Long-term Survival of Advanced Small Cell Carcinoma of the Esophagus after Resection: A Case Report

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Abstract. *Background: Small cell carcinoma of the esophagus is a rare and rapidly lethal disease. The mean survival for patients with advanced disease is 5.3 months, and only 10% live longer than one year. Case Report: We report a very unusual case in which a patient diagnosed with advanced disease is still alive 96 months after being treated by surgery-alone. This patient is a 61-year-old woman who was referred to our hospital with the chief complaints of dysphagia and vomiting. Endoscopy revealed a huge type-3 tumor on the abdominal esophagus invading the gastric cardia. Histopathology established the diagnosis of small cell carcinoma; computed tomography did not detect metastatic cells in the lymph nodes or other distant sites. We therefore performed radical resection, involving a lower esophagectomy, total gastrectomy, and splenectomy with regional lymph node dissection. The initial diagnosis of small cell carcinoma was confirmed, and classified as type-3 (13.8×7.5 cm), T3N1M0, stage III with invasion to the adventitia (T3) and lymph node metastases along the lesser curvature of the stomach (N1). Postoperative adjuvant chemotherapy using tegafur, gimestat, and otastat was discontinued due to poor tolerance, and the patient developed severe anorexia. The patient remains alive at the time of writing eight years and four months post-surgery, with no evidence of tumor. Conclusion: To our knowledge, this is the longest survival reported for a case of advanced small cell carcinoma of the esophagus treated by surgery-alone.*

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We report an unusual case of long-term survival of a patient with advanced small cell cancer of the esophagus treated only by surgery.

Small cell carcinoma of the esophagus (SCEC) was first reported by McKeown 60 years ago (1), and the description of her findings remains striking even today. She described "two examples of extrapulmonary oat-cell tumors" from among 9,000 post-mortem examinations; her histological findings were "not easily confused with any other type of growth," and the tumor involved the lungs. Histologically the tumor is identical to its pulmonary counterpart, as exemplified by a recent case by Nevárez *et al*. (2) and summarized by others (3-5), as follows: "tumors contain small, round, ovoid or spindle-shaped cells with scanty cytoplasm, finely granular nuclear chromatin, and absence or not easily seen nucleoli." The neuroendocrine origin of SCEC is indicated by the occasional presence of intracytoplasmic argyrophilic and neurosecretory granules in the tumor cells, as revealed by Grimelius staining and electron microscopy, respectively (6-10), albeit that the presence of such neuroendocrine properties is not considered essential to diagnosis (11, 12). Moreover, tumor tissues in cases of SCEC frequently include associated components of adenocarcinoma or squamous cell carcinoma (6-10). For example, in a retrospective study by Casas *et al*. (8) 137 (68.8%) out of 199 patients with SCEC had pure small cell carcinoma (SCC), 62 (31.2%) had mixed esophageal SCC, and 40 had squamous cell differentiation (20.1%).

SCEC generally follows a rapidly fatal course, whether it is treated by surgical resection, chemotherapy, or radiotherapy, whether alone or in combination. SCEC accounts for 0.05-3.1% of all esophageal cancers worldwide (5, 8, 13-21) and as much as 7.6-15% in China and Japan (13, 18). SCEC can be classified as limited disease (LD) or extensive (advanced) disease (ED), based on the United States Veterans Administration Lung Study Group (VALG), as modified by the International Association of Lung Cancer (IASLC) (22). In LD, the tumor is confined to the esophagus

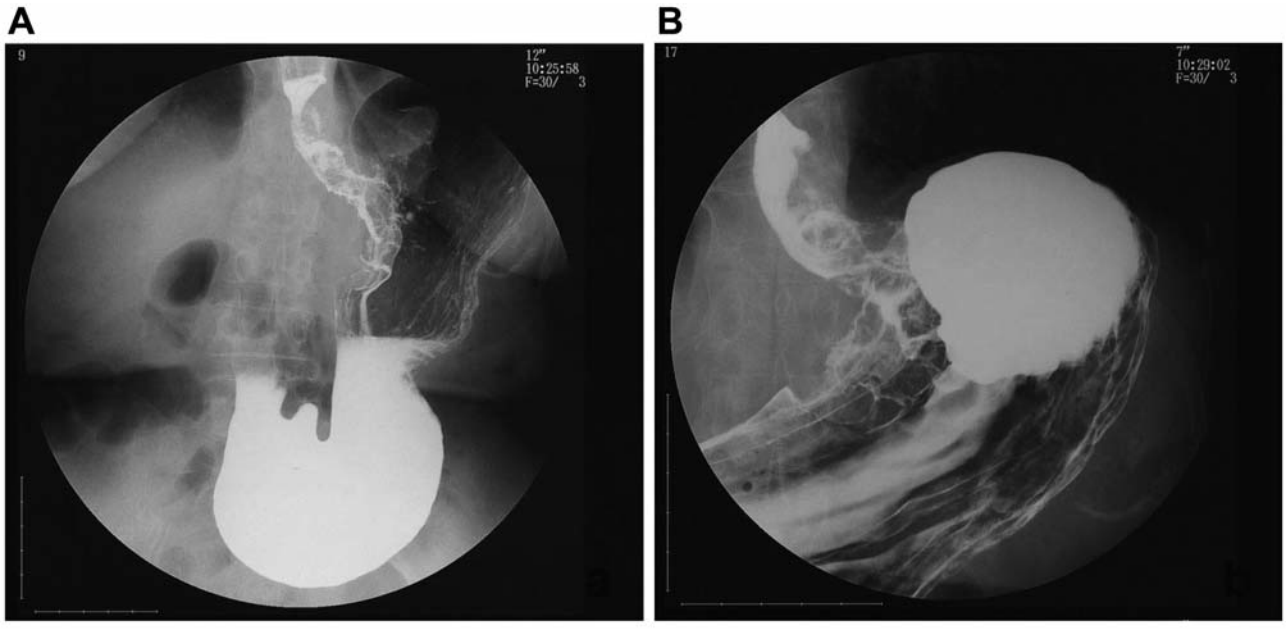

Figure 1. *A: Upper gastrointestinal series demonstrating a type-3 esophageal small cell carcinoma. B: Severe irregular stenosis of the lower esophagus 7 cm in length with invasion of the gastric cardia.*

and the adjacent organs, in the presence or absence of spread to regional lymph nodes. In ED, the tumor extends beyond these regions. Mean survival times for LD and ED in recent studies (15-17, 19, 20) are reflected by the findings of Lv, *et al*. (16) in their study of 126 patients (85 LD, 41 ED), the overall median survival time (MST) was 12.5 months, and 5-year overall survival rates were 52.2%, 15.9%, and 12.2% at one, two, and three years, respectively. For LD, these values were 14.0 months, 62.1%, 30.8%, and 22.4%; and for ED were only 7.0 months, 29.3%, 13.6%, and 2.7%, respectively. Although long-term survival of patients with LD has been reported (6, 15, 17-21, 23-29), we were unaware of reported long-term survival in patients with ED, despite the recent application of multimodality therapy.

Here we describe the clinical features of a case in which a patient with ED SCEC remains alive at writing, eight years following initial surgery.

Case Report

A 61-year-old woman visited our hospital in May 2002 complaining of dysphagia of five months' duration. The results of her physical examination were normal and routine laboratory data were all within normal limits, including assays for tumor markers. Although her chest radiographs were normal, a barium swallow study revealed a large tumor of 13-cm length involving the lower half of the esophagus (Figure 1A-B), and was confirmed by esophagogastroendoscopy (Figure 2). The histological features of the biopsy obtained from the tumor by endoscopy were consistent with a diagnosis of SCEC. Computed tomography (CT) revealed abnormal thickening of the middle to lower esophageal wall, but no metastatic disease was evident in the mediastinal lymph nodes or liver (Figure 3). We had intended to administer *cis*-diamminedichloroplatinum (CDDP) and 5-fluorouracil (5-FU) before the operation, but owing to severe dysphagia caused by this large esophageal tumor, the patient was elected to undergo surgery first. Therefore, on June 21, 2002, the patient underwent a subtotal thoracic esophagectomy, total gastrectomy, distal pancreatectomy with splenectomy, and systematic dissection of cervical, mediastinal, and abdominal lymph nodes. The postoperative course was uneventful except for the formation of a mild pancreatic fistula that was resolved by conservative therapy, and the patient was discharged on July 4, 2002.

Pathology of the resected specimen revealed a huge ulceration in the middle to lower esophagus with gross evidence of a gastric tumor. Microscopic examination revealed SCC with a depth of T3 (Figures 4A, B). Four out of the total 52 dissected lymph nodes were positive for metastatic disease (N1). Postoperative adjuvant chemotherapy with tegafur, gimestat, and otastat (TS-1) was poorly tolerated, with the development of severe anorexia, and was subsequently discontinued under informed consent. The patient remains alive in good condition at the time of writing, with no evidence of disease after 100 months (Figure 5).

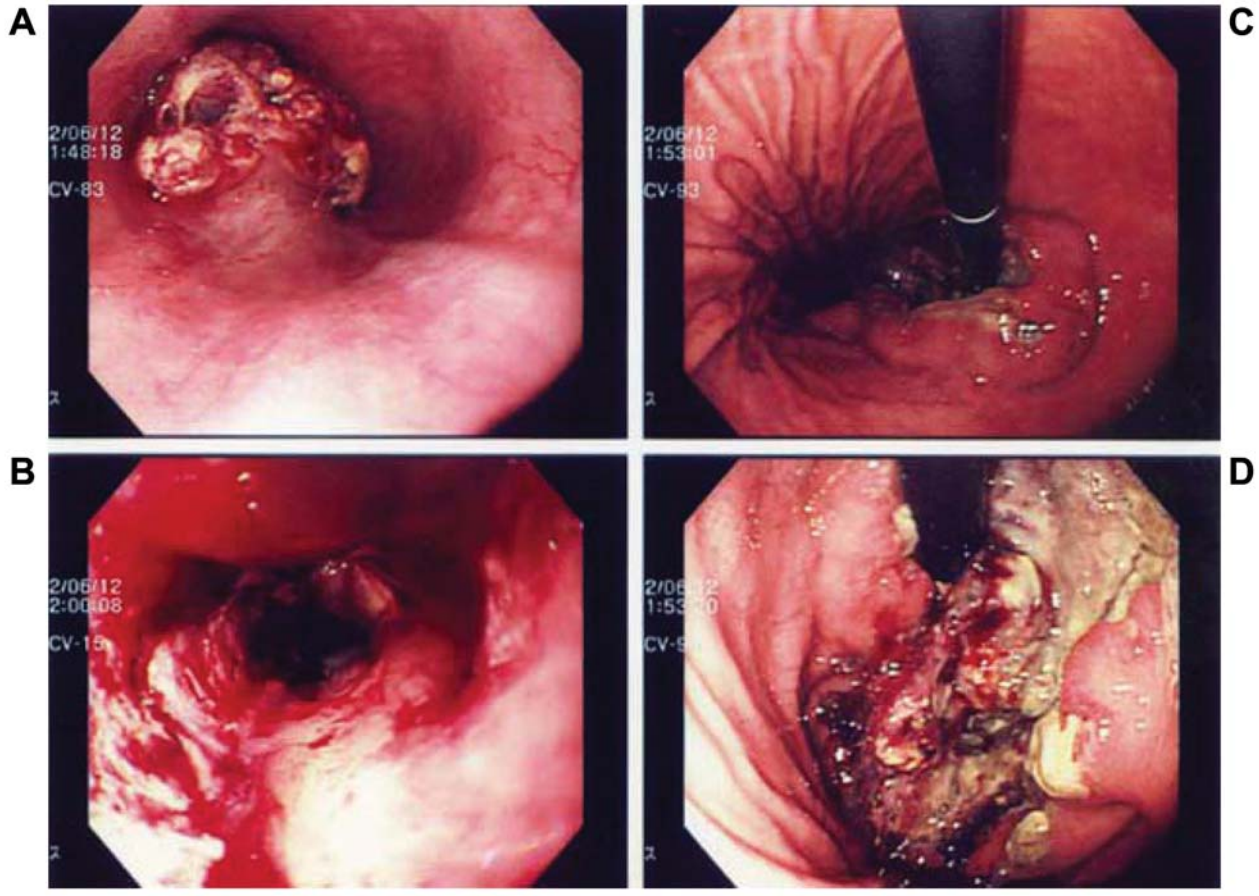

Figure 2. *Upper gastrointestinal endoscopy revealing stenosis caused by a huge, irregular type-3 tumor with deep central ulceration and significant bleeding.*

Discussion

In the present article, we report the unusually long-term survival of a patient with SCEC. Unlike other long-term survivors of this rare but lethal disease, our patient was treated only with surgery. At the time of this writing, eight years have elapsed since surgery, and no evidence of recurrence has been found.

This outcome is fortuitous for two reasons. Firstly, consistent with the current opinion on the most appropriate treatment for advanced SCEC (11, 13, 23-25, 30-34) our intention was to start her treatment with chemotherapy, but this was declined by the patient. We then performed extensive surgery that involved a subtotal thoracic esophagectomy, total gastrectomy, distal pancreatectomy with splenectomy, and systematic dissection of cervical, mediastinal, and abdominal lymph nodes. Secondly, administered adjuvant chemotherapy after surgery was poorly tolerated by the patient. Chemotherapy was therefore discontinued. To our knowledge, this patient is the first to survive advanced-stage SCEC for an extended period after surgery without any other type of treatment.

Treatment of SCEC with surgery, particularly cases of ED, continues to be controversial, and clarification is hampered by the small number of cases, around 300 since McKeown's report in 1952 (7, 15). In their review, McFadden *et al*. (11) described 129 cases available in the world literature and stated: "The fact that three-fourths of affected patients had metastatic disease at the time of diagnosis leads us to recommend surgical intervention plus systemic chemotherapy in these patients." The consensus opinion has since shifted away from surgery, as detailed in an editorial by Jatoi and Miller (35) who reviewed the study of Lv *et al*. (16) and provide their own review of the literature. They cautioned that a lack of a surgical survival advantage is compelling but does not provide definitive evidence of its non-existence, and that the patients described by Lv *et al*. were not staged using the most recent techniques, thus raising the possibility that "some surgical patients may have had unrecognized metastatic disease; and, in this context, surgery may not have proven itself to be a statistically significant prognostic factor." Nevertheless, they conclude that the findings from Lv *et al*. begin to raise

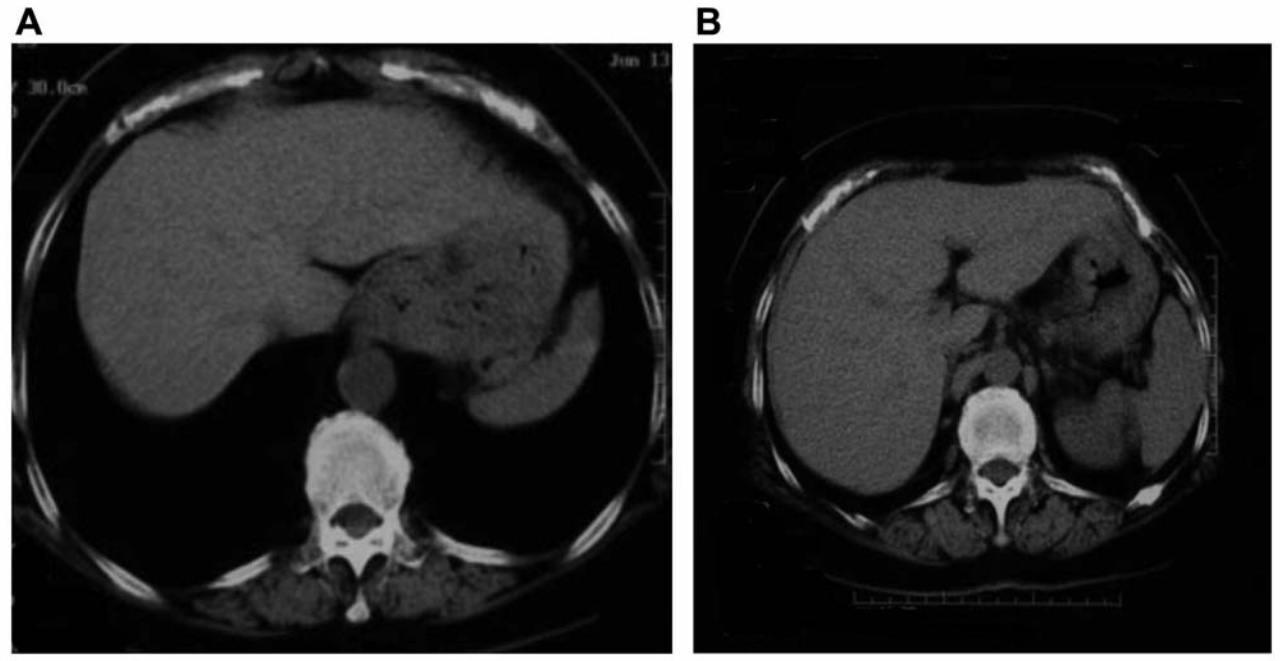

Figure 3. *Abdominal computed tomographic scan shows the tumor of the lower esophagus (A) with no evidence of direct invasion to surrounding organs or metastasis to lymph nodes or distant sites (B).*

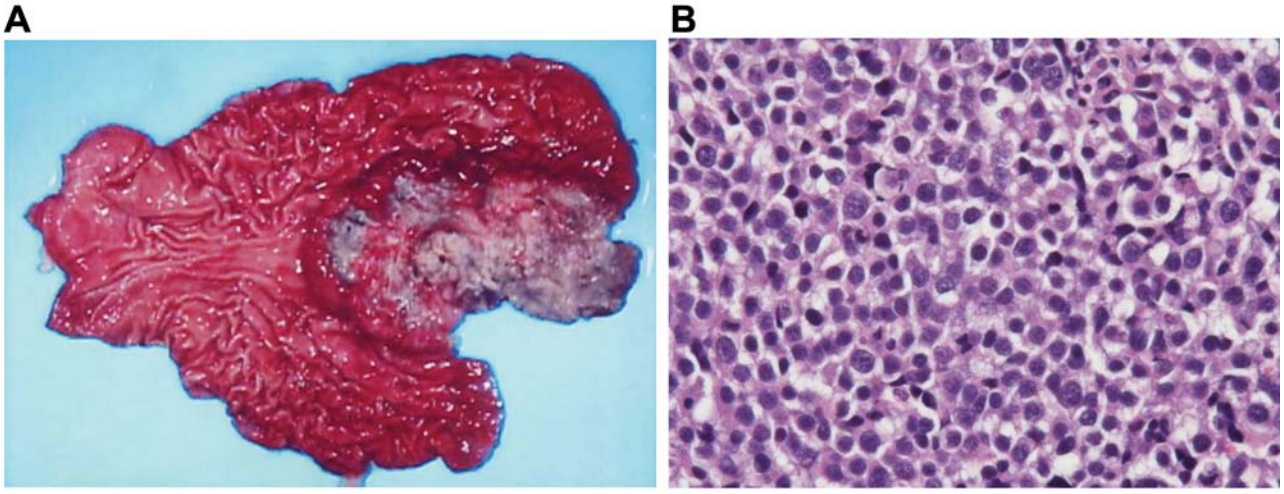

Figure 4. *Lower esophagectomy and total gastrectomy was performed with regional lymph node dissection. The pathological diagnosis of the resected specimen was small cell carcinoma, T3N1M0, stage III. A: Macroscopic view of the resected specimen. B: Hematoxylin and eosin staining of specimen showing small hyperchromatic cells with scanty cytoplasm that formed a pseudo-rosette structure. Magnification, ×200.*

doubts about the necessity of surgery as an essential component of treatment.

With regard to chemotherapy, Vos *et al*. (20) investigated 24 patients with SCEC, 13 of whom had ED, and indicated that chemotherapy represented the basis of treatment of SCEC in all stages. Although their data did not allow them to assess the role of surgery, they concluded from both their data and a review of the literature, that surgery should play an important role in multimodal treatment of LD.

Most recently, Kubota *et al*. (7) stated that radiotherapy- or surgery (13, 23, 36)- alone have generally been disappointing and long-term survival is only rarely reported. Regarding treatment of LD and ED, they conclude that combined modality therapy using platinum-based

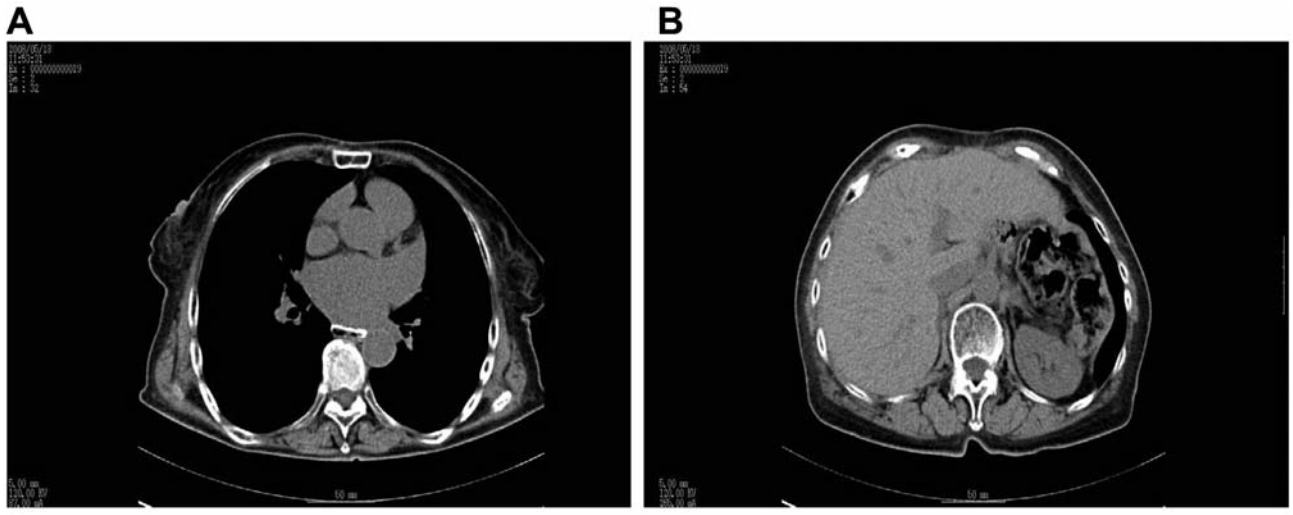

Figure 5. *The most recent thoracoabdominal computed tomographic scan for follow-up examination showed no evidence of recurrence in the thoracic (A) and abdominal cavities (B).*

combination chemotherapy and radiotherapy and surgery, either singly or in combination, appears effective for locoregional disease, and that patients with extensive disease should be treated with the same chemotherapy

A conclusive evaluation of the role of surgery awaits controlled, randomized prospective trials, but prospects for this are hampered by the small number of cases (20, 35). Considering this most recent perspective together with the results of our present study, we consider that oncologists should not rule out surgical intervention in cases of ED, whether alone or in combination with other modalities.

Conflicts of Interest

None.

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