Studies on Bile Salt Deconjugation in Patients with Tropical Sprue

C. R. KAPADIA, A. N. RADHAKRISHNAN, V. I. MATHAN & S. J. BAKER
Wellcome Research Unit, Christian Medical College Hospital, Vellore, Tamilnadu, India


A study was undertaken to determine the role of bile salt deconjugation and dehydroxylation in the pathogenesis of steatorrhoea in tropical sprue. In contradiction to the stagnant loop syndrome, bile salt deconjugation does not play any significant role in the causation of steatorrhoeas in tropical sprue.

Keywords: Bile salt deconjugation; steatorrhoea; tropical sprue

C. R. Kapadia, M. D, Wellcome Research Unit, Christian Medical College Hospital, Vellore 4, Tamilnadu, India

Steatorrhoea has long been recognized as a feature of tropical sprue, but its pathogenesis has not been fully elucidated. In recent years much attention has been paid to the role of abnormalities of bile salt metabolism in the production of steatorrhoeas in various malabsorptive states. This communication reports the results of studies undertaken to determine whether bile salt deconjugation and dehydroxylation occurs in tropical sprue.

SUBJECTS AND METHODS

Five control subjects, 20 patients with tropical sprue, and one patient with malabsorption secondary to a post-gastrectomy stagnant loop were studied in a metabolic ward. All subjects were on a diet containing 50 g of fat, and stool fat excretion was measured daily by the method of van de Kamer, Huinink & Weyers (11). The patients with tropical sprue had a 3-day mean stool-fat excretion varying from 9.8 g/day to 24.1 g/day. All had malabsorption of xylose following a 5 g dose and 18 of the 20 had malabsorption of vitamin B₁₂. Jejunal biopsies and barium meals showed changes consistent with those described in this condition (5, 14). The control subjects had normal absorption of fat, xylose, and vitamin B₁₂ and barium meal studies and jejunal biopsies were similar to those of the general population (3). The patient with the post-gastrectomy stagnant loop had a fat excretion ranging from 18.6 g to 36.5 g/day and had xylose and vitamin B₁₂ malabsorption as well.

All subjects were starved overnight and intubated in the morning with a single lumen, radiopaque, polyvinyl tube 400 cm long. Under fluoroscopic control, samples were collected from the upper jejunum (just beyond the ligament of Treitz, 75 to 110 cm from the incisor teeth), lower jejunum (140 to 200 cm), upper ileum (220 to 250 cm), and lower ileum (280 to 315 cm). A liquid diet was given only after collections were completed from the lower jejunal levels.

Proteins were precipitated from the samples by repeated alcoholic extraction, and extraneous lipids were removed by partitioning with n-heptane. The processed samples were then stored at −20 °C until further use. The samples were streaked on thin-layer chromatographic plates coated with 250 μ thickness.
DISCUSSION

The results in the patient with the stagnant loop syndrome are very similar to those described by other workers (6, 7, 15, 17). The absence of bile salt splitting in 19 of the 20 patients with tropical sprue indicates that bile salt deconjugation plays no significant role in the causation of steatorrhoea in this condition. The presence in one patient of some deconjugation in the ileum is probably not significant.

The occurrence of vitamin B\textsubscript{12} malabsorption which is not corrected by the simultaneous administration of intrinsic factor (2), as well as histological studies (3), suggests that the ileum is frequently involved in tropical sprue. As, in man, the ileum is the site of active transport of bile acids (4), it is possible that alterations in the enterohepatic circulation of bile acids do exist. Such changes have been demonstrated in other situations involving ileal dysfunction (1, 9, 10, 12, 13, 16). Work on this aspect is currently in progress.

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REFERENCES


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