

malignant change in gastric ulcer

alex felice

final year medical student

The co-existence of ulcer and cancer in the same stomach may be revealed by examination at autopsy or at surgery. The histological features of chronic gastric ulcer and gastric cancer may be described in the same lesion under microscopic examination.

Two questions arise:

What proportion of gastric cancers are casually related to chronic gastric ulcers?

Secondly, what proportion of chronic peptic gastric ulcers run the risk of malignant change?

Muir estimates that there is evidence of chronic gastric ulceration in about 18% of gastric carcinomas. In judging of the relationship, there must be clear evidence of cancer in connection with an ulcer, as there is often irregular growth of epithelium and even displacement of epithelium or heterotopia at the margin of a healing ulcer, apart from any malignancy. As to the pre-existence of chronic ulceration in an undoubted case of carcinoma, the important points are that there is a long history of chronic ulcer pain and that the muscular coat has been entirely destroyed and replaced by fibrous tissue in which there is often obliteration of arteries. Carcinomatous change begins in the margin of the ulcer crater and tends to encircle it, spreading outwards into the submucosa and the muscular layer, but not invading the fibrous floor to any extent.

On the contrary, whilst primary carcinoma of the stomach often invades the muscularis, it practically never destroys it entirely and even in advanced cases, remains of muscle may be detected in between the neoplastic tissue. Characteristically; Ulcer destroys muscle, Cancer invades it.

Though most cancer ulcers are large, usually being larger than 4 cms., at least 10% of benign ulcers may be larger than that.

Both cancer and ulcer most commonly inhabit the prepyloric region, though the former prefer, the greater curvature and the latter the lesser, however, as many as 30% of gastric carcinomas are found on the lesser curvature, where they tend to be larger, some having huge excavations.

The ulcerative type of gastric carcinoma differs anatomically in many respects from its benign counterpart.

Classically they have a heaped up, beaded, firm, overhanging margin on a shaggy necrotic base. Histologic evidence of neoplasia is found in the margins and in the base of the ulcer. The ulcer defect seems to be carved out of the tumour.

When a peptic ulcer becomes malignant, the transformation occurs at the mucosal margin and very often, if the neoplastic process is not far advanced, the base remains free of tumour infiltration. The presence of anaplastic glands in the base of the lesion is one of the distinguishing features that helps to differentiate the ulcerative type of gastric cancer from the malignant transformation of a previously benign peptic ulcer.

One may perhaps draw an analogy between cancer arising in the scar tissue of a chronic peptic ulcer and chronic burn scar carcinoma. Differences in treatment which account for delayed re-epithelisation is thought to explain the rarity of the condition in the U.S.A. and its relative frequency in the Orient and the Middle East. Repeated or persistent ulceration of the gastric mucosa may take a similar course.

Most authorities would agree that in an ulcerating gastric cancer, evidence that it arose from a previously benign chronic ulcer is given by:

1. Complete destruction of the muscle layers of the stomach in the base of the ulcer.
2. Fusion of the muscularis mucosa and the muscle wall at the margin of the ulcer.
3. Intimal thickening of the blood vessels
4. The presence of cancer in only one part of the wall and its infiltration in the base of the ulcer and in other parts of the wall.

Differing criteria of diagnosis have led to widely different estimates of the incidence of ulcer-cancer. Presently, the pendulum seems to have swung to lower values averaging below 10%, sometimes much below this. This is a far cry from original estimates of over 7%. Robbins considers the incidence of malignant change in a benign ulcer as being of the order of 1%. He concludes that it is probably not justified to call peptic ulcer a pre-malignant lesion.

Willis suggests that chronic ulceration perhaps does no more than determine the site of neoplasia in a stomach already prepared for it. He also takes into consideration the fortuitous existence of ulcer together with cancer.

Hellsingen and Hillestad in Norway have shown that in patients with peptic ulcer, the later development of gastric cancer was three times as high as the expected or anticipated incidence in the general population within the same age group.

Bailey and Love suggest that malignant change occurs in 4% of gastric peptic ulcers and when it does so it is limited to the ulcer and the mucosa around it.

However much one may argue for or against the relative incidence of malignancy occurring in a gastric ulcer, the possibility in the individual case must be considered.

Recent investigations have been directed towards the study of enzyme activity and mucopolysaccharide content of the gastric mucosa and the gastric juice in cases of gastric carcinoma and atrophic gastritis. Though controversial, some authorities regard the intestinal metaplasia as seen in atrophic gastritis as precancerous and others view hypertrophic gastritis similarly. A marked increase in the glucose content of the gastric mucus and an increase in the concentration of gastric juice B-Glucuronidase is described in malignant aspirates. Other observations correlate with the general concept that cancer arises in stomachs that have been the site of previous injury. Mucosal injury might initiate cellular mutation or facilitate contact between tissue and ingested carcinogen.

The differential diagnosis between benign and malignant ulcer and malignant change in a previously benign ulcer, raises several difficulties. All stomach derangements evoke a fairly limited range of clinical manifestations. At least 10% of gastric ulcers defy clinical classification as benign or malignant.

A duodenal ulcer may be safely assumed to be benign and is more closely correlated with hyperchlorhydria. Similarly, when a gastric and duodenal ulcer are present simultaneously the lesion in the stomach is invariably benign.

Adequate medical treatment may be a valuable therapeutic test. An uncomplicated benign peptic ulcer should heal in three weeks under a suitable therapeutic regimen.

Age of the patient is not of great diagnostic value.

A long history is said to favour the diagnosis of benign ulcer whereas a short one favours malignancy.

With the onset of cancer in a person known to be suffering from chronic gastric ulceration of some duration there is loss of periodicity or regularity of daily painful episodes. The attacks appear to worsen progressively, and intervals between attacks to shorten. The pain is mild but constant and without postprandial relief.

Anorexia and nausea are usual features of malignant disease. Vomiting no longer gives relief. Early diagnosis may be possible if the growth gives rise to obstructive symptoms. Emaciation, anaemia and tumour mass appear at a late stage in the disease. Loss of weight is initially slight but is progressive with advance of the disease.

Gastric chemical analysis shows that 51% of primary

carcinomas of the stomach are associated with achlorhydria, and 33% of ulcer-cancer and 81% of chronic ulcer patients are isochlorhydric. The persistence of achlorhydria in the presence of an ulcerating gastric lesion is highly suggestive of carcinoma.

The characteristic sign of gastric ulcer is the crater on radiology — the niche of Haudlek. An ulcer crater on the lesser curvature, smooth in outline, projecting beyond the normal outline of the lumen with uninterrupted rugae converging towards it is most likely to be benign. It is claimed that the smaller the diameter the more likely it is to be benign.

Cancer developing in the edge of a previously benign ulcer cannot be detected in the early stages. At a first examination, the ulcer which has undergone malignant change reveals a large crater which should arouse suspicion if larger than 4cms. If seen, the meniscus sign of Carman, which appears as a halo, is pathognomonic of gastric carcinoma. The crater, then protrudes inwardly as a filling defect with irregular contours. Stewart proposes serial radiography in suspect patients as the most satisfactory assessment of ulcer change to cancer.

Gastroscopy will reveal and define a new growth. The points in favour of malignancy are;

1. A raised irregular edge.
2. An uneven base containing blood and necrotic tissue.
3. Irregularity or nodularity of the converging folds.
4. Raising of the whole ulcer above the level of the surrounding mucosa.

Early diagnosis is important if the results of surgery are to be improved. Sometimes this may be impossible even after radiological, endoscopic and cytological investigation. Most important in this evaluation is the probability of the disease in terms of its frequency.

The medical treatment of a supposedly benign peptic ulcer should be followed up by repeated roentgenographic and endoscopic examination. The reliable data of healing in a benign peptic ulcer are;

1. Complete absence of occult blood in the faeces.
2. Progressive decrease in the size of the ulcer and its disappearance on X-ray examination.
3. Complete healing of the crater.

Delaying surgery in an uncomplicated, non-healing ulcerating lesion of the stomach involves serious risk to the patient and is, in all probability not justified, if the patient is operable.