Comparative Analysis of the Value of Gastroscopic Biopsy and Surgical Pathology in the Diagnosis of Gastric Cancer

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Abstract: *Objective:* To explore and analyze the diagnostic value of gastroscopic biopsy and surgical pathology in improving the diagnostic accuracy of gastric cancer. *Methods:* From May 2019 to June 2020, 80 patients with gastric cancer treated in Shuyang Xiehe Hospital were selected and divided into two groups, a control group and a study group, with 40 cases in each group, based on the examination method individually selected by the patients. The patients in the control group were investigated via gastroscopy, while those in the study group were investigated by surgical pathology. The diagnostic values of the two methods were compared and analyzed. *Results:* The diagnostic accuracy of patients in the study group was 100%, which was higher than that of the control group. The tissue type, lesion morphology, and cancer differentiation of the study group were better than those of the control group. There was significant difference between the two methods ($P < 0.05$). *Conclusion:* Surgical and pathological examination can improve the diagnostic accuracy of gastric cancer, comprehensively analyze the patient's condition, and provide corresponding theoretical basis for follow-up treatment, so that patients can obtain more active and effective treatment, reduce pain, and improve their quality of life.

Keywords: Gastric cancer; Gastroscopic biopsy; Surgical pathology

1. Introduction

Gastric cancer is a common malignant tumor, originating from the gastric mucosal epithelium, and it can occur in different parts of the stomach. The risk factors of gastric cancer include genetics, eating habits, Helicobacter pylori, and other factors. Spontaneous sternal pain, epigastric discomfort, and vomiting are some of its clinical manifestations [1]. For this disease, active treatment and intervention should be taken to reduce the occurrence of adverse events. In the early stage of gastric cancer, the clinical symptoms are atypical and often confused with gastric ulcer or other benign diseases. Therefore, missed opportunities often occur in the diagnosis of this disease, resulting in serious complications, which may be life-threatening to the patients. Therefore, clinically, the diagnosis of this disease is particularly important. Early diagnosis and early treatment can improve the quality of life of patients, reduce their pain, and promote family harmony as well as social stability. At present, the common examination methods are gastroscopic biopsy and surgical pathology. Both of these methods can achieve ideal diagnostic results for gastric cancer. In this paper, the diagnostic accuracy of gastroscopic biopsy and surgical pathology for gastric cancer is explored and discussed.

2. Data and methods

2.1. General information

From May 2019 to June 2020, 80 patients with gastric cancer treated in Shuyang Xiehe Hospital were selected and divided into two groups, a study group and a control group, with 40 cases in each group, according to the examination methods. There was no statistically significant difference in the basic data of the patients ($P > 0.05$). The basic data of the patients are shown in **Table 1**.

Table 1. Comparison of basic data between the two groups

Group	Male-female ratio	Age range (years)	Average age (years)	Mean course of disease (months)
Study group (n = 40)	22:18	40-65	52.5±2.5	16.5±5.5
Control group (n = 40)	21:19	41-66	53.5±3.5	17.5±4.5
P	> 0.05	> 0.05	> 0.05	> 0.05

Inclusion criteria: (1) the clinical symptoms of the patients were consistent with the indications of gastric cancer; (2) the patients and their families had given informed consent to the study.

Exclusion criteria: (1) patients with multiple organ failure, shock, cardiovascular disease, stroke, hemiplegia, diabetes, or mental disorders.

2.2. Methods

Upon admission, the patients' vital signs were monitored, and fecal occult blood test was routinely done, so as to have a preliminary understanding and judgment of the degree of their condition. The patients' past history was checked in detail, and the investigation and diagnosis were done on a specific day.

The patients in the control group were investigated via gastroscopic biopsy. The procedure was carried out according to the following steps: first, carefully observe the gastric mucosa of the patient through a gastroscope; then, record the size, degree, and distribution of the lesion in detail; following that, perform the biopsy according to the condition of the lesion; for ulcerative lesion, select the ulcer area for tissue biopsy; for the protuberant type, perform the biopsy at the apical and basal areas of the gastric mucosa; for the flat type, perform the biopsy around the gastric mucosa; for submucosal lesion, select the tissue at the central depression for biopsy. In order to improve the diagnostic accuracy, the number of tissues selected during the examination should not be less than three [2].

The patients in the study group underwent surgical and pathological diagnosis according to the following steps: make preoperative preparations, followed by routine anesthesia; select the tissues for pathological examination; if the diameter of the lesion is 0-1.0 cm, remove the whole lesion and examine pathologically; if the diameter of the lesion is greater than 1.0 cm, select typical parts of the lesion; thereafter, process the specimen, fix the specimen with 10% formaldehyde solution, and embed it in paraffin; continue by tissue sectioning and staining, and then observe the specimen under the microscope while analyzing the pathological results.

2.3. Observation indicators

The accuracy of the two methods was observed; the tissue types under the two methods were compared; the pathological types of the two methods were observed, including the rate of cases with infiltration type, ulcer type, localized ulcer type, and mass type; the differentiation degree of gastric cancer in the two groups was observed.

2.4. Statistical analysis

The data were calculated and analyzed using SPSS 23.0. The count data were expressed in n/% and X^2 test. $P < 0.05$ indicates statistical significance.

3. Results
3.1. Diagnostic accuracy

Through two different methods, the diagnostic accuracy of the study group was 100%, which was significantly higher than that of the control group ($P < 0.05$). The results are shown in **Table 2**.

Table 2. Comparison of diagnostic accuracy between the two groups (n/%)

Group	Number of cases	Undiagnosed	Diagnosed
Control group	40	10 (25)	30 (75)
Study group	40	0 (0)	40 (100)
X^2	-	-	11.4286
P	-	-	0.0007

3.2. Tissue type

Under the two different methods, there was significant difference in the tissue type between the two groups ($P < 0.05$). The results are shown in **Table 3**.

Table 3. Comparison of tissue types between the two groups (n/%)

Group	Number of cases	Adenocarcinoma	Signet ring cell carcinoma	Others
Control group	40	8 (20.0)	5 (12.5)	1 (2.5)
Study group	40	19 (47.5)	14 (35.0)	7 (17.5)
X^2	-	6.7645	5.5910	5.0000
P	-	0.0093	0.0180	0.0253

3.3. Lesion morphology

There was no significant difference in the rate of cases with ulcer type, localized ulcer type, and mass type between the study group and the control group ($P > 0.05$). The rate of cases with infiltrating type in the study group was significantly higher than that in the control group ($P < 0.05$). The results are shown in **Table 4**.

Table 4. Comparison of lesion morphology under the two examination methods (n/%)

Group	Rate of ulcer type	Rate of localized ulcer type	Rate of mass type	Rate of infiltrating type
Control group (n = 40)	6 (15.0)	5 (12.5)	10 (25.0)	3 (7.5)
Study group (n = 40)	8 (20.0)	9 (22.5)	13 (32.5)	16 (40.0)
X^2	0.3463	1.3853	0.5492	11.6652
P	0.5562	0.2392	0.4586	0.0006

3.4. Cancer differentiation

The degree of cancer differentiation of the study group was significantly better than that of the control

group ($P < 0.05$). The results are shown in **Table 5**.

Table 5. Comparison of cancer differentiation under the two examination methods (n/%)

Group	Number of cases	Poorly differentiated type	Differentiated type
Control group	40	8 (20.0)	13 (75.0)
Study group	40	17 (42.5)	23 (100.0)
X^2	-	4.7127	5.0505
P		0.0299	0.0246

4. Discussion

Gastric cancer is a common malignant tumor seen in clinical practice. Its pathogenesis is explained by the spontaneous canceration of gastric mucosal epithelial cells. Patients with gastric cancer often present with symptoms such as epigastric discomfort, sternal pain, nausea, and vomiting. The early symptoms of gastric cancer are often confused with other gastrointestinal diseases, conferring wrong judgments and missed opportunities for treatment.

There are many risk factors of gastric cancer, including poor eating habits, Helicobacter pylori, genetic factors, and inflammatory diseases of the stomach. Alcoholism, smoking, and spicy food increases the burden on the stomach, leading to a series of gastric diseases and increasing the risk of cancer. Gastric mucosal inflammatory responses induced by Helicobacter pylori infection accelerate the reproduction of gastric mucosal epithelial cells, which eventually leads to cancer. Chronic gastritis, gastric ulcer, and other diseases have different degrees of inflammatory hyperplasia at their onset. These conditions promote inflammatory lesions at the gastric mucosal epithelium, resulting in cancer. Gene sequences and genetic factors also increase the risk of gastric cancer [3].

Gastric cancer mostly occurs in the lesser curvature of the stomach, cardia, and gastric antrum. This disease mainly affects those around 40 years old, most of which are male patients. Gastric cancer has a high mortality rate. Therefore, actively taking effective measures for intervention in the early stage of the disease, combined with chemotherapy and other measures, can improve the quality of life, prolong the life of patients, and increase the survival time to more than 5 years [4]. For patients with advanced cancer, their quality of life and survival time significantly reduce without timely treatment. Therefore, for patients with gastric cancer, intervention should be done in the early stage, but more importantly, early diagnosis is crucial.

Clinically, there are many ways to diagnose gastric cancer, such as barium meal radiographic examination, gastric fluid analysis, immunological tests, etc. These investigations can achieve ideal results to a certain extent, but there are some deficiencies in formulating reasonable and effective treatment plans. With the progress and development of intervention, the most common methods to diagnose gastric cancer are gastroscopic biopsy and surgical pathology. Gastroscopic biopsy is easy to operate, lowers the risk of injury to patients, has clear imaging, allows the surgeon to determine the location of the lesion intuitively and accurately, and has high accuracy [5]. It also provides corresponding theoretical basis for follow-up surgical treatment. However, this kind of examination has certain limitations. The field of vision of a gastroscope is small, and the pathological tissues cannot be comprehensively analyzed and judged. In order to ensure the accuracy of gastroscopic biopsy, no less than four samples of living tissues should be examined each time. The diagnosis of the pathological features of gastric mucosa is one-sided, so misdiagnosis and missed diagnosis may occur, resulting in missed opportunities for the best treatment and thus affecting the final treatment effect.

Surgical pathology involves the removal of the lesion during surgery, which will then be fixed, embedded, sectioned, stained, and finally analyzed and studied under the microscope, so as to draw relevant conclusions, make up for the shortcomings of gastroscopic biopsy, and carry out specific research and analysis of the cause for the occurrence and development of the disease, its morphology, and structure, as well as the final regression of the disease with higher accuracy.

The results of this study showed that the diagnosis made via surgical pathology had higher accuracy compared to gastroscopic biopsy. There were statistically significant differences between the two methods in terms of the degree of differentiation, lesion morphology, and tissue types ($P < 0.05$).

Gastroscopic biopsy is less harmful to patients and easier to operate. It is suitable for the preliminary screening of gastric cancer. Surgical pathology can make up for and correct the deficiencies of the former as well as improve the accuracy of diagnosing gastric cancer.

Gastric cancer, a malignant tumor disease, has serious impact on the life and health of patients. Therefore, in order to improve the treatment efficiency, early diagnosis should be strengthened. Both gastroscopic biopsy and surgical pathology have high diagnosis rate. Therefore, they are able to provide relevant theoretical basis for subsequent treatment, ensure the safety of patients, reduce the pain experienced by patients to a large extent, and improve their quality of life.

Disclosure statement

The author declares no conflict of interest.

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