SODIUM SHIFT FROM MUSCLE IN RESPONSE TO SODIUM LOADING IN PROTEIN CALORIE MALNUTRITION (PCM).

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Wharton and MacCance reported that children with PCM on high sodium diet frequently develop excessive expansion of extracellular volume (ECV). In our patients sodium intake was varied at 1.2, 2.3 and 5 mEq/kg/day while the children received 5 mEq of K and 0.7 gm protein/kg/day. On the 1.2 mEq diet an excessive diuresis of Na occurred, no water diuresis was observed and no change in muscle composition was detected. At the 2.5 mEq Na level an increase in urine volume was evident. At the 5 mEq Na level positive balance was achieved. This was accompanied by a loss of approximately 10% of the edematous body weight. A drop in % muscle water from 83 $\pm$ 3 to 79 $\pm$ 4 (SD) occurred and a loss of muscle Na from 465 $\pm$ 122 to 332 $\pm$ 37 mEq/kg fat-free dry weight was documented. This shift of muscle water accounts for half of the loss in total weight.Because no change in serum Na occurred (129 $\pm$ 6 vs. 132 $\pm$ 2) it is likely that the retained Na and the Na from muscle have contributed to an expansion of ECV at the time of loss of tissue H_2O). The sodium retained on the 5 mEq diet accounts for only 1/3 of the retained Na in the expanded ECV.

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