

On the Diagnostic Value of Multi-Slice Spiral CT in Internal Abdominal Hernia

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Abstract: Objective: To explore the application value of multi-slice spiral CT in abdominal hernia; Method: 50 patients who underwent gastrointestinal examination and treatment in our hospital from January 2022 to January 2023 were selected. The clinical and CT data of patients confirmed to have internal abdominal hernia after surgery were analyzed. At the same time, 50 patients were scanned using multi-slice spiral CT, and the results were compared; Result: Among the 50 patients, only 44 were diagnosed with intra-abdominal hernia on preoperative CT examination, of which 6 were diagnosed with small intestinal obstruction. But during the surgery, it was found that the patient had an internal hernia. After the surgery, 50 confirmed patients who came to the hospital for medical treatment were all diagnosed with intra-abdominal hernia. Among them, there were 6 cases of ileal hernia, 4 cases of jejunal hernia, 8 cases of distal jejunal hernia, and 26 cases of fibrous scar hernia. The remaining 6 patients had fibrous scars caused by ileal hernia entering the fibrous bundles between the intestinal walls. After analysis, CT scans of various patients with intra-abdominal hernia have common signs, and there is a correlation between individual characteristics and surgical results; Conclusion: Careful examination of the course of the small intestine and the morphology of the obstruction site on multi-slice spiral CT images can provide a clear diagnosis or indication of this disease.

Keywords: Abdominal Hernia; Intestinal Obstruction; Multi Slice Spiral CT

1. Materials and Methods

1.1 General information:

We selected 50 patients who came to our hospital for gastrointestinal treatment from January 2022 to January 2023. All patients were confirmed as patients with internal abdominal hernia after spiral CT examination and clinical surgical pathology examination. Complete a retrospective analysis of the patient's clinical data. Among the 50 patients, there were 35 male patients and 15 female patients. The patient's age is between 29 and 58 years old. The average age is (35.42 ± 6.31) years old. The time of coming to our hospital for treatment during the onset of the disease is between 6.5-24 hours. The average time is (13.4 ± 1.3) hours. After examination, 25 out of 50 patients experienced abdominal pressure, 22 patients had disappearance of intestinal sounds, and 23 patients had hyperactivity of intestinal sounds. After clinical diagnosis, there were a total of 39 patients with intestinal obstruction. After comparison, there was no statistically significant difference in general data among all patients ($P > 0.05$).

1.2 Method

All patients underwent multi-slice spiral CT scans. Before the CT scan, patients should stop eating 6 hours in advance, and all 50 patients underwent multi-slice spiral CT scans. Among them, 25 patients underwent plain scans, while the remaining 25 patients underwent plain scans and dual phase augmented scans. The contrast agent selected in the scanning was the non-ionic contrast agent iohexol with a dose of 1.5mg/kg. The injection flow rate of all patients was 2.5~3.5mL/s, and the patients were given high-pressure injection through the anterior elbow vein. Scanning parameters: ① 140kV; ② 280~350mA; ③ Layer thickness 7.5-8.0mm; ④ Pitch 1.375:1; ⑤ The delayed scanning time for the venous phase of

enhanced scanning is 60 seconds. Reorganize the examination data of all patients.

1.3 Observation indicators:

The examination results of all patients are evaluated by the same group of experts, and if different results occur, they will be determined through collaborative discussions among experts.

2. Results

2.1 Surgical results

After clinical surgery, it was confirmed that all 50 patients had intra-abdominal hernia disease and all had small intestinal hernia. 50 patients had mesenteric hernia: ① 6 patients had ileal hernia, with obvious symptoms of small intestinal torsion and local intestinal wall edema, but no patients had intestinal necrosis; ② 4 patients had a jejunal hernia into the root of the mesentery, with obvious small intestinal torsion and local intestinal wall edema, but no patients had intestinal necrosis; ③ Another 8 patients had distal jejunal hernia into the mesenteric root, with only local intestinal wall edema symptoms appearing. The remaining 26 patients were all diagnosed with fibrous scar hernia, including 10 patients with fibrous scars formed by ileal hernia entering the uterus and the anterior abdominal wall. The patients presented with 270 ° small intestine torsion and intestinal strangulation symptoms. During the surgery, it was observed that the patients had a 35-40cm intestinal necrosis, and there was obvious bloody fluid in their abdominal cavity; The remaining patients have fibrous scars caused by ileal hernia entering the fibrous bundle between the intestinal walls. The patient shows symptoms of 180 ° small intestinal torsion and strangulation, and during the surgery, there is a 40~50cm necrosis of the intestine. In addition, there is obvious bloody fluid in the patient's abdominal cavity.

2.2 CT imaging results

Among the 50 patients with intra-abdominal hernia, 44 patients had signs of partial intestinal hernia entering the pores or small areas in their CT imaging results. Hernias were visible, and there were obvious traction, displacement, and aggregation phenomena in the hernia entering the intestinal canal. In the imaging results, mesenteric blood vessels with displacement signs and proximal intestinal canal with obstruction and expansion signs were visible; There were 28 patients with mesenteric hernia, and in CT images, it can be seen that part of the intestinal canal entered the patient's mesenteric root after passing through the small intestinal hiatus hernia; 33 patients had symptoms of combined small intestine torsion, and the "vortex sign" of blood vessels and intestines was the main sign of the 33 patients. This means that in the imaging, the patient's intestines can be seen in a spiral arrangement around a certain point, and signs of vortex like changes and displacement of the rotating intestines can be seen at the patient's intestinal mucosal blood vessels; Among the 12 patients in this group, the CT imaging results showed obvious "bird beak sign", and it was observed that the vortex of the patient was filled with liquid, while there was a more obvious bird beak like change near the vortex of the patient; In addition, the CT images of 6 patients showed the "concentric circle sign".

3. Discussion

3.1 Definition of intra-abdominal hernia

Intra-abdominal hernia refers to the formation of abdominal organs leaving their original position and protruding into a certain anatomical gap inside the abdominal cavity through internal pores or fissures. The content of hernia is mostly small intestine, and intra-abdominal hernia is one of the rare causes of intestinal obstruction. In recent years, with the extensive development of abdominal surgery, the incidence rate of this disease is constantly increasing, with an obvious upward trend. The condition of internal hernia is developing rapidly. Although it is not fatal, the complications brought by it have a high mortality rate. Therefore, for internal hernia, it is necessary to improve the diagnostic effect of early diseases. Multi slice spiral CT has the effect of enhanced scanning, and the scanning speed is fast, with the advantage of multi plane subordination. Currently, it has become the preferred detection method for diagnosing intra-abdominal hernia, providing important assistance for clinical practice.

3.2 Clinical manifestations of intra-abdominal hernia

The clinical manifestations of intra-abdominal hernia have many specificity. Firstly, mild patients have no obvious symptoms, and they may only be accompanied by intermittent abdominal discomfort. The stage of disease progression is mostly abdominal pain, and abdominal pain is also the main clinical manifestation. Secondly, as the condition progresses, patients may experience symptoms such as abdominal distension, vomiting, nausea, and the anus may stop venting and defecating. Intra-abdominal hernia can lead to intestinal obstruction, intestinal wall ischemia, necrosis, and intestinal perforation in patients. It can also be accompanied by peritonitis and bloody ascites, and in severe cases, shock or even death can occur. For intra-abdominal hernia, the earlier the formation of the condition, the better the treatment effect for the patient. Due to the tendency of intra-abdominal hernia to cause intestinal obstruction and other problems, the intestinal body can twist, causing compression on both ends of the hernia. If not detected in a timely manner, the patient's disease speed will accelerate, ultimately leading to a rapid exacerbation of the condition. Therefore, it is necessary to pay sufficient attention to this disease.

3.3 Differential diagnosis of intra-abdominal hernia

The differential diagnosis of intra-abdominal hernia mainly focuses on identifying adhesive intestinal obstruction or volvulus. Adhesive intestinal obstruction is mainly caused by trauma and postoperative adhesions, and the location of the adhesions is uncertain. The lesion is no longer limited to the mesenteric side of the intestine. Adhesive intestinal obstruction can sometimes find adhesive bands, while internal hernia can sometimes find a hernia opening. For internal hernia, intestinal torsion and internal hernia have very similar pathological characteristics, making it difficult to distinguish in clinical imaging manifestations. If we cannot distinguish between the two based on experience, it is very easy to cause misdiagnosis problems.

Abdominal hernia is a clinical condition that has a rapid onset and development in clinical practice. Due to the relative lack of specificity in clinical signs, symptoms, and X-ray examinations, the early clinical diagnosis of this disease is relatively large, and it often cannot be effectively diagnosed in a timely manner, affecting the treatment and rehabilitation effects of patients. Clinical staff and researchers have been searching for a more rapid, safe Effective clinical diagnostic methods. In relevant investigation and research, the use of multi-slice CT examination for intra-abdominal hernia has obvious characteristics. Multi slice spiral CT examination can detect signs of intra-abdominal hernia, strangulated small intestinal obstruction, closed loop, and torsion in patients, which has a good effect in diagnosing clinical diseases of patients. In this study, we can see that the clinical CT imaging results are similar to the surgical results of patients, and can clearly detect symptoms such as abdominal hernia and small intestine torsion, which has good guiding significance for formulating clinical surgical plans for patients.

Summary

In summary, the use of multi-slice spiral CT reconstruction in the clinical diagnosis of internal abdominal hernia can better understand the patient's disease situation, determine the patient's symptoms, and have a good auxiliary effect in formulating the patient's clinical surgical plan. It has clinical significance and is worth promoting and using.

References

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