Early gastric carcinoma diagnosed on endobiopsic and surgical specimens

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Abstract
Early gastric carcinoma (EGC) is difficult to diagnose without a screening program. Aims. In this study, we reveal the importance of endobiopsy in EGC diagnosis. Material and methods. We examined multiple gastric endobiopsies from 1 201 patients with or without symptoms and endoscopical aspect for gastric carcinoma. All specimens were fixed in 15% buffered neutral pH formaldehyde and paraffin embedded. Histological sections were stained using current techniques: Hematoxylin–Eosin, trichromic van Gieson, Giemsa (for Helicobacter pylori) and Alcian blue, pH 1 and 2.5 (for acid and sulfated mucins). We used Laurén histological classification with two main types of gastric carcinoma: intestinal and diffuse. Results. From 1 201 gastric endobiopsies, we diagnosed gastric carcinoma in 257 patients (21.3%) and only four of them were EGCs, although their endoscopical examination was negative for gastric tumor. Among these malignant proliferations, three cases showed intestinal type EGC and one case was diffuse type EGC. The additional endobiopsies fragments presented chronic atrophic gastritis with H. pylori infection, intestinal metaplasia and dysplasia. Conclusions. EGC had an incidence of 0.34%, which is very low because the lack of an endoscopical screening program favors the diagnosis of gastric cancer in advanced stages. Both histological types – intestinal and diffuse, were present in EGC, associated with H. pylori chronic gastritis, intestinal metaplasia and dysplasia. The presence of dysplasia recommends the endoscopical surveillance of these patients.

Keywords: early gastric carcinoma, dysplasia, endobiopsy.

Introduction
Diagnosed by classical methods, early gastric cancer (EGC) represents 16–24% from all gastric cancers, while using endoscopical screening methods, the incidence raises to 30–50% [1–3]. In this study, we present four cases of EGCs diagnosed by endobiopsy and confirmed after gastric surgical resection

Material and methods
The study included 1 201 gastric endobiopsies and four specimens of total gastric surgical resection.

Results
After analyzing the 1 201 cases, 257 (21.3%) were diagnosed with gastric adenocarcinoma. Only in four of them (0.34%) we found aspects of EGC, although the endoscopical examination of these cases wasn’t suggestive for gastric cancer. The evaluation of the surgical resection specimens from these patients revealed three cases of intramucosal adenocarcinoma and only one of submucosal adenocarcinoma.

According to Laurén classification, intestinal type adenocarcinoma was diagnosed in three endobiopsies and confirmed on corresponding surgical specimens (pT1N0MxG1). Microscopically, intestinal type adenocarcinomas were well differentiated, with atypical cells arranged in a tubular pattern, similar with intestinal metaplasia (Figures 1 and 2).

Only one case was diffuse type adenocarcinoma, which, on surgical resection specimen, proved to be a poorly differentiated adenocarcinoma, mucus secreting, invading the submucosa by penetrating the muscularis mucosae (pT1N0MxG3). Atypical tumor cells were isolated or in cords and strands, and most of them were positive for Alcian blue (Figures 3 and 4).

Both in endobiopsies with multiple tissue samples, and in surgical specimens we noticed chronic gastritis with H. pylori or atrophic gastritis. Gastric mucosa adjacent to intramucosal carcinoma presented high grade dysplasia in native epithelium or in intestinal
metaplasia areas. Histologically, high-grade dysplasia is characterized by distorted glands, arranged in a “back to back” pattern, lined by atypical cells often with irregular, stratified nuclei, but preserved polarity. Mitosis is present. Neoplastic cells are confined to the glandular structures, inside the basement membrane. (Figures 5 and 6).

**Discussions**

Early gastric cancer is a carcinoma invading only the mucosa or the mucosa and the submucosa, irrespective of the presence of lymph node metastasis [4]. Countries with an operational screening program for early detection of gastric cancer (e.g. Japan), EGC incidence is high (30–50%) [3].

In our study group, the EGC incidence was very low (0.33%), as a result of routine endoscopy practice and not of a screening program.

Endoscopically, EGC is classified as protrusive (type I), elevated (type IIa), flat (type IIb) or ulcerated (type Iic), and excavated (type III). With regard to the dimensions, carcinomas limited to mucosa can be divided in: intramucosal carcinoma if it is smaller than 4 cm (M) and superficial carcinoma if it is larger than 4 cm (SUPER-M). Similarly, submucosal carcinomas will be SM, and SUPER-SM, respectively.

In addition, penetrating carcinomas have two subtypes: PenA – when tumor cells invade into the submucosa in a large front, and PenB – characterized by multiple foci of invasion beneath the muscularis mucosae [4].

Upon correlation between endoscopical and pathological data, one can conclude that protrusive (type I) and elevated (type IIa) EGCs present a papillary or glandular pattern, well to moderately differentiated, while depressed / ulcerated (type Iic) carcinomas are often poorly differentiated. Excavated (type III) carcinomas may be intestinal or diffuse type [4, 5].

None of the above mentioned endoscopical aspects was observed in the four cases of EGC diagnosed in our study group. Histologically, three of them were well differentiated, intestinal type adenocarcinomas, the fourth being poorly differentiated, diffuse type, mucin producing adenocarcinoma. Laurén classification also demonstrates the role of *H. pylori* and intestinal metaplasia in gastric carcinogenesis.

**Conclusions**

In summary, low incidence of EGC is a consequence of the lacking of a screening program for early detection of gastric cancer. Gastric dysplasia recommends endoscopical surveillance of the patient. EGC presented both histological types of Laurén classification, and were associated with chronic gastritis with *H. pylori*, intestinal metaplasia and dysplasia.

**Abbreviations**

EGC – early gastric cancer; *H. pylori* – *Helicobacter pylori*.

**References**

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Figure 1 – Intramucosal intestinal type adenocarcinoma (HE, ob. ×4)

Figure 2 – Intramucosal intestinal type adenocarcinoma, detail (HE, ob. ×20)

Figure 3 – Intramucosal diffuse type adenocarcinoma, mucin-producing (Alcian blue, ob. ×4)

Figure 4 – Intramucosal diffuse type adenocarcinoma, mucin-producing, colloid (Alcian blue, ob. ×20)

Figure 5 – High-grade dysplasia in gastric epithelium surrounding intramucosal carcinoma (HE, ob. ×10)

Figure 6 – High-grade dysplasia in superficial gastric mucosa; endobiopsy (HE, ob. ×10)


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