Gastric Carcinoma A clinico-Pathological Study

Thesis
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Master Degree
in Internal Medicine

By
Shafika Ibrahim Ibrahim

Supervised By
Prof. Dr. Sami Abd Allah Abd El Fattah
Prof. of Internal Medicine
Faculty of Medicine
Ain Shams University

Prof. Dr. Laila Fares
Prof. of Radiotherapy
Faculty of Medicine
Ain Shams University

Dr. Magdy El Guinaidy
Lecturer of Internal Medicine
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
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بسم الله الرحمن الرحيم

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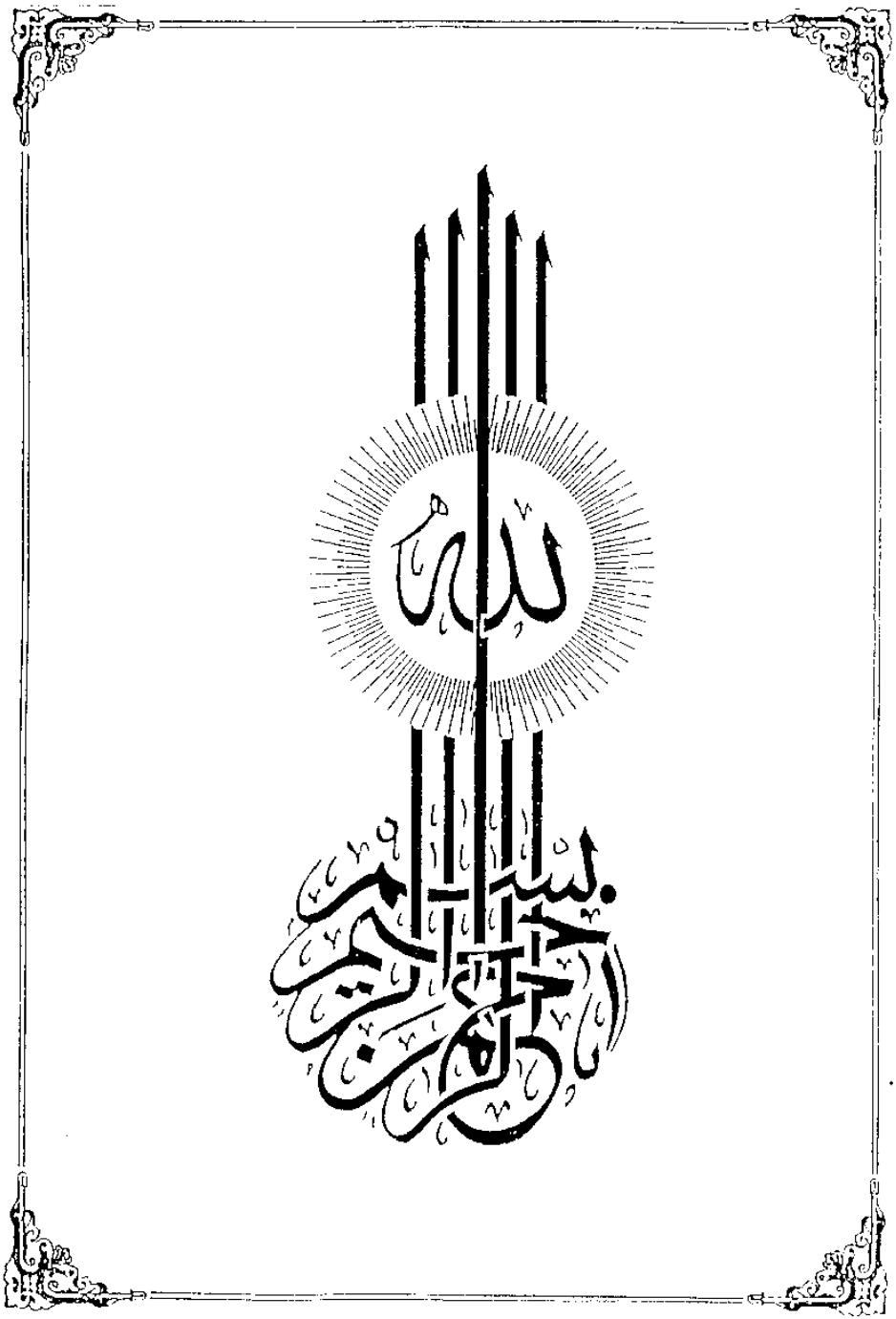

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INTRODUCTION AND AIM OF THE WORK

Gastric malignancies include many varieties which may develop from all the structures forming the layers of the wall of the stomach. However, adenocarcinoma arising from the lining of gastric epithelium is the most common. It accounts for 95% of all gastric malignancies (Dupont and Cohn, 1980).

Lymphomas may develop from lymphoid structures in the stomach or may involve it, as part of one of the well known varieties of generalized lymphomas. Their incidence may be relatively high in countries or regions where lymphomas in general are not uncommon (Pack, 1964; Macon 1979).

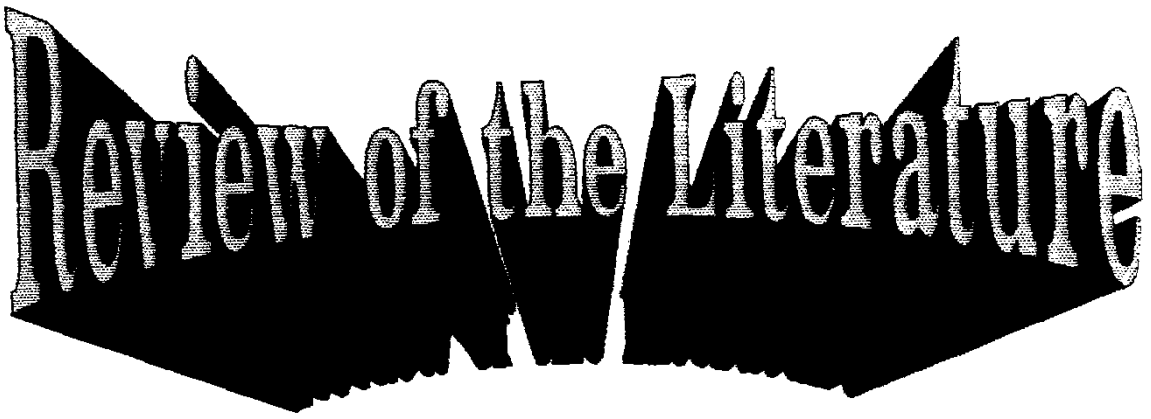
All sorts of tumours of mesenchymal origin may also occur such as leiomyomas, leiomyoblastomas and leiomyosarcomas. Among the rare varieties are apudomas (carcinoid tumours) mainly gastrinoma (Pack, 1964; Phillips et. al., 1970).

Direct invasion of the stomach by malignancies arising primarily in neighbouring organs such as the liver, the spleen , the pancreas, the colon, the small intestine, etc .. may occur. Metastatic affection is rarely encountered spreading to the stomach from primary malignancies arising in any other organ in the body such as the breast, the

Kidneys.. etc. Over all gastric cancer is the commonest malignancy on a global scale, although lung cancer is the most frequent in males and breast and cervical cancers are the commonest in females (Devesa and Silvermann, 1978)

AIM OF THE WORK

To know the percentage of malignant tumours of the stomach in Ain Shams University Hospital in relation to other gastrointestinal tumours and other tumours. It was also intended to know the types of malignant gastric tumours whether adenocarcinoma or lymphoma and the relation between it & mode of presentation and the longevity of the patient.



GASTRIC MALIGNANCY

Possible aetiological factors: There seems to be a closerelationship between the socio-economic status and the frequency of gastric cancer. (Silverberg. 1980). No genetic factors could be recognized and proved to have a significant influence on the incidence of gastric cancer. On the other hand. Japanese migrants to the USA develop gastric cancer with the same frequency as in Japan where they spent their first 20 years of life. Their offsprings develop gastric cancer at a rate comparable to that of the Americans living in the same areas. This indicates that other environmental factors such as diet. which the Japanese ingest in their early life, may play a significant aetiological role (Haenszel et. al.. 19-2). There are many conditions which have been known. for a long time to be associated with higher frequency of stomach cancer. Such as hypo and achlorhydria. pernicious anaemia. atrophic gastritis. intestinal metaplasia and gastric ulcer. Malignant transformation of a benign gastric adenoma may also occur (Ming and Goldman. 1965: Oota. 1968: Hofman. 19-0: Tomasulo. 19-1: Kawachi and Sugimura. 19-9).

Alcoholic bevarages have always been suspected as aetiological factors whether through their direct action or due to impurities ingested with them (Hofman. 19-0).

Diet: the characteristics of diet listed below have been linked with gastric cancer (Correa et. al., 1983):

a) Low in animal fat and animal proteins.
b) High in complex carbohydrates.
c) A substantial proportion of proteins is obtained from vegetable sources, mostly grains.
d) Low in fresh fruits especially citrus varieties.
e) High in salt.
f) High in nitrates.

The protective action of fat (Milk and dairy products) have been emphasized by Hirayama (1981). Fat is needed for proper utilization of lipid soluble vitamins such as A and E.

Phenol is present in all smoke, soot, tar and smoked foods, and may have a carcinogenic role. Smoked salmon is among the main articles of food in Iceland and Finland (Cady, 1980). Talc in talc treated rice-commonly used in Japan may contain asbestos which is an established carcinogen. (Japanese Research Society for Gastric Cancer, 1973: Selikoff, 19[illegible]). A high corn consumption may be related to the low incidence of gastric cancer in Nigeria and Yugoslavia (Silverberg and Lubera, 1986).

Indices of micronutrients based on case control studies have been calculated for ascorbic acid and vitamin A. In Japan a large cohort study has revealed a negative association between green and yellow vegetable intake and gastric cancer risk. Such vegetables account for approximately 50% of vitamin A intake and 25% of vitamin C intake (Hirayama, 1981). Similar calculations tend to implicate vitamin E in gastric cancer precursors (Correa et. al., 1983). Salt concentration in diet has long been suggested as a factor which increases the incidence of gastric cancer. This has been emphasized in japanese reports over several years and in France, Hawaii and Colombia. Experimentally, salted food causes severe gastritis, salt is not a complete carcinogen. It may act by inducing chronic gastritis and increasing cell turn over rates. (Correa et. al., 1983).

The Role of Nitrosamines

Sodium nitrate is used widely as a fertilizer, and is also present in the drinking water of the population, as well as in many vegetables, wheat plants and wheat grains. Nitrates and nitrites are used as food additives in preserving canned meat and fish.

Nitrosamines are potent carcinogens for many organs including the stomach. They may be formed by interaction between nitrites with secondary or tertiary amines in the stomach, and this could be an important factor in the aetiology of gastric cancer (Matsukura et. al., 1978). Gastric cancer could be produced by nitrosamines in experimental animals and could be an aetiologic factor in man. (Sasajima et. al., 1979). Bacteria are capable of synthesing nitrosamines in the stomach from ingested nitrates in the drinking water or diet. Bacteria which act through certain enzymes are usually destroyed by gastric acidity. This may explain the high incidence of gastric cancer in patients suffering from atrophic gastritis, and hypo or achlorhydria. Nevertheless there is no definitive proof of a direct relationship in man yet obtained, or generally accepted.

Vitamin C was proved to block off the formation of nitrosamines in the stomach: hence the possibility that vitamin C could be used as a preventive measure, perhaps a major factor in the general reduction of incidence of gastric cancer in many countries during the last five decades is the correction of nitrate intake in the drinking water and the increasing intake of diet rich in vitamin C (ascorbic acid) (Correa et. al., 1983).

Life expectancy in any population is a significant factor in increasing the incidence of gastric cancer. As it increases, the incidence of gastric cancer is also expected to increase (Cady, 1980).

Premalignant Lesions:

1- Intestinal metaplasia:

It seemed likely that most of the well differentiated adenocarcinomas arise with intimate relation to the two types of intestinal metaplasia "single and double-layer intestinal metaplasia", although the incidence of malignant change of each type has been unknown (Yamagiwa et. al., 1991).

2- Adenomatous gastric polyps: of the three known varieties, the hyperplastic, the hamartomous (which are present in the Peutz-Jeghers syndrome) and the villous form, the last one is 10 times less frequent than the first two. Villous adenomatous polyps are frequently premalignant in at least 40% of cases (Ming; and Goldman 1965; Tomasulo, 1971). Some authors feel that the gastric polyp is a benign lesion which, if a symptomatic and smaller than 2 Cm in size, can safely be followed radiologically without necessity of surgical removal, and surgical removal of lesions larger than 2 Cm in size is only necessary because they cannot clearly be differentiated radiologically from gastric carcinoma (Monaco et. al., 1962; Marshak and Feldman, 1965).

3- Chronic Gastric Ulcer:

Recent studies indicate the rarity of malignant transformation despite the long standing debates related to this subject. In about 3% of resected gastric ulcers in the USA carcinoma has been detected (Oota. 1968). Sometimes. it is difficult or even impossible to distinguish an ulcer from an ulcerated carcinoma, grossly or even after limited biopsies irrespective of which occured first. Practically all chronic gastric ulcers should be resected (Larson et. al., 1961).

4- Hiatal Hernia

There is a definite increase of gastro-oesophageal cancer in such cases. estimated as five folds. it is mostly an adenocarcinoma. Regurgitation of acid gastric juice results in ulceration of oesophageal mucosa and replacement by gastric epithelium. Adenocarcinoma may arise from this epithelium or from the epithelium of the cardia (Dupont et. al., 1978).

5- Gastric stump carcinoma

There is a noticeable relatively higher incidence of cancer in the gastric stumps. following partial or subtotal gastrectomy previously performed for the treatment of peptic ulceration (Lygidakis. 1981. Giarelli et. al., 1983).