Role of cholecystokinin in the regulation of liquid gastric emptying and gastric motility in humans: studies with the CCK antagonist loxiglumide

W Schwizer, Jan Borovicka, P Kunz, R Fraser, C Kreiss, M D’Amato, G Crelier, P Boesiger & M Fried

BACKGROUND: Exogenous cholecystokinin (CCK) inhibits antral motility and slows gastric emptying (GE) but the effect of endogenous CCK on the gastric motor mechanisms responsible for GE remains unclear. METHODS: The effect of the CCK-A antagonist loxiglumide (LOX) on GE and motility was studied using magnetic resonance imaging in six healthy volunteers after ingestion of 500 ml Intralipid 10% (550 kcal). Subjects were studied in the supine position on two occasions during intravenous infusion of LOX (66 mumol/kg/h for 10 min followed by 22 mumol/kg/h) or placebo. GE was determined every 15 minutes using transaxial abdominal scans and motility was studied by means of 120 coronal scans, 1.2 seconds apart. For each coronal image the proximal and distal (antral) diameters were measured at a fixed point in the stomach to determine contraction frequency (ACF) and amplitude (AMP). RESULTS: GE was faster during LOX infusion than placebo (t1/2 31 (22) versus 115 (67) minutes, p < 0.03). There was little variation in the diameter of the proximal stomach with either LOX or placebo. In the distal stomach marked contractile activity was observed during LOX (ACF 2.9 (0.2) versus 1.5 (2.9) during placebo, p < 0.01). AMP also increased during LOX compared with placebo (56 (22)% versus 27 (16)% p < 0.001). CONCLUSION: The increases in antral motility are likely to contribute to the acceleration of GE and suggest that CCK may regulate GE by acting on the distal stomach although an effect on the proximal stomach cannot be excluded.