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Introduction

Gastric cancer is a common tumor. Recent advances in the diagnosis and treatment had improved the results of treatment. Locally advanced gastric cancers or gastric cancer that recurred after resection are difficult to treat. Gastric cancer recurrence always present with peritoneal carcinomatosis, liver, lung or bone metastases. All forms of gastric cancer recurrence carries very poor prognosis (1). Brain metastases occur very rare with gastric cancer. Its frequency was reported to be less than 1% (2, 3). It always occur in advanced cases and usually accompanied with other organs metastases. Brain metastases after curative radical total gastrectomy is very rare especially if it arises after several years from the operation. Brain metastases is always considered the end stage of any cancer and palliative treatment is usually the recommended treatment(3).

Case Report

A 58–year–old male patient was diagnosed by endoscopy and biopsy to have adenocarcinoma of gastric cardia which extends to the gastroesophageal junction. After the diagnosis he received chemotherapy. After completion of the chemotherapy regimen the patient underwent total radical gastrectomy plus D2 lymphadenectomy with splenectomy, greater omentectomy, cholecystectomy and appendectomy as a part of cytoreductive surgery (CRS) combined with intraoperative radiotherapy (IORT) to the celiac artery, right hepatic artery and porta hepatis lymph nodes and hyperthermic intraperitoneal chemotherapy (HIPEC) using cisplatin 100 mg/m² and Mitomycin C 30 mg/m². This treatment regimen is the regimen adopted in the treatment of all gastric cancer patients in our center. The operation went smooth with minimal blood loss. The patient extubated immediately after the operation. He spend one night in the ICU then went to...
the ward in a good condition. On postoperative day 5 the contrast meal revealed no evidence of anastomotic leak and the nasogastric tube (NGT) was removed and the patient started clear liquid diet which was advanced as tolerated to regular diet. All the drains were clear and were removed after postoperative day 8 and the patient was discharged home. The pathology showed no residual tumor with chemotherapy induced fibrosis. The patient did not receive any postoperative chemotherapy. The patient was on regular follow up in both the surgical oncology and medical oncology outpatient clinics with complete laboratory tests including tumor markers and CT scan for chest, abdomen and pelvis. This follow up was every 3 months during the first 2 years then every 6 months after that. After three years of follow up the patient started to complain of headache, nausea, vomiting and seizures. Urgent CT brain was done which showed isolated brain lesion in the right medial temporal area near the temporal incisura. The patient was referred to neurosurgery clinic where the patient was followed up by repeated CT scan brain which showed an increase in the tumor size (Figure 1). Magnetic resonance imaging (MRI) showed right medial temporal lesion enhancing with flow void resonant, large in size (Figure 2). Right-sided temporal craniotomy was done and the lesion was resected completely. The patient tolerated the procedure well. CT scan brain postoperatively was unremarkable with small hematoma at the surgical site. The patient was discharged home in a good stable condition. He has follow up in surgical oncology, medical oncology and neurosurgery.

Figure 1. CT transverse view of the brain shows tumor in the right temporal lobe

Figure 2. MRI transverse view of the brain shows right temporal lobe tumor

Figure 3. Primary gastroesophageal junction adenocarcinoma

Figure 4. H&E 20X showing metastatic adenocarcinoma (neoplastic glands) within brain parenchyma
Figure 5. Double immunostaining cytokeratin 7 (CK7) red (positive in adenocarcinoma) and glial fibrillary acidic protein (GFAP) brown (positive in background glial parenchyma with reactive gliosis in the left lower field).

clinics. The pathology report denoted that the right temporal lobe lesion showed metastatic adenocarcinoma of gastric origin (Figure 3, 4, and 5). Cytokeratin (CK) 20 and thyroid transcription factor 1 (TTF1) were negative.

Discussion

Total radical gastrectomy plus lymphadenectomy procedure is an effective treatment of early gastric cancer. Recurrence rate after this procedure is very rare. Recurrences usually occur in the peritoneum, bone, and liver. Brain metastases form gastric cancer is very rare. The incidence was reported to be 0.46% (4) in one study and 0.7% in another study (2). The mechanism of brain metastases in not clear but mostly it is hematogenous and indicates that the disease from the start is not local but systemic. This can denote that there are cancer cells from the initial stage of cancer circulating in the patient peripheral blood. These cells can predict recurrence or poor prognosis even if detected early in the course of the disease (5-7). These circulating gastric cancer cells were present after curative gastric surgery and due to decrease immunity of poor nutritional status, the tumor cells start to flourish and promote disease recurrence and metastases (5).

The treatment of brain metastases includes surgery, radiotherapy, chemotherapy or combination of all these modalities (5). Stereotactic radiosurgery as gamma knife or cyber knife became the main modality for treatment of brain metastases (8). Always the prognosis is poor as brain metastases usually associated with other organ metastases (2-4). Most of these patients were managed by palliative care. Treatment may be directed to improve the neurological manifestations in cases of controlling other organs metastases (1). In the current case the brain metastases was localized to the right temporal lobe and the patient was in a good general condition therefore the surgical excision was the selected mode of therapy. All the neurological manifestations were improved after surgery.

The time interval from the gastrectomy until the detection of brain metastases varied between 9–9.6 months (2, 4). The main manifestations for brain metastases were mainly generalized weakness, headache, nausea, vomiting and gait abnormalities (2). After the detection of brain metastases, the mean survival was reported to be around 2 months (1). When the patient received whole brain radiation and corticosteroids the mean survival time was 9 weeks from the diagnosis and after surgical resection in resectable tumors in addition to whole brain radiation the mean survival was increased to 54 weeks (5). In the present case the patient survived three years post curative gastric resection and after detection of localized right temporal lobe brain metastases, the patient withstood the operation well. All the neurological symptoms improved and the patient is doing well 3 months postoperative and he is still on strict follow up schedule.

References