

Comparison of gastric emptying of a solid meal with a semi-solid meal using real-time ultrasonography in a cohort of healthy individuals.

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Aims

Routine performance of solid gastric emptying (GE) to assess gastroparesis is not feasible due to prolonged test duration and cumbersome preparation of test meals. Substitution of a commercially prepared semisolid meal could increase feasibility. This study compared GE of a solid and semi-solid meal.

Methods and materials used

Thirty (30) healthy volunteers underwent gastric emptying by real-time ultrasonography after partaking a solid meal (Mung kiribath) and semi-solid meal ('Nestum mung') on two separate days. The calorie content of each meal was 350 Kcal and consisted of approximately 60% carbohydrates, 30% fat and 10% proteins. The pyloric antral area, amplitude and frequency of contractions were measured at 5, 15, 30, 45, 60, 90, 120, 150, 180, 210 and 240 minutes after ingestion.

GE parameters were compared and correlated by using Wilcoxon Signed Ranks test and Spearman Rank Correlation. A $P < 0.05$ was considered as statistically significant.

Results

The subjects were 17 males (mean (SD) age 29.4 (6.0) years, BMI 23.4 (2.94)) and 13 females (mean (SD) age 37.2 3 (11.9) years, BMI 22.9 (4.34)).

Mean (SE) fasting antral area, antral areas, gastric emptying rates (GER) and gastric residual ratios at each time point did not differ significantly between the meals. At the end of 4 hours, the mean emptied percentage of the semisolid meal and solid meal was 81.1% and 70.6% respectively. GER of semisolid meal at 90min significantly correlated with GER at 240min. There was no correlation of the solid meal with the 90min and 240min GER.

Conclusions

A semisolid meal could be substituted in place of a solid test meal. A gastric emptying test can be performed in 90min when utilizing a semisolid meal as opposed to 4 hours when utilizing a solid meal. Ease in preparation of the semisolid meal and reduction in test time increases test feasibility.

Key words: Gastric emptying, Real-time ultrasonography, Solid meal, Semi solid meal