

## Gastric emptying and plasma levels of gastrointestinal hormones in patients with peptic ulcer

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### Abstract

**AIM:** To study the plasma level of gastrointestinal hormones and the time of gastric emptying in patients with peptic ulcer.

**METHODS:** Thirty patients with gastric ulcer (GU), 29 patients with duodenal ulcer (DU), and 12 healthy controls were studied. Plasma levels of somatostatin (SS), vasoactive intestinal peptide (VIP) and substance P (SP) were measured by radioimmunoassay. Gastric emptying half-time ( $GE_{T_{1/2}}$ ) was measured by the TC-99<sup>m</sup> resin/solid meal method.

**RESULTS:**  $GE_{T_{1/2}}$  was significantly longer in the GU patients than that in the healthy controls ( $65.9 \pm 14.8$  min vs  $53.3 \pm 4.3$  min,  $P < 0.01$ ) and plasma VIP levels were significantly higher ( $37.5 \pm 10.7$  ng/L vs  $18.4 \pm 5.9$  ng/L,  $P < 0.05$ ). There was a significant positive correlation between  $GE_{T_{1/2}}$  and plasma VIP levels ( $r = 0.55$ ,  $P < 0.01$ ).

No significant differences were found in SS and SP levels when GU patients were compared with healthy controls ( $P > 0.05$ ).  $GE_{T_{1/2}}$  was markedly shorter in the DU patients than in the healthy controls ( $41.7 \pm 10.2$  min vs  $53.3 \pm 4.3$  min,  $P < 0.01$ ) and plasma SS levels were significantly lower ( $6.4 \pm 2.5$  ng/L vs  $11.9 \pm 3.4$  ng/L,  $P < 0.01$ ). There was a significant positive correlation between  $GE_{T_{1/2}}$  and SS levels ( $r = 0.56$ ,  $P < 0.01$ ). Plasma SP levels in the DU patients were significantly higher than those in the healthy controls ( $54.4 \pm 12.7$  ng/L vs  $41.6 \pm 5.8$  ng/L,  $P < 0.01$ ). There was a significant negative correlation between  $GE_{T_{1/2}}$  and SP levels ( $r = -0.68$ ,  $P < 0.01$ ). No significant differences were found in the plasma VIP levels when DU patient were compared to healthy controls ( $P > 0.05$ ).

**CONCLUSION:** Elevation in VIP may contribute to occurrence of GU and its associated delay in  $GE_{T_{1/2}}$ . Increased SP and reduced SS may play important roles in  $GE_{T_{1/2}}$  acceleration and in the pathogenesis of DU.

**Key words:** Peptic ulcer/physiopathology; Gastric emptying; Gastrointestinal hormones/blood

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