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Survival outcomes of geriatric patients with clinically resectable gastric cancer: to operate or not

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ABSTRACT

Background: Approximately, 50% of all gastric cancer patients are aged >70 y. Although curative surgery is the treatment of choice, many geriatric patients die of surgical complications. Therefore, we aimed to evaluate the impact of radical surgery on the survival outcome of geriatric patients with resectable gastric cancers.

Methods: About 488 patients diagnosed with resectable gastric cancers, aged ≥70 y, between January 2007 and December 2012 at Chang Gung Memorial Hospital (CGMH) Linkou branch were included in this study. Using univariate and multivariate analyses, possible prognostic variables for survival outcome were assessed in 445 patients (91.2%) treated with radical surgery (operation [OP] group) and 43 (8.8%) receiving conservative treatment (non-OP group). The impact of radical surgery on survival outcomes was evaluated according to CGMH scores.

Results: On multivariate analysis, surgical resection with subtotal gastrectomy and CGMH score were the only independent prognostic factors for both overall and cancer-specific survival. The median survival time was 43 mo for the entire cohort. The OP group had significantly better survival outcome than the non-OP group (median survival, 50.3 *versus* 16.2 mo, $P < 0.001$). The median survival times for patients with CGMH scores ≤20 were 64.1 and 20.0 mo ($P < 0.002$) and those for patients with CGMH scores >20 were 13.8 and 10.4 mo ($P = 0.18$) in the OP and non-OP groups, respectively.

Conclusions: Surgical resection and CGMH score are independent prognostic factors for overall and cancer-specific survival; the CGMH score might be a prognostic indicator of surgical outcome in geriatric patients with resectable gastric cancers.

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Introduction

Gastric cancer is the fifth most common cancer worldwide, accounting for 6.8% of the new cancer cases and 8.8% of total cancer-related deaths in 2012.[1] Approximately, 24,590 patients are diagnosed annually in the United States with gastric cancer, 10,720 of which have poor prognosis.[2] Because of its high incidence and mortality rates across the world, gastric cancer is of particular importance in Eastern Asia.[3] Gastric cancer is the eighth most common cancer in Taiwan, with the incidence of 10.7 per 100,000 population. In 2013, there were 3768 new cases of gastric cancers in Taiwan, accounting for 3.8% of all new cases, and 2241 deaths, accounting for 5.0% of cancer-related deaths.[4] The median age at diagnosis of gastric cancer is 70 y in Taiwan and 69 y in the United States. Therefore, generally speaking, half of the patients who undergo gastric cancer treatment are aged more than 70 y.

Complete tumor resection represents the best treatment modality for long-term survival in localized gastric cancer.[5] However, a substantial portion of patients died because of surgical complications. In a previous study that examined the mortality rates for gastrectomy in the United States between 1982 and 1987, the average perioperative mortality rate was 7.2%.[6] In a more recent study conducted in Texas between 1999 and 2001, the hospital mortality ranged from 1.1%-6.2% in independent centers performing gastrectomy for primary gastric cancer.[7] Furthermore, performing extended lymphadenectomy of adjacent lymph nodes in addition to gastrectomy improved survival compared to without extended lymphadenectomy.[8,9] Extended (D2) lymphadenectomy was associated with elevated postoperative mortality, ranging from 10%-13%, compared to D1 lymphadenectomy (4%-6%).[10,11] Increased postoperative mortality eventually eliminated the survival difference between the D2 and D1 lymphadenectomy groups, despite a significantly lower risk of recurrence in patients who underwent D2 lymphadenectomy.[10,11]

The increase in life expectancy of the general population resulted in an increase in the number of elderly patients with localized gastric cancers referred for surgical management. Old age is an apparent negative predictor of outcome after cancer surgery,[12] especially for medically unfit or frail patients.[13] Overtreatment may result in high postoperative mortality due to disregard of the aging patients' frailty; on the other hand, undertreatment resulting from overconcern regarding their ability to tolerate treatment may compromise the survival outcome. Therefore, the appropriately selection of geriatric cancer patients for radical surgery has to be addressed urgently. We reported that cancer patients of 70 y or older had a 3.3-fold higher postoperative morality risk than those younger than 70 y.[13] The present study aimed to evaluate the impact of radical surgery on survival outcome in geriatric patients with clinically resectable gastric cancer.

Materials and methods

Patient selection

A retrospective study was conducted on patients with resectable gastric cancers between January 2007 and December 2012 at the Chang Gung Memorial Hospital (CGMH) Linkou Medical Center. "Resectable disease" was defined as either no evidence of distant metastases or locally advanced disease that curative resection was achievable based on preoperative image studies. Patients aged 70 y and older with gastric cancers confirmed by endoscopic pathological examination were included. Patients with evidence of distant metastases, locally unresectable disease, inconclusive diagnosis of gastric malignancy after repetitive endoscopic biopsy, or loss to follow-up after the diagnosis of gastric cancer were excluded. In addition, patients who received palliative resection, bypass surgery, or had other cancers needing active treatment were also excluded. In total, 488 patients were enrolled in this study. Patients were categorized into operation (OP) or non-OP groups based on whether they received radical surgery or conservative treatment for the gastric cancer, respectively. Patient characteristics were analyzed to identify the variables associated with survival outcome. The study was approved by the institutional review board, in compliance with the Helsinki Declaration (1996).

Data collection

The prospectively collected administrative and clinical data were patient demographics; including age, sex, Eastern Cooperative Oncology Group performance status (ECOG scale); a history of previous cancer; preexisting comorbidities; histological grade of differentiation, Lauren classification,[14] carcinoembryonic antigen (CEA) status; and clinical tumor staging. Data were recorded by the primary care clinicians using an electronic patient record form at the time of cancer diagnosis. The electronic patient record form was introduced in 2006 by the institutional cancer center with the intention to improve the quality of cancer patient care after the implementation of Cancer Prevention and Treatment Act in Taiwan. The clinical data were collected and maintained by the individual multidisciplinary cancer care teams at the cancer center. Clinical tumor staging was performed by preoperatively image studies according to the seventh American Joint Committee on Cancer (AJCC) classification system.[15] Comorbidities were represented by modified Charlson Comorbidity Index (CCI),[16] excluding patient age and diagnosis of cancer. We recently proposed a prognostic model (CGMH score, Supplementary Table) that predicted 1-year postoperative mortality rate in patients with solid-organ cancers.[17] The model was constructed using the nine most predictive clinicopathological variables, including age, sex, cancer location, history of previous cancer, clinical tumor stage, CCI, American Society of Anesthesiologist score (ASA), admission type, and ECOG scale, based on a cohort of 37,288 patients. The model enabled clinicians to provide highly accurate prognostic information by quantifying individual risk. The CGMH scores for each patient were retrospectively calculated using the electronic patient record form.

Follow-up

The overall survival was calculated from the time diagnosis to any cause of death or the date last known to be alive. Cancer-