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Surgical outcomes and survival after gastrectomy in octogenarians with gastric cancer



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ABSTRACT

Background: The aim of this study was to evaluate the surgical outcomes and survival after gastrectomy in octogenarians and identify the optimal treatment for these patients.

Methods: The medical records of 1262 patients with gastric cancer who underwent gastrectomy from January 2003 to December 2012 were reviewed retrospectively. Patients were divided into two age groups: octogenarians (≥ 80 y, $n = 75$) and nonoctogenarians (< 80 y, $n = 1187$). The patients' clinicopathologic data, surgical outcomes, and survival were evaluated.

Results: Octogenarians exhibited a higher proportion of female patients, poorer performance scale scores, higher comorbidities, and more advanced tumor–node–metastasis (TNM) stages than did nonoctogenarians. There was no difference in the surgical curability between the two groups, although octogenarians were more likely to have higher post-operative morbidity and mortality than those of nonoctogenarians. In an analysis of risk factors affecting survival after gastrectomy for octogenarians, only advanced TNM stage was an independent prognostic factor. Overall survival was significantly lower in octogenarians than in nonoctogenarians, whereas disease-specific survival was comparable between the two groups. There was no difference in the disease-specific survival for each stage of cancer after adjustment for tumor stage.

Conclusions: Octogenarians had higher postoperative morbidity and mortality rates but comparable cancer-specific survival compared with nonoctogenarians. Only an advanced TNM stage influenced the prognosis of octogenarians. Early detection and thorough post-operative care would improve the overall survival for octogenarians with gastric cancer.

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1. Introduction

The worldwide incidence and mortality of gastric cancer have fallen dramatically during the past several decades. Nonetheless, gastric cancer is the fourth most common cancer and the second leading cause of cancer death worldwide, thus remaining a major public health issue [1]. Treatment

guidelines for gastric cancer have been issued, and a standard therapeutic strategy for gastric cancer according to stage has been established. Gastrectomy with D2 lymph node dissection has been increasingly regarded as the standard surgical procedure for most patients with operable gastric cancer [2,3].

With the aging of the population, 10%–20% of patients with gastric cancer in developed countries are aged ≥ 80 y [4].

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Although the living conditions and quality of medical care have dramatically improved in many countries, most patients in this age group have comorbidities such as cardiovascular disease and renal or respiratory dysfunction. Some studies have reported that gastrectomy with curative intent for elderly patients is associated with increased postoperative morbidity and mortality [5,6], whereas other studies have reported that elderly patients can safely undergo gastrectomy [7]. Thus, no consensus has been established on whether these therapeutic strategies are appropriate for treating gastric cancer in elderly patients, especially octogenarians, and controversy still exists.

In the present study, we compared the clinicopathologic findings and surgical outcomes of gastric cancer between octogenarians and nonoctogenarians. We also investigated risk factors and survival to identify the optimal treatment regimen for octogenarians with gastric cancer.

2. Patients and methods

2.1. Patients

A total of 1262 patients with gastric cancer who underwent gastrectomy from January 2003 to December 2012 at St. Vincent's Hospital, the Catholic University of Korea were enrolled in this retrospective study. Patients with a history of gastric surgery, neoadjuvant chemotherapy, or palliative procedures such as bypass surgery or exploratory laparotomy were excluded. The patients were classified into two age groups: octogenarians (aged ≥ 80 y, $n = 75$) and nonoctogenarians (aged < 80 y, $n = 1187$). Clinical, surgical, and pathologic data were obtained from the hospital records. The Institutional Review Board of St. Vincent's Hospital approved this study (VC14RISI0112).

All patients underwent subtotal gastrectomy or total gastrectomy with regional lymph node dissection (D1 plus or D2) according to the Guidelines of the Japanese Research Society for Gastric Cancer [2]. The cancer stage and histopathologic classification were based on the seventh edition of the American Joint Committee on Cancer staging system [8]. Postoperative chemotherapy was implemented according to the tumor–node–metastasis (TNM) stage, physical condition, and willingness of the patient. The chemotherapeutic regimen comprised 5-fluorouracil and cisplatin.

The clinicopathologic features evaluated included age, sex, Eastern cooperative oncology group performance status, number of comorbidities, type of gastrectomy, depth of invasion, lymph node metastasis, TNM stage, extent of lymphadenectomy, number of retrieved lymph nodes, curability, operation time, blood loss, and hospital stay. The postoperative complications were classified as surgical or medical complications. Anastomotic leakage, postoperative bleeding, anastomotic stenosis, intraabdominal abscess, afferent loop syndrome, wound infection, and ileus were defined as surgical procedure-related complications, whereas pulmonary disease, cardiovascular disease, and systemic infections were considered to be medical complications. Late complications, such as anemia and dumping, were not included in this study.

Thirty-day mortality was defined as postoperative death of any cause within 30 d of surgery.

All patients were followed up every 6 mo for 2 y after surgery, every year for up to 5 y, and then every year until the end of the study period or death. Physical examination, laboratory tests, imaging, and endoscopy were performed at every visit. The median follow-up period was 43.7 mo (range, 0.1–97.0 mo). The follow-up data were used to calculate the overall and disease-specific survival rates as of December 2013.

2.2. Statistical analysis

Discrete or categorical variables are expressed as counts and percentages and continuous variables as means $\pm$ standard deviations. The chi-squared test or Fisher exact test was used to compare discrete or categorical variables, and the Student *t*-test was used for continuous variables. Overall survival was estimated by the Kaplan–Meier method, and the log-rank test was used to compare survival curves. Multivariable analysis for independent risk factors was performed using the logistic regression test, and Cox proportional hazard models were used to obtain the hazard ratio. A *P* value of < 0.05 was considered to indicate a statistically significant difference with a 95% confidence interval. Statistical analysis was conducted using SPSS version 21 (SPSS Inc, Chicago, IL).

3. Results

3.1. Clinicopathologic characteristics

The clinicopathologic characteristics of the two study groups are shown in Table 1. The mean age was 82.2 ± 2.3 y (range, 80–89 y) among the octogenarians and 59.8 ± 11.8 y (range, 22–79 y) among the nonoctogenarians. The octogenarians exhibited a higher proportion of female patients, poorer Eastern cooperative oncology group scores, and higher comorbidities. There were no differences in the type of gastrectomy or extent of lymphadenectomy between the two groups. In terms of cancer invasion, octogenarians were more likely to have advanced T stage, N stage, and TNM stage cancer. Furthermore, the proportion of octogenarians with T3 and T4 stage cancer was higher than that of nonoctogenarians (60.0% versus 36.8%, respectively; $P < 0.001$). There was no difference in the surgical curability between the two groups; however, shorter operation times and fewer numbers of retrieved lymph nodes were found in octogenarians than in nonoctogenarians. Blood loss during the operation was comparable between the two groups, whereas longer hospital stays occurred among octogenarians compared with nonoctogenarians.

3.2. Postoperative complications

Table 2 summarizes the postoperative morbidity and mortality. Surgical and medical complication rates were all higher in octogenarians than in nonoctogenarians. The rates of surgical complications in octogenarians and nonoctogenarians were 16.0% and 7.5%, respectively ($P = 0.008$), and those of medical complications were 14.6% and 2.5%, respectively ($P < 0.001$). The most common surgical complications in octogenarians

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