EPIDERMOID CARCINOMA OF THE STOMACH

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Epidermoid carcinomas of the stomach are extremely rare. A survey of the literature revealed only six cases.

Futterer (1), in 1904, reviewed the literature on epithelial metaplasia and could find only one reported case, by Borst, of squamous-cell carcinoma of the stomach. This case, however, was not described in detail.

Rolleston and Trevor (2), in 1905, reported a case of columnar-cell carcinoma of the stomach showing squamous-cell metaplasia in a thirty-nine-year-old female.

P. P. Vinson and A. C. Broders (3), in 1925, recorded the case of a forty-six-year-old female who had an obstruction in the lower portion of the esophagus necessitating a gastrostomy. A bronchoscope was introduced into the stomach through the gastrostomy and a piece of tissue removed which microscopically revealed a squamous-cell carcinoma, of grade three malignancy. Unfortunately, no post-mortem examination was performed to verify the exact site of the tumor.

Kaufman (4), in 1931, described a large tumor of the posterior gastric wall in a forty-two-year-old male as a hornifying squamous-cell carcinoma gradually disappearing at the esophageal border, with infiltrations progressing to the liver.

Cabot (5), in 1933, included in his case series an example of esophageal obstruction in a sixty-four-year-old male. The tumor involved the cardioesophageal junction and proved to be an epidermoid carcinoma of grade two malignancy. It was so large that its primary origin could not be ascertained.

A. Penna de Azevedo and E. Villela (6), in 1936, called attention to the rarity of epidermoid carcinoma of the stomach and reported a case in a fifty-seven-year-old male. The tumor was located on the lesser curvature of the stomach, appearing as a crater-like ulcer, 3.5 cm. in diameter, and was adherent to the pancreas. The esophagus and the cardiac end of the stomach were not affected. Metastases were found in the heart, liver, capsule of the pancreas, lungs, and adrenal glands. The histologic picture, both in the primary tumor and in the metastatic foci, was that of a carcinoma of the epidermoid type. The authors explained the origin of this tumor, in this unusual location, as a result of metaplasia of the gastric mucosa.

A survey of 273 cases of carcinoma of the stomach in a series of 11,480 consecutive autopsies performed at the Cook County Hospital in Chicago, in 1928–1938 inclusive, revealed only two examples of squamous-cell carcinoma, a percentage of 0.7 per cent. In one of these cases, however, there is a question as to the gastric origin of the tumor. The patient was a sixty-three-year-old white male with a large friable, fungating ulcerative tumor involving the entire cardiac end of the stomach and extending up into the esophagus for a
The high-power photomicrograph shows the cellular detail: large, pale-staining polygonal cells with large nuclei; some mitotic figures; two epithelial horn pearls.

distance of 4 cm. The cardiac orifice was completely surrounded by tumor. The microscopic picture was that of a medullary undifferentiated squamous-cell carcinoma of the cardio-esophageal junction. The second case in this series was that of a forty-nine-year-old white male with symptoms suggesting a gastrocolic fistula. Autopsy revealed a large oval defect, $8 \times 5$ cm. in diameter, along the greater curvature of the stomach, 4.5 cm. from the cardiac end, opening into a large cavity, the lateral wall of which was formed by the spleen.
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FIG. 3. EDGE OF THE ULCER IN THE STOMACH, SHOWING MALIGNANT CHANGES IN SEVERAL OF THE GLANDS AND MARKED ROUND-CELL INFILTRATION OF THE MUCOSA

There was a defect in the wall of the colon at the splenic flexure communicating with the cavity. Histologically, the edge of the ulcer in the stomach revealed a squamous-cell carcinoma.

It is obvious that the gastric origin of the tumor in some of the cases presented is questionable in view of the esophageal involvement. The case to be described was definitely of gastric origin with extensive metastasis to the liver.

A seventy-four-year-old white man was first seen at the Chicago State Hospital April 21, 1938, with a diagnosis of cerebral arteriosclerosis. He was admitted to the hospital ward Oct. 1, 1938, complaining of pain in the epigastric region and progressive jaundice of two weeks' duration. The abdomen was distended and tympanitic, and peristalsis was active. The liver was enlarged to five fingers below the right costal margin, nodular, and firm. The spleen was not palpable. There was a slight pitting edema of the lower extremities.

The laboratory findings were as follows. The urine was amber in color and cloudy, with a specific gravity of 1020; acid in reaction, showing only a trace of albumin and no sugar. The stools were light yellow, of watery consistency, and positive for occult blood. The icterus index was 94, with a positive immediate direct Van den Bergh reaction. The blood count showed 21,350 white cells, 3,850,000 red cells, 70 per cent hemoglobin, a color index of .85. The differential count was 88 per cent polymorphonuclear leukocytes and 12 per cent lymphocytes.

A diagnosis of metastatic malignancy of the liver with the primary focus in the gastrointestinal tract was considered but before any further investigation could be made the patient died, five days after admission to the ward.

Autopsy was performed by the senior author. The body was that of a moderately jaundiced, elderly white male in a fair state of nutrition. The abdominal cavity was filled with about 4000 c.c. of a clear straw-colored fluid. The liver was enlarged, extending 6 cm. below the right costal margin, 11 cm. below the xiphoid process, and 5 cm. below the left costal margin. The surface was studded with innumerable light yellowish firm nodes from 1 cm. to 4 cm. in diameter, and section showed the liver structure to be almost entirely replaced by similar nodes. Between the tumor masses the liver tissue was a light yellow brown with indistinct markings.
On the posterior wall of the stomach, along the lesser curvature, 7 cm. from the cardiac end, was an ulcer 1.5 cm. in diameter with firm indurated edges, and a light yellow tan base. The remaining gastric mucosa was a light pinkish tan with folds and rugae distinct. The esophagus was normal.

In addition, there were a hypostatic pneumonia of both lower pulmonary lobes, eccentric hypertrophy of the heart with mild coronary sclerosis, benign nephrosclerosis, nodose goiter, benign prostatic hypertrophy with prostatic calculi, infectious hyperplasia of the spleen, and generalized arteriosclerosis.

**Microscopic:** The mucosa of the stomach distal to the ulcer was intact but was infiltrated with focal areas of small round cells. It was replaced, in the region of the ulcer, by nests of cells surrounded by dense connective-tissue fibers. Only occasionally was there a tendency toward alveolar arrangement. Numerous epithelial pearls were present throughout (Fig. 1). The tumor cells were large, polygonal in shape with large oval to round pale-staining vesicular nuclei. Many atypical mitotic figures were present. The nuclei varied in size and staining reaction (Fig. 2). The lymph spaces in the submucosa were distended with tumor cells and the overlying mucosa was intact, although at the edge of the ulcer a few of the mucosal glands revealed evidence of malignant change (Fig. 3).

The normal liver structure was almost completely destroyed and replaced by tumor cells similar to those seen in the stomach. In addition, there were large areas of central necrosis with marked connective-tissue proliferation (Fig. 4). Occasional epithelial pearls were seen scattered throughout the section. The periportal spaces revealed a proliferation of the bile ducts with round-cell infiltration.

**Comment**

The predominating histologic feature in this case was the presence of solid nests of cells, with numerous epithelial pearls, warranting the diagnosis of primary epidermoid carcinoma. The occasional tendency, however, toward an alveolar arrangement of some of the tumor cells and the changes in the glands at the ulcer edge necessitate the consideration of squamous-cell metaplasia, with extensive hornification, of an adenocarcinoma of the stomach.
Various explanations have been sought for the presence of epidermoid carcinoma in the stomach. Herxheimer (7) advocated the theory of embryonic rests, which later in life assume growth characteristics of the embryonic type of cell. Krompecher (8) favored a metaplasia of the glandular elements, basing his view on careful personal observations. He states that the mucosa of such organs as the stomach and appendix, which normally are lined by cylindrical epithelium, has another basal layer of cells which are unevenly distributed. This he regards as analogous to the basal-cell layer of the skin, and as giving rise to glandular and cylindrical epithelium. Under certain pathological conditions these basal cells are able to form either flat epithelium, cylindrical epithelium, or both. Teutschlaender (9) supports this theory.

Lubarsch (10) stated that anaplasia or retrogression to a more primitive type of cell is the forerunner of cell metaplasia.

Futterer, in 1904, showed experimentally that metaplasia of gastric glandular elements to that of malpighian epithelial cells occurred after injecting pyrogallic acid to inhibit healing of resected gastric mucosa.

Watson, Flint and Stewart (11), in 1937, reported a case of hyperplastic tuberculosis in the midportion of the stomach, in which the gastric mucosa proximal to the involved area was lined by squamous epithelium. They could not determine whether this was a genuine metaplasia due to changed environment resulting from obstruction or whether there was squamous epithelial replacement extending down from the esophagus.

Ewing (12) states that squamous-cell metaplasia affecting the cells before the development of the tumor, or appearing in the course of glandular carcinoma, or as an element in teratomas, accounts for the presence of epidermoid carcinoma in unusual situations. The lungs, thyroid (Jaffé, 13) and prostate are generally favorite sites for epithelial metaplasia. We recently encountered a squamous-cell metaplasia in a case of adenocarcinoma of the gallbladder.

**Summary**

A case is presented of primary epidermoid carcinoma of the stomach with extensive metastasis to the liver. Metaplasia of the gastric mucosa is suggested as the possible explanation of epidermoid carcinomas in such an unusual site. The literature is reviewed.

**Bibliography**