

# Ciliated Metaplasia in a Patient of Mediterranean Origin with Gastric Adenoma

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## Summary

We report here the first case of ciliated gastric metaplasia in a Croatian patient. This is also the first case of ciliated metaplasia reported in a patient of Mediterranean descent. Cilia were found in slightly cystically dilated gastric glands underneath a gastric adenoma with severe dysplasia. They were visualized by desmin immunohistochemical stain. Cells that presented with cilia were columnar cells, some of them with vacuolization of the cytoplasm. This case report shows that ciliated metaplasia occurs in patients with Southern European origin.

**Key-Word:** ciliated metaplasia

## Introduction

Ciliated cells in gastric mucosa were reported to exist in high incidence in Japanese (5) and Hong Kong Chinese (1) patients, occurring either with gastric adenoma, intramucosal adenocarcinoma or peptic ulcer. Only few case reports indicate the presence of this type of metaplasia in other ethnic groups with, so far, only four cases described (3, 4, 8). Three of them were from Europe, being of the Northern European descent (3, 8) and presented with tubular adenoma (2 patients, 3) or intestinal adenocarcinoma (1 patient, 8). The presence of ciliated cells in the gastric mucosa has not been reported, so far, in any patient of the Southern European or Mediterranean origin. Here we report the first case from that European region, describing ciliated metaplasia presented underneath gastric tubular adenoma in a 67-year-old Croatian patient. Cilia were visualized using desmin immunohistochemical stain.

## Clinical Summary

The patient is a 67-year-old male, who presented with upper epigastric pain, nausea and vomiting. Endoscopic examination showed a polyoid nodule with a diameter of 8 mm on lesser curvature of the posterior surface of the antrum. By means of exfoliative cytology gastric adenoma was diagnosed. Endoscopic polypectomy was performed and a histologic diagnosis of tubular adenoma with high-grade dysplasia was made. Of four additional biopsies, two were taken from the corpus and two from the gastric antrum. One biopsy from the antrum revealed high-grade (severe) dysplasia and the other three demonstrated inflammatory infiltrate of the lamina propria with mononuclear and polymorphonuclear leukocytes (PMNs) as well as reparatory and degenerative changes of the foveolar epithelia and cystic-dilated glands covered with intestinal metaplastic epithelium (see Figure 1). Inflammatory infiltrates were found only in the antral biopsy specimens and inflammation of the antrum was characterized as chronic nonatrophic gastritis with no evidence of *H. Pylori*-like organisms. Subtotal gastrectomy was indicated to remove tubular adenoma with high grade dysplasia.

## Pathologic Findings

Resected stomach specimen measured 10 cm on lesser and 14 cm on greater curvature. The fresh spec-

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Figure 1  
Low-magnification (HE, X40) view of the dilated glands in the vicinity of the muscularis mucosae.

Figure 2  
High-power view (HE, X1000) of the ciliated cells in the dilated glands.

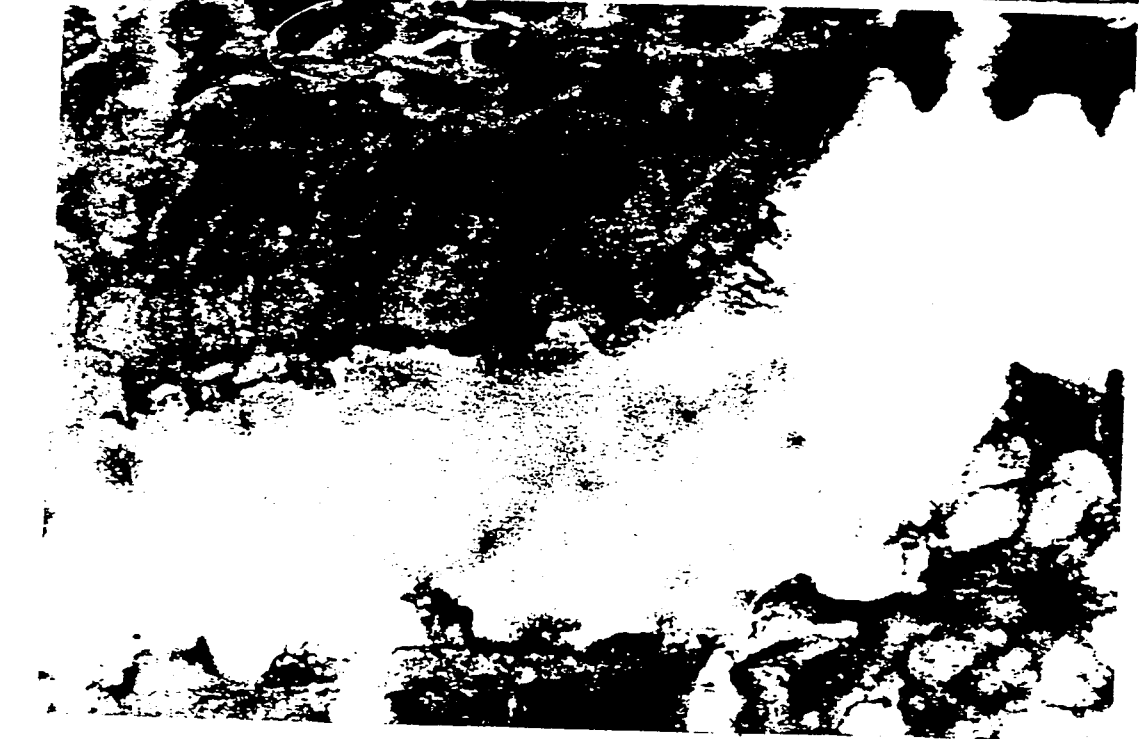


Figure 3  
Medium-power view (HE, X200) of the ciliated cells positive for desmin.

Figure 4  
High-power view (HE, X1000), cilia and the end bars of ciliated cells showing strong positivity on desmin.

imen was cut along the greater curvature. On macroscopic examination, only a hyperemic zone 1 cm diameter was noted at the site of the previous polypectomy. Standard fixation of the stomach was accomplished using 4% neutral buffered formalin and tissue samples were paraffin-embedded. The hyperemic area was serially cut into six samples. A total of five lymph nodes situated in fat tissue of the lesser curvature were isolated. Histologically, only sinus histiocytosis was present in those lymph nodes.

## Microscopic Examination

Histologic examination of the hyperemic zone (Figure 1) revealed a somewhat thinned mucosa with the mononuclear and polymorphonuclear leukocytes in lamina propria. Reparatory and degenerative changes of the superficial epithelium were also noted, along with signs of complete and incomplete intestinal metaplasia and low-grade to moderate dysplasia. Some glands were cystically dilated and lined with columnar to cuboidal PAS positive cells of the foveolar and pyloric type. There was no evidence of *H. Pylori*-like organisms.

Deep in mucosa, just next to the lamina muscularis mucosae, we found a few cystically dilated glands. They were lined with ciliated columnar cells and goblet cells. Those cells which presented with cilia were high and columnar, with basally placed circular to ovoid nucleus containing finely dispersed to granular chromatin without clear nucleolus. The cytoplasm of the columnar cells were eosinophilic with terminal plate and high cilia clearly visible at the luminal pole. Cilia were less visible at the luminal surface of the vacuolized cells (see Figure 2). Histochemical stainings of that epithelium on PAS, PAS/AB, HID/AB stains were negative.

To visualize cilia, we used monoclonal antibodies on desmin (DAKOEPOS, Dakopatts, Glostrup, Denmark). As a positive control we used normal mucosal surface of the trachea (data not shown). Luminal poles of the columnar cells stained positive on desmine (Figures 3 and 4). In the vicinity of those cysts, pyloric glands were found lined with regular cuboidal epithelium.

## Discussion

This report details a case of ciliated gastric metaplasia in a Croatian patient with tubular adenoma of the stomach. Interestingly, this is the first case of the ciliated gastric metaplasia in a patient of Mediterranean ancestry.

Cysts in the stomach appear due to the obstruction of secretions by proliferating hyperplastic epithelium, which closes the secretion output of the gastric glands (2, 6, 7). Application of the monoclonal antibodies on desmin showed in our case very little or no dye distribution in branches of the lamina muscularis mucosae, suggesting less or no presence of the myofilaments in this region (see Figure 3). Speculatively, the consequence of the weaker contractile power of the lamina muscularis mucosae in the affected region may be a lesser expulsion of the mucous from the glands, which then becomes cystically dilated.

The association of ciliated gastric metaplasia with intestinal metaplasias (1, 9) as well as the presence of ciliated cells only in the lower part of the glands (9) seem to apply to most of the cases where ciliated gastric metaplasia was detected. This is confirmed again in our case report.

The origin of the ciliated cells is yet unclear. It has been proposed that ciliated metaplasia occurs as an adaptive response to retention of the viscous material in the lumens of dilated cysts (8). This would be an adaptation mechanism of the luminal cells on mucus retention. However, mucous retention was not demonstrated clearly in an earlier study (10). Furthermore, vacuoles of columnar cells were present in this study as was shown in other studies (4, 6, 7) and they stained negative for mucus (Figures 3 and 4). We could not find the nature of the contents of those vacuoles.

Pathologic significance of gastric cilia remains unclear as well as the frequent presence of those cilia in gastric mucosa of the Japanese and Chinese patients (1, 5) and the extremely rare appearance in the patients of the rest of the world population.

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