Initial findings and follow-up by magnetic resonance imaging in gastrointestinal lesions.

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Abstract

Advances in cross-sectional imaging, such as computed tomography and Magnetic Resonance Imaging (MRI), have profoundly altered the idea of gastrointestinal imaging over the last two decades. In the examination of gastrointestinal problems, Magnetic Resonance Imaging (MRI) is becoming more used. Excellent soft-tissue contrast, noninvasiveness, functional information, and the absence of ionising radiation are all advantages of MRI. In addition, recent advances in MRI have resulted in greater spatial and temporal resolution, as well as a reduction in motion artefacts. The technical features of gastrointestinal MRI are described in this article, as well as a practical strategy for a well-known spectrum of gastrointestinal illness processes.

Keywords: Magnetic resonance imaging, Crohn's disease, Celiac disease, Appendicitis.

Introduction

The notion of gastrointestinal imaging has altered substantially in the last two decades thanks to developments in cross-sectional imaging like as computed tomography and Magnetic Resonance Imaging (MRI). In the assessment of gastrointestinal problems, Magnetic Resonance Imaging (MRI) is becoming more used. Excellent soft-tissue contrast, non-invasiveness, functional information, and the absence of ionising radiation are all benefits of MRI. In addition, recent MRI advancements have resulted in enhanced spatial and temporal resolution, as well as a reduction in motion artefacts. We propose a realistic strategy for a well-known spectrum of gastrointestinal illness processes in this article, which describes the technical components of gastrointestinal MRI [1].

In the examination of gastrointestinal problems, MR and CT modalities specialised for small bowel imaging are becoming more common. The advantages of these approaches over traditional barium fluoroscopic tests have been demonstrated in several researches. Cross-sectional techniques have a number of advantages, including the capacity to see the complete thickness of the gastric and intestine walls, visualise the deep pelvic ileal loops without superimposition, and assess the mesentery and perienteric fat. Another inherent benefit is the ability to evaluate solid organs and provide a comprehensive picture of the abdominopelvic cavity [2].

The choice of MR over CT is primarily based on financial constraints and government policies. However, CT treatments, like fluoroscopic procedures, expose patients to radiation. As people become more aware of the dangers of radiation, there has been a surge in interest in developing strategies to decrease or eliminate radiation exposure. This is especially important in the case of radiosensitive patients with chronic inflammatory bowel disease, who may require numerous investigations over the course of their lives. As a result, MRI is becoming more used as a tool for assessing various gastrointestinal illness processes [3].

Excellent soft-tissue contrast, noninvasiveness, functional information, and the absence of ionising radiation are all advantages of MRI. In addition, recent advances in MRI have resulted in greater spatial and temporal resolution, as well as a reduction in motion artefacts. We propose a realistic strategy for a well-known spectrum of gastrointestinal illness processes in this article, which describes technical elements of gastrointestinal MRI [4].

Practical aspects of gastrointestinal MRI technique

Appropriate luminal distension is necessary, as it is with other imaging modalities, because improperly distended loops might mimic or disguise pathogenic processes, especially in less experienced hands. MR enteroclysis and MR enterography are two approaches that have been proposed to give sufficient luminal distension of the small bowel. Because of the excellent bowel distension achieved by fluid administration after nasojejunal intubation, MR enteroclysis is linked with high image quality. The catheter implantation, on the other hand, is a painful and stressful experience for the patient. Greater distention achieved by enteroclysis does not always imply improved diagnostic effectiveness, and peroral fluid injection is an effective and frequently satisfying method of inducing

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small bowel distention. One benefit of MR enteroclysis could be the identification of mesenteric small bowel cancer [5].

Positive (bright lumen), negative (dark lumen), and biphasic contrast agents are the three types of contrast agents that can be used to generate distension. Water-based biphasic contrast agents are commonly used because they are simple to employ and have excellent signal qualities, resulting in bright lumen on T2-weighted sequences and dark lumen on T1-weighted sequences [6].

Conclusion

Tap water is commonly employed as a biphasic contrast agent, particularly when imaging the upper gastrointestinal segment (stomach, duodenum, and proximal jejunum); nevertheless, it is quickly absorbed in the small intestine, resulting in inadequate distension of the distal jejunum and ileum. Higher-osmolality and viscosity compounds are commonly used to decrease water absorption in the intestine. Patients are instructed to drink between 1000 and 2000 mL of water after a 4 to 6-hour fast.

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