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Biochemical adaptations in early starvation: Observations on sex difference. By J. BROOM, A. FLECK and D. F. DAVIDSON, *Department of Pathological Biochemistry, Western Infirmary*, and C. ROSENBERG and J. V. G. A. DURNIN, *Department of Physiology, University of Glasgow, Glasgow*

The same group of students as described previously by Rosenberg & Durnin (1978) were used to follow changes in biochemical parameters in the early phase of starvation in normal man. Twenty-two students, eleven male and eleven female, volunteered to fast for 3 d. Twenty-four hour urine collections were obtained over the period of study, and total nitrogen, urea, and 3-hydroxybutyrate (3-OH-butyrate) were determined in each. Pre-lunch blood samples were taken on day zero and at midday on day three: plasma glucose, serum urea, 3-OH-butyrate, total protein, albumin, retinol binding protein (RBP), pre-albumin, C-reactive protein (CRP) and other acute phase reactants were measured.

Male to female groups showed a marked reduction in urine volume over the three days and a slight rise occurred in serum total protein and albumin. Both groups showed a fall in plasma glucose over the period of study. RBP concentration in plasma fell, the day 3 level being 16% lower than day zero. This was the only plasma protein to demonstrate such an effect. Other acute phase reactants showed no change in this period, CRP remained undetectable throughout.

The change in plasma 3-OH-butyrate showed significant sex differences. The ratio serum urea to serum 3-OH-butyrate showed a twofold difference between the groups, the males having the higher ratio. This was also reflected in the degree of ketonuria, the females showing a fivefold increase in 24 h urinary output of 3-OH-butyrate over the male group.

This difference in the metabolic response to fasting might be related to the clear sex differences in body composition, the possible lesser loss of urinary N after injury in mildly ketonaemic patients (Wedge *et al.* 1976) and the more marked metabolic response to injury in the male.

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