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Research Article

The Diagnostic Value of 256-Slice CT in Different Risk Degree of Gastrointestinal Stromal Tumor

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Received: October 08, 2020; **Published:** January 27, 2021

Abstract

Objective: To explore the diagnostic value of 64-row CT for gastrointestinal stromal tumor (GIST) by using the techniques of plain scan, enhancement and post-processing.

Methods: CT findings of 11 cases GIST were analyzed, among which 10 cases underwent CT plain scan and enhanced double stage.1 case only received plain CT scan without enhancement. CT findings were compared with pathological findings.

Results: There were 11 patients in our study group, most of which were gastric stromal tumors (9 cases), while holileum and colorectal stromal tumors were rare (1 case each), with no multiple lesions. All the patients in this group were single. Among the 11 patients, there were 3 low-risk stromal tumors with uniform density and clear boundaries, and the tumor diameter was generally within 4 cm. Among them, 1 patient had calcification in the lesion, which was small and patchy. The lesion enhancement by enhanced scan was relatively uniform, indicating mild to moderate enhancement. There were 3 cases of moderate risk stromal tumor with uneven density and regular morphology, and the diameter was generally no more than 5 cm. The enhanced scan showed moderate enhancement and heterogeneity. There were 5 cases of high-risk stromal tumor. The tumor was generally large, with the maximum diameter up to 20 cm, uneven lesion density, and multiple internal necrosis. Among them, there was 1 case of patchy calcification in the lesion and 1 case of hemorrhage. The accuracy of CT diagnosis and location was 91% consistent with that of intraoperative exploration, and the accuracy of diagnostic results and pathological control was 82%.

Conclusion: Multi-row spiral CT plain scan plus enhanced scan is one of the important methods for the examination of GIST at present. Post-processing technology can clearly show the size, location and blood supply of the lesions, which can determine the benign and malignant lesions, and has an important value for further clinical diagnosis, treatment and prognosis evaluation.

Keywords: *Spiral CT; Stromal Tumor; Pathology; Diagnosis*

Introduction

Gastrointestinal stromal tumor (GIST) is the most common tumor in the digestive system, originating from mesenchymal tissue. The peak age of the disease is middle-aged and elderly people, and it usually occurs in the stomach, accounting for three fifths of the total population. It is followed by intestinal stromal tumor, which occurs in only 1% of the esophagus, and rarely occurs in mesentery and retroperitoneum [1]. GIST is crucial for further clinical treatment of benign and malignant GIST. Most of the clinical symptoms are not obvious, mostly manifested by abdominal discomfort and occasional abdominal pain, so it is difficult to distinguish benign and malignant

GIST clinically. In the past, preoperative diagnosis of stromal tumor mainly relied on X-ray gastrointestinal contrast and ultrasound and other imaging examinations.

In recent years, with the rapid development of imaging and pathology, imaging diagnosis GIST has attracted more and more attention, especially the more and more extensive application of MSCT. Its advantages include fast scanning imaging speed, high image quality, and clear display of tumor size, shape, internal structure and the relationship with surrounding tissues. Accurate judgment of benign and malignant tumors and accurate evaluation of malignant degree of tumors are the basis for clinical diagnosis and treatment plan and prognosis evaluation [2]. Based on this, the author collected 11 cases of GIST confirmed by surgery and pathology in our hospital and analyzed retrospectively the MSCT manifestations of gastrointestinal stromal tumor and the diagnostic value of MSCT for benign and malignant stromal tumors.

Purpose of the Study

The purpose is to summarize the MSCT signs of gastrointestinal stromal tumor, so as to obtain more accurate diagnosis rate of gastrointestinal stromal tumor in the future work.

Materials and Methods

Clinical data

Of the 11 patients admitted to GIST in our hospital from August 2015 to March 2018, 8 were males and only 3 were females. The age ranges from 28 to 78. Clinical manifestations: abdominal pain and abdominal discomfort were the majority of the patients, a total of 7 cases. Two patients were treated for black defecation. The other 2 cases were found to have gastric mass by accident on physical examination.

Inspection methods

Check fasting the night before, oral purified water or diluent meglumine 0.5~1 l before scanning. The scanning equipment is American GE 64-slice spiral CT with thickness and spacing of 5 mm. The patient was placed in supine position and the scanning range was from 3 cm above the diaphragm to the bottom of the pelvic cavity. The contrast agent was iodopropane. Arterial and venous phase scans were performed after 25s and 60s respectively. The images were reconstructed to 0.625 mm layer thickness and layer spacing. ADW 4.4 workstation was used to perform multiplanar recombination (MPR) on the lesions to facilitate the optimal display of the internal and peripheral structures of the lesions, and to show the relationship between the tumor and the surrounding tissue structure. The lesions were diagnosed by 2 doctors with intermediate professional titles or above, and the morphology, size, location, strengthening mode, necrosis, benign and malignant judgment of the lesions were evaluated.

Results

CT performance

Location of mass: 4 and 5 cases were located in and outside the gastrointestinal lumen, and 2 cases had mass crossing the inner and outer wall of the gastrointestinal lumen. Morphology of the mass: The lesions were all round or lobulated, in 6 and 5 cases, respectively, with a minimum diameter of 3cm and a maximum diameter of 20 cm. Plain scan of mass: The mass of 11 patients presented soft tissue density, 6 patients presented uniform density, and 5 patients presented intratumor necrosis. Calcification and hemorrhage in the tumor were 2 cases and 1 case, respectively. Enhancement scanning: Among the 11 patients in this group, 10 underwent double phase scanning

and all showed mild to moderate enhancement, among which most of them were non-uniform enhancement (8 cases, only 2 cases were uniform enhancement). The edge of mass: the edge of the lesion was clear in 6 cases and indistinct in 5 cases. Lymph node metastasis: No abdominal or retroperitoneal lymph node metastasis was observed in 11 patients.

Comparison of pathological and imaging results

GIST was divided into four grades based on the maximum diameter and mitotic figure of GIST. There were 11 patients in this group, including 0 patients with extremely low risk stromal tumor, 3 patients with low risk, 3 patients with moderate risk, and 5 patients with high risk. During the operation, most of the tumors were found in the stomach (9 cases), but less in the small intestine and sigmoid colon (1 case each). There were no multiple cases of tumors, all were single. CT diagnosis was consistent with postoperative pathology in 9 of the 11 patients, and the diagnostic accuracy was 82%. The CT localization of 10 cases of stromal tumor was accurate, and the accuracy of CT diagnosis localization and intraoperative exploration localization was 91%. CT has high accuracy in the localization and diagnosis of stromal tumors.

Discussion

In 1983, scholars [3] proposed the term GIST, which has been widely recognized by the clinicopathological community. GIST is composed of spindle cells and epithelioid cells, and its microscopic appearance is similar to that of smooth muscle and nerve-derived tumors, so it is easy to be misdiagnosed. In recent years, with the rapid development of immunohistochemistry and molecular gene detection technology, it plays an important role in clinical diagnosis and treatment. It is very important to accurately determine the benign and malignant GIST tumor, to make treatment plans for clinicians, and to determine the clinical prognosis [3]. GIST images are similar to other abdominal tumors to some extent, so it is difficult to diagnose GIST. Therefore, the summary of the characteristic CT manifestations of GIST has a good clinical role to know.

Clinical and pathological features of GIST

Stomach is the most common site of GIST, followed by the small and large intestine. It is more rare outside the gastrointestinal tract. In this study, 9 of the 11 GIST patients occurred in the stomach, accounting for 81.2%, 1 in the small intestine, accounting for 9.1% and 1 in the sigmoid colon, accounting for 9.1%. Pan Xia., *et al*. [4] showed that the incidence of stomach was 84.6%, which was similar to the results of our study. Shi Lei., *et al*. [2] showed that the incidence of stomach was 45.8%, which was significantly lower than the results of our research group, and the reason might be related to case selection and case number.

Literature shows that the operation method choice and prognosis of GIST level and risk of malignant tumor, close but gastrointestinal stromal tumor histologic, immune omics is more complex, and to distinguish between benign and malignant tumor biological behavior has no obvious value [5,6], so with the aid of CT imaging technologies such as to determine the malignant degree of risk GIST has very important clinical value. Clinical studies have shown that the risk assessment of GIST can be divided into four levels, namely, extremely low, low, medium and high risk, based on the maximum tumor diameter and nuclear fission image. Or it can be divided into three grades: benign, potentially malignant and malignant [7,8]. In this study, according to the grade of risk, the 11 patients were classified into extremely low degree, low degree, moderate degree and high risk, with 0, 3, 3 and 5 cases respectively.

CT features of GIST

Multi-slice spiral CT can not only observe the size and scope of the tumor inside and outside the gastrointestinal luminal cavity, but also evaluate the relationship between the tumor and the surrounding organs, as well as the distant metastasis, and also determine the invasion of the surrounding organs. Of the 11 patients in this study group, 9 were observed according to the growth site, 1 was found in

the stomach, 1 in the small intestine, and 1 in the sigmoid colon. Among them, no cases were collected in the pathologically diagnosed extremely low risk group. In the low-grade risk group, there were a total of 3 tumors, all with tumor diameter less than 4cm, all of which showed no foliated round soft tissue mass, no cystic necrosis or hemorrhage in the mass, clear boundary between the lesion and the surrounding organs and tissues, forming compression and progression on the surrounding structures, and the degree was relatively low. In 3 cases, the diameter of the moderately dangerous tumor was less than 5 cm, the tumor mucosal surface had ulcers, cystic degeneration, necrosis, and no hemorrhage, presenting uneven density. There were 5 cases of high-risk tumors, all of which were larger than 5 cm in diameter. In our study, the maximum diameter was about 20 cm. The mass was irregular in shape, showed signs of infiltration to the surrounding structures, with uneven density and obvious necrotic foci.

Su Haixia., *et al*. [9-11] found that CT scan of patients with benign and malignant GIST tumor was mainly different from each other in terms of whether the tumor morphology was regular, how fast and how the tumor grew in different directions. The 64-slice CT has the characteristics of fast scanning and good image quality. MPR reconstruction by post-processing software can display the position, shape, size and infiltration of lesions in three dimensions, and clearly display the organs of tumor origin, invasion and surrounding structures, providing accurate basis for clinical diagnosis and treatment.

Differential diagnosis of GIST

It is mainly differentiated from the following diseases: Gastrointestinal neoplasms: Malignant neoplasms of the digestive tract mainly originated from the mucosal layer of the digestive tract, and most of them are manifested as the erosion and infiltration of the gastrointestinal wall by the tumor, resulting in rigid tube wall and narrow lumen, thus causing a series of gastrointestinal symptoms. GIST, however, generally has signs of mass but no symptoms of gastrointestinal obstruction. Lymphoma: First, it is manifested as extensive thickening of the gastrointestinal wall, uneven thickening, and a dactyloid change. After enhancement, it is slightly enhanced. Generally, there is no liquefactive necrosis, lymph node enlargement is common, and it is mostly located in the retroperitoneum and abdominal cavity. Lymph node metastasis is rare in stromal tumors, especially at low risk; Leiomyoma: Gastrointestinal mucosa is intact without damage, generally without necrosis and hemorrhage.

Therefore, CT is an important examination method for GIST at present. Post-processing methods such as plain SCAN, enhanced scan and multi-plane reorganization can clearly show the imaging characteristics of GIST, which can better improve the diagnosis accuracy rate of lesions and provide an accurate basis for the determination of diagnosis and treatment programs.

Conclusion

Multi-row spiral CT plain scan plus enhanced scan is one of the important methods for the examination of GIST at present. Post-processing technology can clearly show the size, location and blood supply of the lesions, which can determine the benign and malignant lesions, and has an important value for further clinical diagnosis, treatment and prognosis evaluation.

Bibliography

1. Joensuu H., *et al*. "Gastrointestinal stromal tumour". *Lancet* 382 (2013): 973-983.

2. Shi Lei and XU Feng. "Comparative analysis of MSCT manifestations and pathological analysis of gastrointestinal stromal tumors". *Chinese Journal of CT and MRI* 15.3 (2017): 109-111.

3. Zhang Haiqing., *et al*. "Evaluation of gastrointestinal stromal tumor with multi-slice spiral CT". *Chinese Journal of CT and MRI* 11.4 (2013): 72-74.

4. Pan X., *et al*. "Correlation between CT characteristics and risk of GASTROINTESTINAL stromal tumor". *Journal of Medical Imaging* 28.05 (2018): 800-804.

5. Zhang Xiaoping and Yin Weimin. "Comparative Analysis of MSCT diagnosis and risk grade of GASTROINTESTINAL stromal tumor". *Chinese Journal of Clinicians* 6.11 (2012): 3076-3078.

6. Bin Jingwen., *et al*. "Multislice CT diagnosis of gastrointestinal stromal tumor". *Sichuan Medical Science* 31.9 (2010): 1359-1361.

7. Zhou Minwen., *et al*. "Imaging findings of rare and rare sites of stromal tumors". *Chinese Journal of Cancer* 26.5 (2016): 409-413.

8. Xue Peng., *et al*. "A comparative study of MSCT and pathology in gastrointestinal stromal tumors". *Imaging Diagnosis and Interventional Radiology* 21.1 (2012): 34-38.

9. Su Haixia., *et al*. "Correlation study of CT image characteristics of gastrointestinal stromal tumor and pathological risk assessment". *Chinese Journal of Medical Computer Imaging* 20.6 (2014): 511-516.

10. Luo Li., *et al*. "MSCT diagnosis and differential diagnosis of primary retroperitoneal smooth muscle tumor". *Practice of Radiology* 32.2 (2017): 167-170.

11. Zeng Yujing., *et al*. "CT diagnosis and differential diagnosis of external stromal tumor of gastrointestinal tract". *Imaging Diagnosis and Interventional Radiology* 22.1 (2013): 28-31.

Volume 8 Issue 2 February 2021