Healthy life expectancy of oral squamous cell carcinoma patients aged 75 years and older

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A B S T R A C T

Objectives: Healthy life expectancy, an extension of the concept of life expectancy, is a summary measure of population health that takes into account the mortality and morbidity of a population. The aim of the present study was to retrospectively analyze the self-reliance survival times of oral squamous cell carcinoma (OSCC) patients.
Materials and methods: One hundred and twelve patients aged 75 years or older with primary OSCC were included and examined at Shinshu University Hospital. To investigate healthy life expectancy, OSCC patients older than 75 years were divided into 3 groups: 75–79, 80–84, and older than 85 years. The Kaplan-Meier method was used to estimate the median times of healthy life expectancy. The Log-rank test was used to test significant differences between actual curves.
Results: The median self-reliance survival times of patients aged 75–79, 80–84, and older than 85 years were 5.7, 1.6, and 1.4 years, respectively. Most patients with early stage cancers underwent curative treatments and showed a health expectancy of more than 5 years. In patients with advanced cancers, health expectancy was poor (less than one year), except among patients aged 75–79 years who underwent standard treatments.
Conclusions: It seems that in patients with advanced cancers, health expectancy was poor (less than 1 year), except among patients aged 75–79 years who underwent standard treatments. In elderly patients, healthy life expectancy (self-reliance survival time) may be one of the measures of patient prognosis as well as overall survival times.

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Introduction

Oral squamous cell carcinoma (OSCC) is the most common malignant tumor of the head and neck regions and accounts for more than 90% of cancers in the oral cavity [1]. Although recent advances in surgical techniques, radiation therapy, and anticancer agents have improved tumor regression in and the survival of OSCC patients, wider surgical resection and/or higher intensity radio/ chemotherapy inevitably results in a number of disabilities in oral function and daily living. In OSCC patients, postoperative dysfunctions depend on the primary site of the tumor, the area of surgical resection, and/or intensity of chemo/radiotherapy. Regarding treatment strategies for OSCC, patient factors, including age, general status, and the postoperative loss of function, are important for postoperative quality of life (QOL), particularly in older OSCC patients.

Healthy life expectancy, an extension of the concept of life expectancy, is a summary measure of population health that takes into account the mortality and morbidity of a population. It also partitions the expected years of life at a particular age into healthy and unhealthy years [2]. Sullivan proposed a simple method for estimating life expectancy as a function of disability or the health status in the early 1970s [3]. Health expectancy has become a standard worldwide for measuring population health as an intuitive and meaningful summary measure that combines length and QOL [4]. Health expectancy dates are invaluable for predicting future needs, evaluating health programs, identifying trend inequalities, and planning health and social services, long-term care, and pensions [5]. However, few studies have investigated healthy life expectancy in cancer patients [6–9]. Therefore, the

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aim of the present retrospective study was to estimate the health life expectancy (self-reliance survival (SS) time) of elderly OSCC patients. We speculate that a survey of the healthy life expectancy of elderly OSCC patients will provide important information for the selection of treatment strategies and prediction of QOL after treatments.

Materials and methods

The study protocol was approved by the Ethics Committee of the Shinshu University School of Medicine. (No. 3391). The medical records of primary OSCC patients aged 75 years and older who were treated at the Department of Dentistry and Oral Surgery, Shinshu University Hospital between January 1993 and December 2013 were retrospectively reviewed. One hundred and twelve patients aged 75 years and older were enrolled in this study. Four independent reviewers (S. Y., H. K., E. K., and T. K.) overviewed medical records on March 2016. Data collection included age, sex, demographic information on tumors, TNM stage at diagnosis, treatment strategies, and outcomes. Tumor stage was classified according to the TNM classification of the International Union against Cancer [10]. In these patients, treatment strategies were selected based on the tumor stage, medical conditions, performance status (PS), activity of daily life, and patient choice. In our institute, surgery is the preferred treatment for patients with oral cancer. Patients with a relatively good health condition (PS equal to or less than 2) underwent radical surgery with/without chemo/radiotherapy following the NCCN guidelines (standard therapy) [11]. Patients who hesitated in accepting surgical interventions or who did not have surgery available because of advanced tumors and physical conditions underwent limited surgery, surgery without the recommended adjuvant therapy, or chemo/radio therapy (other curative therapy). Some patients with very advanced tumors, distant metastasis, or bad physical conditions underwent palliative radiotherapy or best support care (palliative and no therapy). Primary tumors were excised with 1.0-cm safety margins (superficial and deep margins). The extent of surgery was not modified according to tumor responses to NAC. Surgery included the removal of the primary tumor and radical neck dissection was performed in patients who had clinically positive cervical lymph node metastasis. Elective neck dissection was not routinely performed. Postoperative adjuvant radiotherapy with a dose field of more than 60 Gy was administered to patients with involved margins or extracapsular lymph node spread. Patients with recurrence that was considered potentially curable and operable underwent salvage surgery and radiotherapy. Patients with recurrence that was considered incurable were treated with palliative chemotherapy.

All patients were followed-up on a regular basis: every 2 weeks for the first year, every month for the second year, every 3 months for the third and fourth years, and then biannually for life. The overall survival (OS) time and healthy life expectancy were the primary outcomes. In the present study, we employed the SS time to estimate healthy life expectancy. OS and SS times were estimated using the Kaplan-Meier actuarial method [12]. All calculations were started at the time of the patient's first visit. Deaths related to any cause were considered uncensored observations for the OS analysis. The SS time was defined as the interval (days) from the patient's first visit to the date of any events including the deterioration of PS (Kamofsky Performance Status [13] ⩽40), any death, any illness requiring hospitalization, and admission to a nursing home. Any these events initially seen were considered uncensored observations for the SS analysis Statistical analyses were performed using StatMate IV (Atms Co., Tokyo, Japan). The Log-rank

test was used to test differences between actual curves. All p values less than 0.05 were considered to indicate significance.

Results

One hundred and twelve patients aged 75 years and older with primary OSCC were included in the study population. The characteristics of these patients were shown in Table 1. The median age at diagnosis was 79 years (range 75–94 years). The most common primary site was the tongue (39 patients, 34.8%); 26 (23.2%) of patients had lower gingival cancer, 20 (17.9%) lip/buccal mucosa cancer, 13 (11.6%) upper gingival cancer, 8 (7.1%) oral floor cancer, and 4 (3.6%) oropharynx cancer. The median follow-up for patients was 18.1 months (range, 0.5–115.2 months). The median OS and SS times of all patients were 5.2 and 4.6 years, respectively, with a difference of 0.6 years.

In order to analyze SS times in more detail, patients were divided into three age groups; 75–79, 80–84, and older than 85 years. Kaplan-Meier estimates of the median OS times of patients aged 75–79, 80–84, and older than 85 years were 7.9, 2.2, and 2.8 years, respectively, while SS times were 5.7, 1.6, and 1.4 years, respectively (Fig. 1). Differences between median OS and SS times in patients aged 75–79, 80–84, and older than 85 years were 2.8, 0.6, and 1.4 with no significance. However, SS times became significantly shorter with age (75–79 vs 80–84; $P < 0.05$, 75–79 vs older than 85; $P < 0.05$). No significant differences were observed in OS times between each age group. OS and SS times according to tumor stages (Stages I & II vs. Stages III and IV) in each age group were shown in Fig. 2. Median SS times in patients with Stages I & II were 5.7 years in the 75–79 years group, 4.4 in the 80–84 years group, and 6.7 in the older than 85 years group. No significant differences were observed among age groups. On the other hand, the median SS times of patients with advanced tumors (Stages III & IV) were 4.7 years in the 75–79 years group, 0.7 in the 80–84 years group, and 0.9 in the older than 85 years group. A significant difference was observed between the 75–79 years group and either the 80–84 or older than

Table 1
Patient characteristics.

Characteristics	No. of patients (%)
Age, median (range)	79 years (75–94)
Sex	
Male	54 (48.2)
Female	58 (51.8)
Primary site	
Tongue	39 (34.8)
Lower gingiva	26 (23.2)
Lip/Cheek mucosa	20 (17.9)
Upper gingiva	13 (11.6)
Oral floor	8 (7.1)
Oropharynx	4 (3.6)
Hard palate	1 (0.9)
Multiple	1 (0.9)
UICC stage	
I	15 (13.4)
II	33 (29.5)
III	12 (10.7)
IV	52 (46.4)
Treatment strategy	
Standard therapy (radical surgery with/without chemo/radiotherapy)	71 (63.4)
Other curative therapy (limited surgery, chemo/radiotherapy)	26 (23.2)
None or palliative therapy	15 (13.4)