Research paper on gastric cancer

Technology, Development

Definition and history of stomach cancer

Stomach cancer also called gastric cancer is a disease that is characterized by the uninhibited proliferation of abnormal cells in the tissues lining the stomach. These cells are abnormal in the sense that genetic mutations render them autonomous hence they are not under the control of growth regulating signals. Gastric cancer used to be the second most prevalent cancer but sharp declines have been seen in its rate in the developed countries especially over the second half of the last century, for instance it is the fourteenth most common malignancy in the United States. However, the same cannot be said for the developing countries where it still has a high prevalence. Nonetheless, the disease is still ranked second in causing cancer-related deaths primarily because it is very difficult to cure since the majority of patients present with advanced disease (Cabebe and Harris). The decrease in the incidence of gastric cancer in developed countries has been attributed in part to the rise in the use of refrigeration which has led to an increase in the consumption of fresh fruits and vegetables, decrease in the of food by carcinogenic compounds as a result of decay process as well as the decrease in salt intake since it is no longer used to preserve foods. Increased screening and the availability of treatment for Helicobacter pylori is also thought to contribute to the decline in gastric cancer in developed countries (Brunner, Smeltzer and Bare).

Types of gastric cancer

Histological classification reveals five main types of gastric cancer, adenocarcinomas, lymphomas, leiomyosarcomas, gastrointestinal stomal

tumors and carcinoid tumors. Adenocarcinoma which develop in the glandular tissues is the most prevalent type of stomach cancer accounting for about 90 to 95% of all reported cases. Lymphoma, a rare type of gastric cancer develops in the stomach wall and specifically in the immune system tissues. Leiomyosarcomas on the other hand develop in the muscle layer of the stomach. The fourth type of gastric cancers, gastrointestinal stomal tumors (GIST) develop in the tissues that support the digestive organs. In the stomach wall, it affects tissues that contain the intestinal cells of cajal. It is worth noting that although GIST, a rare type of cancer can occur anywhere along the gastrointestinal tract; its most common site is the stomach. Carcinoid tumors are the final type of gastric cancer, they stem from the hormone producing tissues of the stomach. They are not very common and they usually do not metastasize to other tissues (Lanhard, Osteen and Gansler).

Symptoms of gastric cancer

About 25% of patients with gastric cancer present with localized disease, 31% with regional disease and 32% with distant metastatic disease. Gastric cancer has no definitive symptoms during its early stages since they tend to resemble those of benign ulcers such as pain relieved by antacids. Symptoms of advanced disease include dyspepsia, dysphagia, nausea or vomiting, aneroxia, weight loss, melena stool, postprandial fullness and hematemesis. Signs of late complications include obstruction of the gastroesophageal junction, small bowel or the gastric outlet, bleeding from esophageal varices in the stomach, pathologic pleural and peritoneal effusions, intrahepatic and extrahepatic jaundice. Physical symptoms such as

a palpable enlarged stomach, hepatomegaly, enlarged lymph nodes, weight loss and pallor from anemia are signs of very advanced disease. Paraneoplastic syndromes such as acanthosis nigricans, dermatomyositis and circinate erythemas may also occur. The latter signs are considered poor prognostic features (Cabebe and Harris; Brunner, Smeltzer and Bare).

Diagnosis of gastric cancer

Esophagogastroduodenoscopy for biopsy and cytologic washings is the mainstay in the diagnosis of gastric cancer with a diagnostic accuracy of 95%. Barium x-ray swallows and double-contrast upper GI series can also be performed to detect the extent of the disease. They are particularly useful in cases whereby the tumor has obstructed the proximal parts making the passage of the endoscope impossible. Chest x-rays, CT scans or MRIs of the bones, liver, abdomen and pelvic regions are invaluable in evaluating the extent of the disease. Laboratory studies such as carcinoembryonic antigen, cancer antigen and complete blood counts are also useful in the diagnostic process (Cabebe and Harris; Brunner, Smeltzer and Bare).

Treatment for stomach cancer

Treatment modalities employed in the management of stomach cancer include surgery, chemotherapy and radiotherapy (Xhang et al.). As far as surgical interventions are concerned, total gastrectomy is the most commonly performed procedure. However, esophagogastrectomy is done for tumors involving the cardia and gastroesophageal junction whilst subtototal gastrectomy is performed for tumors that develop in the distal stomach. The extent of lymph node dissection required remains controversial. The National

Comprehensive Cancer Network however recommends D2 over D1 lymph node dissections. In particular, it is in favor of a spleen and pancreas preserving lymphadenectomy because it is thought to confer a survival benefit, provide information useful to the staging of the disease and prevent excess morbidity. D2 dissections entail the removal of lymph nodes from the hepatic, celiac, left gastric, splenic arteries and splenic hilum regions. Perigastric lymph nodes are removed during D1 dissections. If the tumor has metastasized beyond the area that can be removed surgically or to vital organs like the liver, then palliative surgery is indicated since it provides relief to the discomfort caused by dysphagia or obstruction through a resection of the tumor. Chemotherapy is indicated to achieve more control over the disease or for palliation purposes. Radiation therapy is also used for palliation. Monitoring of cancer antigen and carcinoembroyonic antigen levels are useful parameters that should are monitored in order to determine the effectiveness of both chemo and radiotherapy (Cabebe and Harris).

Prognosis of gastric cancer

The five year survival rate following curative surgical resection varies depending on the stage of the disease. Patients with stage I gastric cancers have a 60-90% 5-year survival rate; it is 30-50% for stage II patients and 10-20% for those with stage III disease. The 5-year survival rate has been found to be similar for patients who have both D1 and D2 gastrectomies. D1 gastrectomy is however associated with much lower rates of postoperative complications, less anastomotic leaks, decreased reoperation rates as well as the length of inpatient stay and a much lower 30-day mortality rate (Cabebe and Harris).

Conclusion

In conclusion therefore, the incidence of gastric cancer has been on the decline in developed countries while remaining constantly high in the developing world. The five major types of the disease are as follows adenocarcinomas which are by far the most common, lymphomas, leiomyosarcomas, gastrointestinal stomal tumors and carcinoid tumors. The disease is asymptomatic during its early stages. Signs and symptoms of advanced disease include dysphagia, postprandial fullness, aneroxia amongst others. Physical symptoms such as enlarged stomach are indicative of very late disease. Endoscopy is the mainstay in the diagnosis of stomach cancer. Imaging modalities like x-ray and CT-scan on the other hand are important in determining the extent of the disease. Surgery, chemotherapy and radiotherapy are the main management options employed in the treatment of the disease. The 5-year survival rate depends on the stage of the disease.

Works cited

Brunner, L. S., Suzanne C. Smeltzer, and Brenda G. Bare. Brunner and Suddarth's Textbook of

Medical Surgical Nursing. 10th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009.

Print.

Cabebe, Elwyn, and Jule E. Harris. Gastric Cancer. Medscape, 13 June 2011. Web. 5 Oct. 2011.

Lenhard, Raymond, Robert T. Osteen, and Ted S. Gansler. Clinical Oncology. Atlanta:

American Cancer Society Inc., 2001. Print.

Zhang, Xialong et al. " Clinical Management of Gastric Cancer: Results of a

Multicentre

Survey". BMC Cancer 11 (2011): 369. Web. 5 Oct. 2011.