17 CALCIUM AND PHOSPHORUS NEEDS OF PREMATURE INFANTS

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According to the evolution of the body composition of the human foetus, Ca and P accretion during the third trimester of gestation is respectively around 140 and 75 mg/kg body weight/day. The results of metabolic balances performed on premature infants fed human milk or humanized of half-skimmed cow's milk formulas show that whatever the Ca intake, Ca retention is low during the first month of life because of a poor net absorption which seems to be related to the immaturity of the digestive tract, the high secretion of endogenous Ca and the formation of Ca soaps. Contrarily to Ca, P is always well absorbed. However P retention is also low. With human milk, P intake is insufficient to cover the tissue growth and the fixation of the low amount of absorbed Ca; this leads to a low P level in the serum, a high calciuria and practically no excretion of P in the urine. On the contrary, with artificial formulas, P intake exceeds the possibilities of retention and urinary excretion of P is directly proportional to the amount of absorbed P. Owing to the influence of Ca intake on fat absorption and of P intake on metabolic acidosis, Ca and P contents of formulas should be adapted to the age of premature infants.

18 PROSTAGLANDINS AND THE REGULATION OF THE TONE OF THE HUMAN UMBILICAL ARTERY

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As human umbilical arteries (HUA) seem to lack vasomotor innervation, humoral regulators of their tone have been proposed. The role of the prostaglandins (PGs) for HUA tone regulation and for closure of HUA at birth have been elucidated by works showing in summary the following data: 1. Isolated HUA in organ baths synthesize PGs. 2. PG biosynthesis is necessary for the generation of the tone of isolated HUA strips. By inhibiting PG biosynthesis or by blocking the effects of PGs, this tone is significantly reduced. 3. The effects of five different PGs on HUA have been studied, both contracting and relaxing effects were found. 4. Immediately after cord clamping extremely high amounts of PGs were found in human umbilical cords and arteries. 5. The findings suggest that PG biosynthesis takes part in the regulation of the tone of HUA and that intense biosynthesis of contracting PGs in HUA participates in the closure of the artery after birth.

19 STUDY ON ALDOSTERONE EXCRETION DURING PHENOBARBITAL NIKETHAMID PROPHYLAXIS OF HYPERBILIRUBINAEMIA

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The investigation yielded the following results:

1. In full term new-borns a significant increase in aldosterone excretion is observed on the 4th, 7th and 14th days of life as compared to the 1st day. The excretion does not decrease significantly on the subsequent days of examination.
2. In new-borns treated with phenobarbital/nikethamid, an analogous increase of aldosterone took place during the first 14 days of life, the decrease after the 4th day of life being statistically significant in this group.
3. Between both groups there are no differences in fluid and electrolyte excretion.
4. Neither in treated nor in untreated children, a positive correlation between the amount of aldosterone secretion and the urine parameters under investigation could be observed.

The evaluated results indicate that increased aldosterone excretion in the treated group is caused by the known increase of glucuronidizing activity due to phenobarbital/nikethamid.