Gastric emptying and motility: assessment with MR imaging--preliminary observations

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PURPOSE: To evaluate a magnetic resonance (MR) imaging method for simultaneous assessment of gastric emptying and motility. MATERIALS AND METHODS: Gastric emptying and motility were measured in nine volunteers after ingestion of a liquid meal. A specially designed MR imaging protocol was used that allowed simultaneous assessment of gastric emptying (spatial resolution, 1.5 mm; corrected for gastric secretion volume) and gastric motility (temporal resolution, 1.2 seconds; spatial resolution, 3.1 mm). To evaluate the ability to detect small changes in gastric motor activity with findings from this method, the influence of a prokinetic agent (loxiglumide) on gastric emptying and motility was tested in five volunteers. RESULTS: Each contraction could be individually visualized at MR imaging. Administration of loxiglumide resulted in decreased gastric half-emptying time (mean +/- 1 standard error of the mean, 88.1 minutes +/- 6.3 for the placebo and 39.1 minutes +/- 6.7 for loxiglumide) and increased gastric motility (contraction frequency, 2.26 contractions per minute +/- 0.15 for the placebo and 3.04 per minute +/- 0.04 for loxiglumide). CONCLUSION: MR imaging makes it feasible to study gastric emptying and gastric motility and to determine the influence of drugs on gastric motor activity.