

The Usefulness of Endoscopic Ultrasound in the Diagnosis of Gastric Tumours

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Abstract

Endoscopic ultrasound (EUS) is a technique used for the exploration of the digestive system, enabling the diagnosis and classification of gastric tumors. The aim of our study was to describe the contribution of EUS and fine needle aspiration in the diagnosis and determination of the histological type of gastric tumors. Our study consists of a retrospective descriptive study involving 36 patients. The mean age was 54 ± 14.4 years, with a female-to-male sex ratio of 2. EUS revealed an ulcerated and polypoid appearance with prominent folds in half of the cases. Fine needle aspiration biopsy was performed in 80.5% of cases. The histopathological findings were predominantly gastrointestinal stromal tumors and adenocarcinomas.

Keywords: Endoscopic ultrasound, Fine needle aspiration biopsy, Gastric tumors, Histopathology.

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INTRODUCTION

Endoscopic ultrasound is a technique for exploring the digestive tract that combines the use of an endoscope to visualise the lumen of the digestive tract and an ultrasound probe to explore the wall and adjacent structures in depth. This imaging technique, which has the highest resolution currently available for studying the lining of the digestive tract and the organs in contact with it, is seeing its development accelerate with the advent and spread of echo-endoscopically-guided histology and the development of echo-endoscopically-guided therapies. The aim of our study was to describe the contribution of endoscopic ultrasound and cytopuncture to the diagnosis and histological typing of gastric tumours.

MATERIALS AND METHODS

Our study is a descriptive and retrospective study, spread over a period of 7 years from January 2017 to June 2023 and covering 36 patients who underwent digestive endoscopic ultrasound for the exploration of a gastric tumour.

All patients included received either propofol sedation with spontaneous ventilation or general anaesthesia, depending on their clinical condition.

All endoscopic ultrasound were performed using a Pentax endoscopic ultrasound with linear and/or radial probe and an Aloka Prosound $\alpha 5$ SV ultrasound.

RESULTS

Of a total of 427 endoscopic ultrasound performed between January 2017 and June 2023, 36 met the inclusion criteria.

The mean age was 54 ± 14.4 years, with extremes ranging from 24 to 85 years. 85% of patients were over 40 years of age. Female/male sex ratio 2/1.

The main presenting sign in our series was abdominal pain in 15 patients (41.6%), particularly epigastralgia in 13 patients. The other presenting symptoms were: Vomiting in 27.7%, digestive haemorrhage in 25% of cases, 1 patient had dysphagia and only one other patient presented with diarrhea. The anaemic syndrome was present in 22 patients (61.1%), with a biological microcytic hypochromic anaemia with a mean value of 9.58 g/dl. All patients included in our study underwent endoscopic ultrasound which enabled the tumour to be visualised in various endoscopic forms (Table 1).

Table 1: The different endoscopic aspects of gastric tumours

Endoscopic appearance	N	%
Ulcerative-burgeoning	9	25%
Large folds	7	19,4%
Extrinsic compression	5	13,8%
Polypliod formation	5	13,8%
Ulcerated pseudopolypliod	2	5,55%
Bourgeonnant	2	5,55%
Congestive and nodular gastritis	2	5,55%
Normal	2	5,55%
Infiltrating mass	1	2,77%
Umbilical swelling	1	2,77%

The endoscopic ultrasound revealed several aspects: Parietal thickening was the most frequent endoscopic ultrasound finding, in 83.3% of cases (n=30), the appearance of an infiltrating mass was found in 3 patients (8.3% of cases) suggesting gastric linitis. A nodular appearance was observed in 2 patients (5.55% of cases), involving the muscularis suggesting a leiomyoma, and a depressed appearance in 1 case (2.7%) suggesting a heterotopic pancreas.

The echostructure was heterogeneous in 72.2% of cases and homogeneous in 27.7%. 4 patients had a heterogeneous appearance with areas of necrosis and

fine calcifications, suggesting a gastrointestinal stromal tumor (GIST). The various lesions found had a hypoechoic appearance.

The tumour was classified as T1 in 10 patients (27.7%), T2 in 4 patients (11.11%), T3 in 4 patients (11.11%) and T4 in 3 patients (8.33%). Parietal extension was unspecified in 15 patients (41.6%).

Adenopathy was present in 27.7% of cases endoscopic ultrasound also revealed secondary hepatic locations in 2 patients and intraperitoneal effusion related to peritoneal carcinosis in 3 patients.

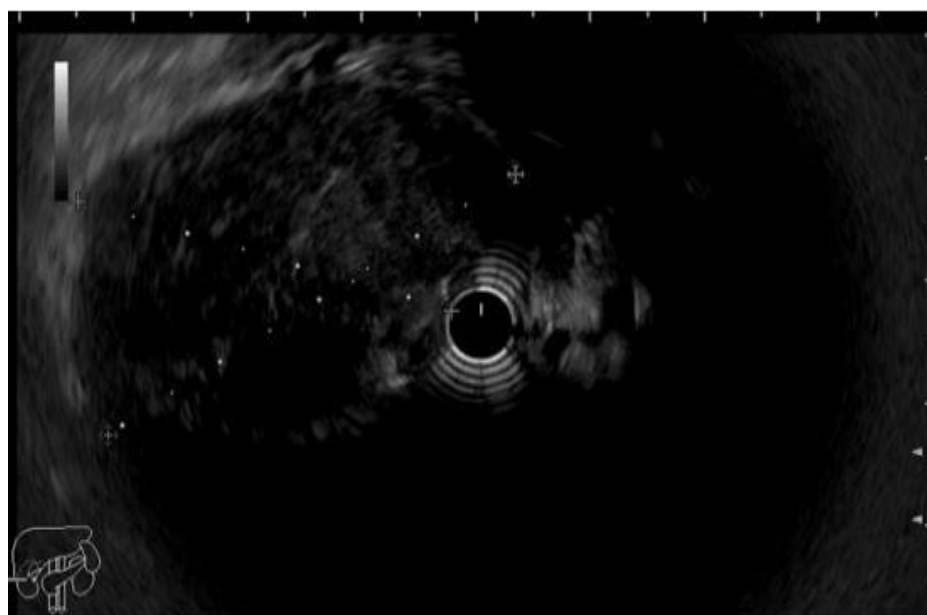


Figure 1: Endoscopic ultrasound image of a heterogeneous, large, well-limited solid mass consistent with gastric GIST

Cytopuncture was performed in 80.5% of cases (n=29). It was carried out using fine needle biopsy (FNB) in 61.9% of cases (n=18), either with 22-gauge needles in 34.4% (n=10) or 20-gauge needles in 8 patients (27.5%), or with 19-gauge FNA in 37.9% of cases (n=11).

We made 3 visits to 10 patients (34.4%), 2 visits to 15 patients (51.7%), only 1 visit to 3 patients (10.3%) and 4 visits to 1 patient (3.44%). The median number of cytopuncture visits was two.

Cytopuncture was successful in 22 patients (75.8%). The different histological types found are summarised in Table 2.

Table 2: Histopathological results of cytopunctions

Histological type	N (%)
GIST	7 (24,1%)
Adenocarcinoma	6 (20,6%)
Lymphoma	3 (10,3%)
Linite	3 (10,3%)
Undifferentiated carcinoma	1 (3,45%)
heterotopic pancreas	1 (3,45%)
Leiomyoma	1 (3,45%)
Inconclusive	7 (24,1%)

In our series, the histological study showed a predominance of GIST, the spindle cell type was predominant in 6 patients and the epithelioid type was present in only one patient.

The mitotic index was ≤ 5 in 3 patients (42.8%), >5 in 2 cases (28.2%) and was not specified in 2 cases.

DISCUSSION

Endoscopic ultrasound makes it possible to visualise the different histological layers of the wall of the digestive tract represented as a superposition of hypoechoic and hyperechoic images [1].

Endoscopic ultrasound plays a crucial role in visualising gastric tumours and determining the depth of extension, as well as assessing lymph node involvement [2]. Accurate staging of these tumours is essential, as it determines the choice of treatment [3].

The data collected in the literature make it possible to classify endoscopic ultrasound as one of the examinations of choice for the T classification of gastric cancers. Although computed tomography (CT) scan is considered to be the reference for assessing the metastatic extension of gastric cancers, it is approximately six times less accurate than endoscopic ultrasound for T staging, particularly in the case of early lesions that are not accurately classified by CT [4].

In a recent meta-analysis published in 2021, including 12 studies and 2047 patients, comparing endoscopic ultrasound with multi-dimensional CT scanning, it was found that endoscopic ultrasound performed better in diagnosing early stages compared with advanced stages.

Submucosal lesions can develop from different layers of the gastric wall. When a submucosal lesion is suspected during endoscopy, the first step is to distinguish it from extrinsic compression. Endoscopic ultrasound is the key examination, surpassing endoscopy, transperietal ultrasound and CT scan. In a prospective study, the sensitivity and specificity of endoscopic ultrasound for differentiating submucosal lesions from extrinsic compression were 92% and 100% respectively [5].

GIST is the most common gastric submucosal tumour, accounting for 80% of gastric mesenchymal tumours. 30% of them are associated with a risk of malignancy [6]. The endoscopic ultrasound appearance is often characteristic of the diagnosis, even if it is not specific, as leiomyomas and schwannomas may have similar features [7].

Data on the impact of endoscopic ultrasound cytopuncture in patients with gastric cancer are limited [8]. In a study conducted by Hassan et al on the impact of endoscopic ultrasound guided fine needle aspiration on the management of gastric cancer including 234 patients, cytopuncture was performed in 81 patients out of 99 suspicious lesions. 61 of these lesions in 38 patients were confirmed as malignant. In 34 of these patients, the presence of metastases was not detected by imaging. Endoscopic ultrasound guided fine needle aspiration changed the management of 34 of the 234 patients who underwent endoscopic ultrasound for staging, representing 15% of the overall patient population [9].

New finer needles are now commonly used for fine needle biopsy cytopuncture, including Procore® 20G and Acquire® 22G needles [10]. They offer the possibility of obtaining better quality tissue samples, with the Acquire® 22G needle performing significantly better than the Procore® 20G needle [11]. In our series, the needles used were fine needle biopsy in 61.9%, size 22G in 34.4% and 20G in 27.5% of cases. Cytopuncture by fine needle aspiration using 19G needles was used in 37.9% of cases.

CONCLUSION

Endoscopic ultrasound is a promising approach to the diagnosis of gastric tumours, particularly submucosal tumours. Its performance is enhanced by the cytopuncture that it can perform. The integration of cytopuncture has improved diagnostic performance.

Our study highlighted the importance of endoscopic ultrasound combined with cytopuncture for visualising the various gastric tumours and determining their precise histopathological type. Stromal tumours and adenocarcinomas are the most common tumours in our series.

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