Effect of insulin-like growth factor I on in vivo intestinal absorption of D-galactose in cirrhotic rats

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Abstract of:


Insulin-like growth factor I (IGF-I) bioavailability is reduced in liver cirrhosis, a condition frequently associated with malnutrition. We have analyzed in vivo absorption of D-galactose by jejunal loops in rats with CCl₄-induced liver cirrhosis and the influence of IGF-I on intestinal sugar transport in this disease. Two different study protocols were followed. In protocol 1, healthy control rats or cirrhotic rats received saline or IGF-I (2 µg·100 g body wt⁻¹·day⁻¹) for 2 wk. In protocol 2, control and cirrhotic rats received saline or IGF-I as a bolus injection of 1 µg/100 g body wt followed by continuous infusion of the same dose for 100 min. In vivo D-galactose absorption was reduced in cirrhotic rats compared with healthy controls. IGF-I, as both a chronic (protocol 1) and acute treatment (protocol 2), was able to improve sugar transport in cirrhotic rats but had no effect on sugar absorption in healthy rats. A significant elongation of enterocyte microvilli was observed in cirrhotic animals; this alteration was totally or partially corrected by chronic or acute IGF-I administration. Our results show that in vivo jejunal sugar transport and microvilli structure are altered in liver cirrhosis and that IGF-I, among other effects, may correct these changes by modulating cytoskeletal organization in enterocytes.

Key words: liver cirrhosis; malnutrition; malabsorption; glucose and galactose transport; microvilli.