bw via Pearson's correlation coefficient and Pearson's partial correlation tests. The effects of $M\Delta$ bw, as low (5-12% of birth weight) moderate (18.1-12%) and high (18-25%) were also assessed.

Results: $M\Delta$ bw (n=102) was 14.2+/-5.4%. Day of life of $M\Delta$ bw was 5.5+/-2.1 and that of surpassing birth weight 14.5+/-4.2. $M\Delta$ bw correlated negatively with GA, ANS and pregnancy associated hypertension (PAH); and positively with BPD28, days on oxygen, fluid intake and urinary output in a GA dependent manner. $M\Delta$ bw did not correlate with RDS, hypotension, PIE, IVH, PDA and hospital stay. $D\Delta$ bw correlated inversely with GA on days 1-8, and was associated with decreased risks for BPD28, PDA and IVH after controlling for GA. ANS decreased $D\Delta$ bw. Maternal diabetes mellitus (MDM) and PAH were not noted in mothers in high $M\Delta$ bw group. 38% of mothers in low $M\Delta$ bw group suffered from PAH.

Conclusion: $M\Delta$ bw, governed by maturation, does not promote morbidities independent of GA within the range of 14.5+4.2%. $D\Delta$ bw is protective for PDA, BPD28 and IVH independent of GA. ANS decreases $D\Delta$ bw, which correlates inversely with GA during the first week of life. MDM and PAH have implications in Δ bw in ELBW neonates.

Biography

Rita Verma Prasad is an attending neonatologist and Professor of Pediatrics at Nassau University Medical Center, NY, USA. She graduated from medical school in India at the top of her class of 210 students with honors. She worked at the State University of New York School of Medicine, Stony Brook; and at the University of Maryland School of Medicine as Associate Professor before joining Nassau University Medical Center. She has published over 90 peer reviewed manuscripts and abstracts and has presented her research at national and international meetings. She serves on the editorial board and is a manuscript reviewer for several journals. She is a member of the Neonatal- Perinatal, Critical Care and Epidemiology subcommittees of the American Academy of Pediatrics and is acknowledged for her contribution in making pediatrics and neonatology protocols for the academy. She has mentored many medical students, pediatric residents and neonatology fellows over the years.

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