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Metabolism

PLASMA IONIZED CALCIUM CONCENTRATIONS Blood samples were obtained from 53 infants less than 72 hours of age admitted to the newborn nursery or the infant intensive care unit. Analyses included total calcium, *p*H, P_{CO_2}, total serum protein, serum proteins by electrophoresis, serum inorganic phosphorus, and ionic calcium using a flow-through calcium-specific electrode. The hypocalcemic infants were defined as having plasma total calcium of 7.5 mg/100 ml or less. Thirteen of the 53 infants studied were hypocalcemic by this criterion. There was a high incidence of perinatal morbidity in both full-term and premature infants, indicating that the results are not representative of the normal infant population. The mean plasma total calcium for the control group was 8.6 ± 0.8 mg/100 ml, in contrast to the hypocalcemic group, whose mean value was 6.9 ± 0.6 mg/100 ml. The ionic calcium values for the hypocalcemic group were 3.5 ± 0.6 mg/100 ml, *vs.* 4.1 ± 0.6 mg/100 ml ($P < 0.05$). There was a linear correlation between the total calcium and ionized calcium levels in the entire series, but no significant correlation when each group was analyzed separately. The serum albumin levels of the hypocalcemic infants (2.8 ± 0.4 mg/100 ml) were significantly lower than those in the control group (3.1 ± 0.3 mg/100 ml) ($P < 0.05$). There was no difference in either group in serum inorganic phosphorus, total globulins, capillary *p*H, or P_{CO_2}. No increased binding of calcium to serum proteins secondary to alkalemia was demonstrated. There was no significant correlation between the values for ionized calcium derived from the McLean-Hastings nomogram (using the total serum protein and the total plasma calcium) and the concentrations of the ionized moiety determined by the ion-specific electrode. Hence, the authors state that this nomogram should not be used as an indicator of the concentration of serum ionized calcium in sick newborn infants. (*Brown, D. M., and others: Serum Ionized Calcium in Newborn Infants, Pediatrics 49:841–846*, 1972.) EDITOR'S COMMENT: Measurements of ionized calcium levels in critically ill patients (neonates, children or adults) are making it increasingly evident that the predicted relationship between total and ionized fractions does not hold as found in the otherwise well individual. It would appear that the trend is toward a lower ionized calcium concentration than predicted from the total calcium, protein and inorganic phosphorus levels. The importance of this change to hemodynamic function requires clarification.