

GASTRIC CANCER

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Epidemiology

Although declined in the United States and the Western World, gastric cancer is still high in several countries around the world. Incidence exhibits significant geographic variability. The disease is most common in East Asia. High rates have been reported in Central and South America, Eastern Europe and parts of Middle East. In Japan, gastric cancer remains the most common type of cancer among men.

The overall incidence of this condition has decreased in the past few decades. Nonetheless, gastric cancer remains a major public health issue as the fourth most common cancer and the second leading cause of death worldwide. In the first quarter of the 20th century, two thirds of gastric cancers were located in the antrum and the prepyloric area and only 10% arose in the cardia or the esophagogastric junction. Since the 1970's, however, adenocarcinoma of the proximal stomach has become increasingly common.¹

The age-adjusted incidence rate in the United States for the years 2000 to 2003 was 8.1 per 100,000. Incidence among men is twice as high as among women.² Mortality rates for gastric cancer have been declining worldwide in recent decades, most prominently in the United States.³⁻⁴ The death rate from gastric cancer for black males was 2.3-fold higher than for whites for the years 1997 to 2001.⁵ The annual number of new cases seems to be steady in recent years; in 2008, it is estimated 21, 500 Americans will be diagnosed with gastric cancer and 10, 880 will die of it.⁶ Worldwide, gastric cancer is the fourth most common cancer.⁷ Most cancers in the United States are advanced at diagnosis, which is reflected in an overall 5-year survival of 2.3% from 1996 to 2002.²

On the contrary, in Saudi Arabia, gastric cancer accounts for 3% of all newly-diagnosed cancer on the year 200, it ranked 10th among male and 14th among female with male to female ratio of 2:1. The overall ASR was 3.1/100,000. The median age is 65 years and stage is quite advanced regional in around 50% of area.⁸

Highest incidence in Japan, South America and Eastern Europe adjusted worldwide is 15.62 per 100,000. Adjusted rate in Latin America is variable in frequent before age 40, twice as frequent leading cause of death from cancer worldwide in men than women.

In Costa Rica, the incidence rate for men is 51.5 and 28.7 for women. In USA, the incidence has been decreasing and unexplained by the cancer has migrated proximally. Gastro-esophageal lesions are more frequent than antral lesions.

Risk Factors 9-14

Risk factors can be summarized as follows:

1. Chronic Atrophy

Chronic atrophic gastritis is thought to be the initial step in the development of most gastric cancer, chronic atrophic gastritis has been shown to appear in patients with:

- Tobacco use
- H. Pylori infection
- Diets with high level of nitrites, nitrates, salt and smoked food
- Previous gastric surgery
- Pernicious anemia
- Alcohol

Smoking increases the risk of gastric cancer by 50% to 60%. It has been estimated that smoking tobacco is responsible for 11% of all stomach cancers worldwide. Tobacco use decreases the level of carotenoids and vitamin C which act as protective agents against this disease. In addition, tobacco use associated with H. pylori infection which in turn leads to atrophic gastritis. Smoking cessation returns the risk to that of the general population after 20 years.

H. pylori is associated with 2-6-fold increase in the risk of developing gastric cancer. In 1994, the World Health Organization designated H. pylori a group of carcinogen.

Consumption of fruit, vegetables and fiber has shown in the majority of controlled studies published, a protective effect against gastric cancer. This is probably due to vitamin C or carotenes.

Nitrites and nitrates found in salted, smoked and dried food lead to atrophic gastritis which in turn leads to gastric cancer.

2. Genetic Factors

- Small percentage of gastric cancers are hereditary known as hereditary diffuse gastric cancer (HDGC)
- Blood type A
- Hereditary non-polyposis colorectal cancer
- E-cadherin gene mutations
- A first degree relative with gastric cancer
- Presently, they are not subject to preventive measures except for prophylactic gastrectomy in e-cadherin mutations

Symptoms

1. Early

- Indigestion or burning sensation (heart burn)
- Loss of appetite, especially for meat

2. Late

- Abdominal pain or discomfort in the upper abdomen
- Nausea and vomiting
- Diarrhea or constipation
- Bloating of the stomach after meals
- Weight loss
- Weakness and fatigue
- Bleeding (vomiting of blood or having blood in stool which can lead to anemia)

Diagnosis

The most important is detailed medical history and physical examination and then to have laboratory work including full blood count since they might develop anemia secondary to blood loss

- Upper GI endoscoped exam is the diagnostic method of choice. Abnormal tissue should be biopsied and sent to a pathologist.

Histology

There are several histological types of gastric cancer of which adenocarcinoma is by far the, the most frequent. Sarcoma and lymphoma can also incur. Two types of adenocarcinoma are recognized:

1. Intestinal

Resembles colon cancer, can be polypoid or ulcerated, occurs usually in the distal stomach and has prolonged precancerous phase.

2. Diffuse

Extends widely with no distinct margins and the glandular structure is rarely present. Patient tends to be younger and have a worse prognosis.

The disease is considered early when confined to the mucosa and sub-mucosa, irrespective of lymph node status, otherwise, it is advanced.

Staging

- CT chest, abdomen and pelvis
- Tumor marker CEA, CA

Treatment

It depends on the location, size and extent of disease; main therapy – surgery.

Surgery

Sub-total or partial gastrectomy or total gastrectomy of the stomach as well as some tissue around the stomach with basic goal of removing all cancer and a margin of normal tissue. Depending on the extent of invasion and the location of the tumor surgery may also include removal of part of the esophagus, spleen ovaries or intestine.

Chemotherapy

Gastric cancer is not sensitive to chemotherapy and primarily it serves to palliatively reduce the size of the tumor and increase survival time. Some of the drugs are 5-FU, BCNU, doxorubicin, cisplatin, taxotere-mitomycin. CT can be given before the surgery neoadjuvant, post-surgery adjuvant to destroy the remaining cancer cells.

Radiotherapy

Gastric cancer has low sensitivity to radiosensitivity. When used, it is often combined with surgery and chemotherapy or may be used to relieve pain or blockage by shrinking the tumor in case of terminal disease.¹⁵⁻¹⁶

Prevention and Early Detection

Gastric cancer is a very common disease that carries a high mortality. The diagnosis in early phases when better results should be expected is difficult due to the unspecificity of early symptoms.

Recognition of risk factors and application of strategies directed towards their elimination are of paramount importance.

Secondary prevention is the “early” detection of cancer through screening. This is done in populations where the disease is a major health problem (e.g. Japan and Costa Rica). In Japan, gas-contrast stomach fluorography is done in the mass population. Those considered abnormal (about 13%) will undergo for the studies endoscopy and biopsy.

The best primary prevention strategies are:

1. Smoking avoidance or cessation
2. Diet rich in fruit, vegetable and fiber

3. Avoidance of salted, smoked and poorly preserved food
4. Eradication of *H. pylori*
5. Mass screening is a possible strategy in high-risk populations but is not uniformly accepted.

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