MR IMAGING FEATURES OF GASTROINTESTINAL STROMAL TUMOR (GIST) OF THE GASTROINTESTINAL (GI) TRACT

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PURPOSE: The radiologic findings of GIST have been well described in the radiology literature[1]. However, there were few reports that had reported the MR imaging features of GIST[2]. Therefore, the aim of this study is to describe the MR imaging features of GIST of the gastrointestinal (GI) tract.

METHODS: We retrospectively reviewed the pathologic and medical records from January 2007 to September 2012 at our institution to identify pathologically proven GIST. Among 364 consecutive patients diagnosed with GIST, we included 42 patients in this study according to the following criteria: 1) Patients performed contrast-enhanced dynamic MRI; 2) GIST originates from GI tract; and 3) GIST is recognizable on MR images (>1cm in diameter). Two abdominal radiologists in consensus analyzed the MR images regarding the following morphologic features: diameter, location (stomach, small bowel, large bowel, rectum), margin (well-defined, ill-defined), shape (round, lobulated, irregular), growing pattern (endoluminal, mixed, exophytic), dynamic enhancement pattern (early strong, peripheral to central, gradually progressive enhancement), enhancement grade of the tumor (poor, mild, obvious), and diffusion restriction as well as the presence of ulceration, intratumoral hemorrhage, cystic/necrotic change, calcification, and lymphadenopathy or metastasis.

RESULTS: GIST of the GI tract commonly showed the following MR imaging features: well-defined margin (100%), lobulated shape (52.4%), exophytic growing pattern (76.2%), obvious (76.2%) and gradually progressive enhancement (57.1%), diffusion restriction (100%) and heterogeneity with intratumoral hemorrhage and/or necrotic/cystic change (52.4%). Small GIST (≤3cm, n=10) appeared as round tumor without intratumoral hemorrhage or necrotic/cystic change and it showed obvious, and early strong or peripheral to central enhancement (Figure 1). On the contrary, large GIST (>10cm, n= 9) appeared as lobulated, exophytic growing tumor with mild degree, and gradually progressive enhancement pattern. In large GISTs, the intratumoral hemorrhage (n=6) and necrotic/cystic change (n=7) were frequently seen (Figure 2). The mean size of GIST was 6.14 ± 4.2 cm (range, 1.3cm-20cm). The locations of GIST were stomach (n=19), small bowel (n=20) and rectum (n=3).

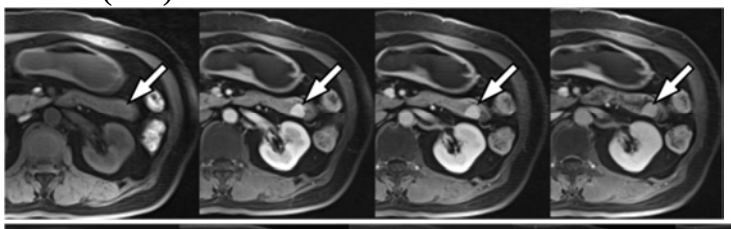

Figure 1: Small GIST of the jejunum shows obvious and homogeneous early strong enhancement

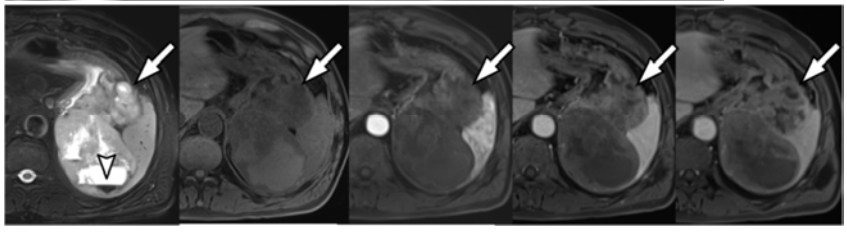

Figure 2: Large GIST of the stomach appears as heterogeneous tumor with intratumoral hemorrhage and cystic change (arrowhead). The mass shows mild degree and gradually progressive enhancement pattern

CONCLUSION: The common MR imaging feature of GIST of the GI tract was well-defined, lobulated, exophytic growing tumor showing obvious and gradually progressive enhancement, and heterogeneity with intratumoral hemorrhage or necrotic/cystic change. The enhancement pattern, enhancement grade and heterogeneity of GIST were variable according to the size of the tumor.

REFERENCES: 1. Levy AD, Remotti HE, Thompson WM et al. Gastrointestinal stromal tumors: radiologic features with pathologic correlation. Radiographics. 2003;23(2);283-304, 456. 2. Amano M, Okuda T, Amano Y et al. Magnetic resonance imaging of gastrointestinal stromal tumor in the abdomen and pelvis. Clin Imaging. 2006; 30(2):127-31.