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RESEARCH ARTICLE

Radiotherapy/Chemoradiotherapy for Geriatric Head and Neck Cancer Patients

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Abstract

Introductıon: In our study, it was aimed to analyze radiotherapy (RT) compliance, acute toxicity results, and survival in geriatric patients with head and neck cancers. **Methods:** In our study, 77 geriatric patients (≥ 70 years) underwent curative RT diagnosed with head and neck cancer between 04.05.2010 and 24.03.2022 in the Radiation Oncology Clinic of Ankara Bilkent City Hospital and Ankara Atatürk Training and Research Hospital were analyzed. The study's primary outcome was RT completion, interruption, and acute adverse events. The study's secondary endpoint was evaluating overall survival (OS) and progression-free survival (PFS). **Results:** The median follow-up period of the study was 10 (range 1-130) months. The median age of the patients at the time of RT was 75 years. (Range 70-86). Most patients were diagnosed with laryngeal cancer (n=35, 45.5%). Of the 77 patients in our study, 71 (92.2%) completed their treatment, and 6 (7.8%) could not complete the radiotherapy course. Patients who could not complete the planned radiotherapy scheme were mostly diagnosed with laryngeal and hypopharyngeal cancer. (p=0.036; OR 1.94 95%CI 0.33-11.30). 71 patients completed treatment, and 67 (94.4%) did not interrupt treatment. In contrast, the treatment had to be interrupted for the last 4 (5.6%) patients. Grade 3 side effects were observed in 6 patients (7.8%). No grade 4 side effects were observed. During the follow-up period, 16 (20.8%) patients died; 61 (79.2%) were alive. Median OS was 9.8 (range 1 to 130) months. There was a significant relationship between OS and primary (p=0.035). Hypopharyngeal patients were significantly lower; nasopharyngeal and nasal cavity tumors have higher OS values. Local recurrence was observed in 6 (7.3%) of the patients and the median PFS was 8.9 (range 1-130) months. **Conclusion:** In patients over 70 with head and neck cancer, definitive chemoradiotherapy (CRT) is a feasible treatment with acceptable toxicity.

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Introduction

Cancer treatment is more complex than before due to many newly developed RT techniques, current immunotherapies, systemic agents, and modernized surgical techniques. The use of increasingly individualized and complex oncological treatments in the geriatric population is a current topic of studies. Geriatric patients (GP) are a heterogeneous group regarding physiology, comorbidity, and general condition.[1] The GP is generally defined as the population whose calendar age is 70 and above.[2] However, it is well-known that chronological age alone is insufficient to evaluate the suitability of treatments for patients. [3,4]

Head and neck cancer incidence increases in the older age group.[5] Surgery, radiotherapy (RT) and chemotherapy are main treatment modalities, and selection varies according to the patient subgroup. RT is applied to 70 Gy, especially in patients who are not operated on for definitive purposes, and acute and chronic toxicities are frequently o observed at this dose value for patients from all age groups.[6] Curative treatment protocols for diseases have been defined independently of age.[6,7] Due to advanced age and comorbid diseases, appropriate, effective, and adequate standard treatments are not often preferred in the geriatric patient group. Serious treatment toxicities concern clinicians, especially in patients with high comorbidity in this group.[7] For example, clinicians may prefer lower and palliative doses to patients instead of the curative 60-70 Gy dose due to the concern of acute side effects. In concomitant chemotherapy applications, different doses and methods can be selected.

The results of studies evaluating the efficacy of treatments in the elderly population are promising. In addition, it has been shown in many publications that calendar age is not directly related to the increase in comorbidity.[3,4] Müller et al reported that calendar age did not significantly affect acute side effects. It was emphasized that the patient's performance and comorbid disease status were more important.[3] In addition, it has been noted that definitive approaches are applicable in this patient group. Avoiding treatment with the worry of side effects may result in missing the chance for appropriate medical treatment.[7] The elderly population is quite heterogeneous and covers a large group. There is very little data in the literature on the early-stage group of HNC patients. At the same time, there are non-randomized retrospective studies on advanced-stage disease. Considering head and neck cancer in particular, additional morbidities such as enteral tube dependence and aspiration can be seen due to acute side effects such as stomatitis, esophagitis, and odynophagia. Although these complications increase with advanced age, they can be observed in patients of all age groups.[7] When determining treatment protocols in geriatric patients, decisions can be made with the frailty scoring systems developed for this patient group , instead of just the calendar age. The patient's general condition, comorbidity, and performance should also be considered. Detailed preliminary evaluation in geriatric patients may contribute to the prediction of possible treatment-related side effects.

Our study aimed to analyze RT-related acute toxicity, treatment completion, treatment interruption, and survival in patients with geriatric head and neck tumors.

Material and Methods

In our study, patients over 70 who received curative RT diagnosed with head and neck cancer between 01.01.2009 and 30.06.2022 in the Ankara Atatürk Training and Research Hospital and Ankara Bilkent City Hospital were analyzed retrospectively. Patient interview information, patient files, dose volume histograms, and electronic system data were used to obtain data. Demographic status of the patients, radiological and pathological disease details, RT interruption and RT completion status, acute side effects, chemotherapy details, surgery details, recurrence status, and last status were noted. The staging was performed per the American Joint Committee on Cancer (AJCC) version 8. The Common Terminology Criteria for Adverse Events (CTCAE) version 5 was used for acute side effect assessment.

Patient Selection

Patients diagnosed with head and neck cancer with pathological evidence, aged 70 and over, receiving RT for curative purposes in XXX Hospital and XXX Hospital Radiation Oncology clinics with complete file data and ECOG 0-3 were included in the study. Patients who started but could not complete their treatment were also included in the study. The exclusion criteria are ECOG 4, lack of pathological evidence, palliative RT, lack of file data, under 70 years of age, undergoing SRS, and palliative RT.

Primary and Secondary Endpoints

In this study, RT acute toxicity, treatment interruption, and treatment completion status were noted in the patient group over 70 years of age. The study's

primary endpoint was treatment tolerance, toxicity, and completion of treatment in the elderly patient group. secondary endpoints were the evaluation of overall survival (OS) and progression-free survival (PFS) in this patient group. The RT start date was accepted as the starting date for the overall survival and PFS. The last control date for patients experiencing the endpoint for OS is the exitus date for those who have died. As the end for PFS, the first event date for relapse was the last control date for non-relapsed patients.

Statistical Analysis

Data were annotated using SPSS version 26 (IBM Corp, Armonk, NY, USA). Descriptive statistics for continuous (quantitative) variables; were expressed as median, standard deviation, minimum and maximum values, and categorical variables were expressed as numbers (n) and ratio (%).The conformity of the variables to the normal distribution was evaluated with Kolmogorov–Smirnov and Shapiro–Wilk tests and nonparametric tests were used because they did not fit the normal distribution. Categorical demographic characteristics of the patients were calculated with Chi-square and Fisher's exact tests. Spearman's rank correlation test was used for Univariate correlation analysis. Kaplan Meier was used in univariate survey analyses and compared with the log-rank test. In multivariate analyses, the Cox regression test was applied. The statistically significant limit was accepted as 0.05 and below.

Results

Our study analyzed the results of 83 geriatric patients who underwent curative RT diagnosed with head and neck cancer between 04.05.2010 and 24.03.2022 in the Radiation Oncology Clinic of Ankara Bilkent City Hospital and Atatürk Training and Research Hospital. The six patients were excluded from the study. The reasons for exclusion from the study are as follows: two patients have missing files and follow-up data, 2 patients have not primary head and neck (colon cancer metastasis and plasmacytoma), and 2 patients have palliative RT. Sixty (77.9%) of the patients were treated in Ankara Atatürk Training and Research Hospital and 17 (22.1%) were treated in Ankara Bilkent City Hospital. The median follow-up period of the study was 9.8 (range 1-130) months. The median age at presentation for RT was 75 (range 70-86). Fourteen (18.2%) patients were female and 63 (82.8%) were male. Primary diagnoses of the patients were 35 (45.5%) larynx; 22 (28.6%) oral cavity; 5 (6.5%) nasopharynx; 5 (6.5%) hypopharynx; 9 (11.7%) major salivary gland and (1. 3%) nasal-paranasal sinus cancers. The most prominent complaints of the applicant were noted. The most common first complaints were as follows; 32 (41.6%) hoarseness; 7 (9.1 %) neck swelling; 14 (18.2%) had sores on the lips and mouth. Pathological examination revealed that the pathology of 72 (93.5%) patients was SCC. In biopsy type evaluation; excisional biopsy in 26 (33.8%) patients; fine needle aspiration biopsy (FNAB) in 16 (20.8%) patients; punch biopsy in 26 (33.8%) patients. According to the stage evaluation; 11 (14.3%) patients were stage 1; 11 (14.3%) patients were stage 2; 20 (26%) patients were stage 3, 29 (37.7%) patients were stage 4, and 6 (7.8%) patients were relapsed. Concomitant chemotherapy was used for 33 (42.8 %) patients. Chemotherapy was not able to be applied due to medical conditions for 41 (53.2 %) patients and chemotherapy data for three patients was not found. Concurrent 30-40 mg/m2 cisplatin was used for radiosensitization with RT. Radiotherapy technique was IMRT in 65 (84.4%) patients and 3D in 12 (15.6%) patients. The median RT dose was 66 (range 29.6 -70) Gy. Only 13 (16.9) of patients received less than 60 Gy; 25 (32.5%) patients received 70 Gy; A dose of 60-70 Gy could be administered to 39 (50.9 %) patients. Patient and treatment details are summarized in Table 1.

Table 1. Patient and treatment details

Parameters		
Age	Median (range)	75 (70-86)
Gender n(%)	Female	14 (18.2%)
	Male	63 (81.8%)
Primary n(%)	Nasopharynx	5 (6.5%)
	Larynx	35 (45.5%)
	Oral Cavity	22(%28.6)
	Hypopharynx	5(6.5%)
	Nasal Paranasal Sinus	1 (1.3%)
	Salivary Glands	9(11.7%)
First Complain	Hoarseness	32(41.6%)
	Wound in Mouth	14 (18.2%)
	Neck swelling	7 (9.1%)
	Others	24 (31.1%)
Pathology	SCC	72 (93.5%)
	ACC	4 (5.2%)
	MEC	1 (1.3%)
Biopsy	Excisional biopsy	26 (33.8%)
	Punch biopsy	26 (33.8%)
	Fine needle aspiration biopsy	16 (20.8%)
	Tru cut biopsy	7 (9.1%)
	İncisional biopsy	2 (2.6%)
Stage	Stage 1	11 (14.3%)
	Stage 2	11 (14,3%)
	Stage 3	20 (2.6%)
	Stage 4	29 (37,7%)
	Recurrence	6 (7.8%)
RT technique	IMRT	65 (84.4%)
	3D	12 (15.6%)
RT Total Doses	Median (range)	66 (29.6%)
	70 Gy	25 (32.5%)
	60-70 Gy	39 (50.9%)
	Less than 60 Gy	13 (16.9%)
Lets Status	Ex	16 (20.8%)
	Alive	61 (79.2)

Abrr: SCC: Squamous Cell Calcer; ACC:Adenoid Cystic Carcinoma; MEC: Mucoepidermoid Cancer; IMRT: Intensity Modulated Ruiiotherapy RT: Radiotherapy

RT interruption and completion status

Of the 77 patients in our study, 71 (92.2%) completed their treatment, and 6 (7.8%) could not. Reason for inability to complete treatment were; deterioration in general condition for 4 patients, death due to pulmonary embolism in one patient. One patient who was ECOG 1 at the start of therapy died at 30 fractions of treatment. It was considered as treatment-related death. The relationship between primary diagnosis and completion of treatment was significant. Patients diagnosed with larynx and hypopharynx at higher risk for non completed RT (p=0.036; OR 1.94 95%CI 0.33-11.30). All 6 patients who could not complete the treatment were male. The relationship between treatment completion and gender was not significant (p=0.287). There was no important relationship between treatment completion status and age (p=0.864), pathological diagnosis (p=0.657), or RT technique (p=0.348). The patients who could not complete the treatment were summarized in Table 2.

Table 2. The patients details who could not complete the treatment

Case	Patient's Detail	Disease	Treatment	Reason of Interrupt	Recurrence	Last status
1	85y, M ECOG 2 155 cm 54 kg	Stage 4 Paranasal sinus cancer	IMRT 62 Gy CT:- Surgery:- Biopsy: FNA AE:Grade2 dysphagia and grade 1 loss weight	Last 2 fraction did not applied due to general situation disorder	No PFS: 29.8 mo	Alive OS: 29.8 mo
2	82 y M ECOG 2 175 cm 67 kg	Stage 3 Oral cavity	IMRT 46 Gy CT:- Surgery: -Biopsy: Excisional biopsy AE: Grade 3 mucositis and esophagitis, grade 1 dermatitis	Treatment stopped at 46 Gy due to general situation disorder	No PFS:1 mo	Alive OS: 1 mo
3	80 y, M ECOG 2 167 cm 55 kg	Stage 2, Supraglottic Larynx SCC	IMRT: 32 Gy Surgery:- CT:- Surgery:- Biopsy: Punch biopsy AE: Insomnia	Treatment stopped at 32 Gy due to general situation disorder	Progression	Ex OS:1 mo
4	72 y , M ECOG 1 179 cm 67 kg	Stage 4 Transglottic Larynx SCC	IMRT: 60 Gy CT:- Surgery:+ Larenjektomi BLND Biopsy:FNA AE: Grade 2 dysphagia	Treatment stopped at 60 Gy due to exitus	Treatment related exitus	
5	73 y, M ECOG 1 165 cm 84 kg	Stage 4, Hypopharynx Ca	IMRT: 29.6 Gy CT:+ concomitant cisplatin Surgery:- Biopsy: Punch AE: Not observed	The patient died when he was at 29.6 Gy due to pulmonary embolism.		Ex
6	78y,M ECOG 2 177 cm, 75 kg	Stage 4, Hypopharynx Ca	IMRT: 40 Gy CT: Neoadjuvant cisplatin 5FU, concomitant cisplatin Surgery:- Biopsy: FNA AE: Not noted	Treatment stopped at 40 Gy due to exitus		Ex Os:1.45

Abbr: SCC: Squamous Cell Cancer; Ex: Exitus; IMRT: Intensity Modulated Radiotherapy ; RT: Radiotherapy; 5FU:5-florourasil-folinik asit ; AE: Adverse Event ; Gy: Gray ; CT: Chemotherapy ; FNA: Fine Needle Aspiration; BLND:Bilateral Lateral Neck Dissection ; PFS: Progression-free survival; OS: Overall Survival

71 patients completed treatment, and 67 (94.4%) of these patients did not interrupt treatment; In 4 (5.6%) patients, the treatment had to be interrupted. Reasons for interruption of treatment were as follows: angina, grade 3 mucositis; grade 3 dysphagia, and machine breakdown. The difference between treatment interruption and age (p=0.921), gender (p=0.172), primary (p=0.451), pathological diagnosis (p=0.220), RT total dose (p=0.398), and RT technique (p=0.532) were not statistically significant. The patients who interrupted the treatment are summarized in Table 3.

Table 3. Details of patients whose treatment was interrupted

Case	Patient's Detail	Disease	Treatment	Reason of Interrupt	Recurrence	Last status
1	74 y, F 160 cm 81 kg	Stage 3 Oral cavity Tongue SCC	RT: 68 Gy IMRT CT: 5c Cisplatin (concurrent) Surgery:-, Biopsy: Punch AE: Grade 3 mucositis Grade 2 dysphagia	5 days break due to grade 3 mucositis	Recurrence:- PFS: 7.3	Alive OS:7.3
2	83 y, M 167 cm 65 kg	Stage 3, Larynx SCC	RT:70 Gy IMRT CT:Concurrent 4 c cisplatin Surgery:- Biopsy: Punch AE: Grade 3 dysphagia	10 days break due to grade 3 dysphagia at 44 Gy	Recurrence :- PFS: 3.5 mo	Alive OS:3.5 mo
3	75 y, M 170 cm 73 kg	Stage 4, Hyphophaynx	RT: 70 Gy IMRT CT: concurrent 2c Cisplatin Surgery:- Biopsy: Punch AE: Grade 2 dysphagia	10 days break due to angina at 56 Gy	Recurrence:- PFS: 9.8 mo	Ex OS:9.8 mo
4	82y, F 155 cm 65 kg	Stage 2, submandibular gland adenoid cystic carcinoma	RT: 60 Gy 3D CT: concurrent cisplatin Surgery: excisional biopsy Biopsy: Punch AE: Grade 2 dysphagia	5 days break due to Linak breakdown	Recurrence:- PFS: 5 mo	Alive OS: 5 mo

Abbr: SCC: Squamous Cell Cancer; Ex: Exitus; IMRT: Intensity Modulated Radiotherapy ; RT: Radiotherapy; AE: Adverse Event ; Gy: Gray ; CT: Chemotherapy ; PFS: Progression-free survival; OS: Overall Survival

Analysis of Acute Side Effects

Patient files and electronic system data were analyzed. Acute side effects noted were as follows: dermatitis in 10 (12.8%) patients; dysphagia in 38 (49.4%) patients; mucositis in 21 (27.3%) patients; weight loss in 10 (12.8%) patients; pain in 4 (5.2%) patients and insomnia in 2 (2.6%) patients. Grade 3 side effects were observed in 6 patients (7.8%). No grade 4 side effects were observed in any of the patients. The patient whose general condition was good and died during treatment was evaluated as treatment-related toxicity (Grade 5). Details of acute side effects are summarized in Table 4.

Table 4. The acute side effect evaluation of patients

Parameters		n (%)
Dermatitis	Observed (total)	10 (12.8%)
	Grade 1	6 (7.7%)
	Grade 2	2 (2.6%)
	Grade 3	2 (2.6%)
İnsomnia*	Observed (total)	2 (2.6%)
RT-related pain	Observed (total)	4 (5.2%)
	Grade 1	3 (3.9%)
	Grade 3	1 (1.3%)
Weight Loss	Observed (total)	10 (12.8)
	Grade 1	6 (7.8%)
	Grade 2	1 (1.3%)
	Unknown*	2 (2.6%)
Dysphagia	Observed (total)	38 (49.4%)
	Grade 1	15 (19.5%)
	Grade 2	21 (27.3%)
	Grade 3	2 (2.6%)
Mucositis	Observed (total)	21 (27.3 %)
	Grade 1	12 (15.6%)
	Grade 2	7 (9.1%)
	Grade 3	1 (1.3%)
	Unknown	1 (1.3%)

*Grade was not noted.

OS and PFS results

During the follow-up period, 16 (20.8%) patients died; 61 (79.2%) were alive. Median OS was 9.8 (range 1 to 130) months (Figure 1). There was no significant relationship between OS and age (p=0.335), gender (p=0.539), pathological diagnosis (p=0.885), RT total dose (p=0.204), and RT technique (p=0.985). There was a significant relationship between OS and primary (p=0. 035)(Figure 2). Hypopharyngeal patients were significantly lower; nasopharyngeal and nasal cavity tumors have higher OS values. Local recurrence was observed in 6 (7.3%) of the patients and the median PFS was 8.9 (range 1-130) months (Figure 3). There were statistically significant differences between PFS and age (p=0.406), gender (p=0.303), primary (p=0.769), pathological diagnosis (p=0.785), RT total dose (p=0.233), and RT technique (p=0.844).

Figure 1

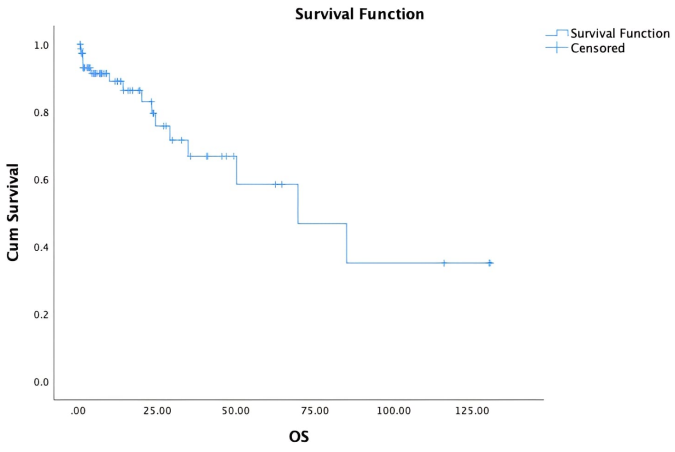


Figure 2

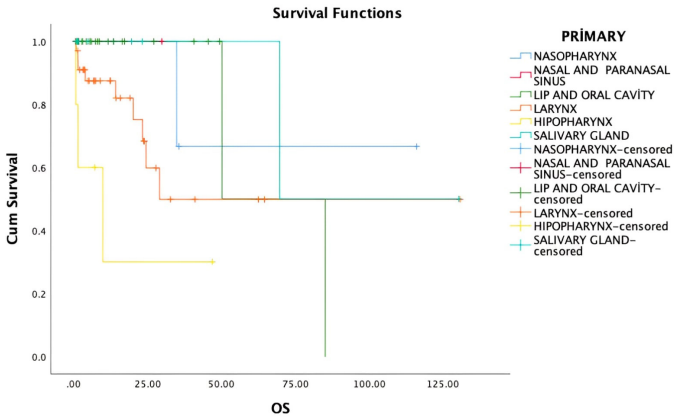
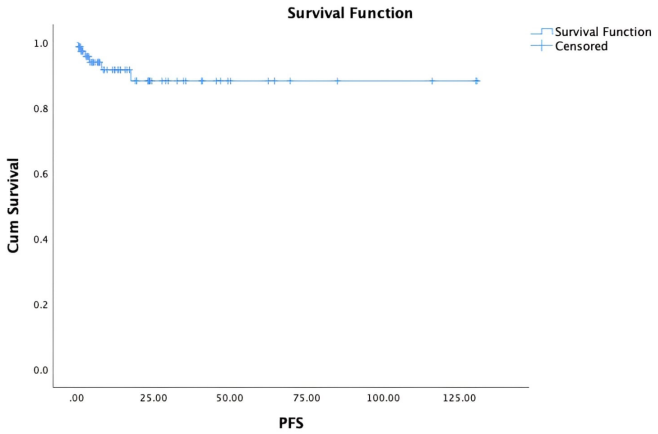


Figure 3



Discussion

In our study, the data of 77 geriatric patients who underwent curative doses of RT with the diagnosis of head and neck cancer were analyzed retrospectively . According to the results, 92.2% of the patients could complete their radiotherapy. These results are promising for the feasibility of curative RT in elderly patients. Grade 3 side effects were observed in 6 patients (7.8%). Treatment-related death was noted in one patient (1.3%). Although the study's follow-up period is short, OS and PFS data are compatible with the literature.

With the increasing elderly population worldwide, the incidence of head and neck cancers in these elderly groups is increasing.[8] Considering the increased comorbidities, loss of cognitive function, multiple drug use, and social factors in the elderly patient group , difficulties may be experienced in making treatment decisions and managing.[9] Increasingly, there are studies evaluating treatment outcomes in this patient population in the literature. Studies have reported data on acute toxicity, which significantly affects treatment compliance, applicability, and success. Sarini et al. reported that

treatment-related deaths increased progressively in head and neck cancer patients according to the patient's age, 4.6% for <40 years old, vs 9. 5% for 40-74 years old vs 11.1% for 75 years old and above respectively (p=0.04).[10] In the study published by Haehl et al. in 2020 with a similar patient group to our study, grade 3 and 4 side effects were reported in 56.1% of the patients.[11] In the study of Bledsoe et al., grade 3 was seen in 42% of patients.[12] In the 2020 publication of Benhmida et al., acute grade 3 adverse events were noted as 5%.[13] Our study noted grade 3 side effects in only 7.8% of patients. The literature shows very different acute side effects values have been reported. This difference may be due to the patients' general conditions included in the studies, differences in primary diagnosis, applied doses, presence of concurrent chemotherapy, surgical status, and treatment techniques. However, observing such different acute toxicity rates in the elderly patient group in further studies is another research topic.

In this patient group, treatment-related death, which is the nightmare of clinicians, also affects the treatment decision. In the study of Stromberger presented in 2021, 1.2% of the patients died in the first 30 days after chemoradiotherapy.[14] Our study noted treatment-related death in 1 (1.3%) patient. Our data are compatible with the literature in this respect.

Considering the existence of patients with different performance statuses in the elderly patient group, it seems that it is not appropriate to make a treatment decision based on only chronological age alone. The new concept of 'frailty', which is used to decide on treatment in geriatric oncology, has been developed to make these evaluations by taking into account different scores. Frailty is a geriatric syndrome that evaluates the body's increased sensitivity to stressors and its relationship with morbidity, mortality, and treatment toxicity.[15] The necessity of holistic and multidimensional evaluation of geriatric patients in addition to chronological age is apparent. This multivariate group of patients needs to be classified in a standardized way.

For this reason, many up-to-date scores have been developed for geriatric patients. The primary purpose of these scores is to create a tool that predicts the patient's response to treatment and survival.[16,17,18] However, this type of evaluation/scoring could not be performed due to the retrospective nature of our study.

In addition to trying to predict treatment success based on patient performance, other studies for optimal treatment selection in this patient group are based on modifying treatment modalities. One of them is evaluating hypofractionated treatment schemes for radiotherapy. Other topic is concurrent cetuximab treatment, which is believed to be successful with less toxicity in this age group.

There is a general tendency to avoid aggressive treatments and conventional RT regimens where the patient has to come to treatment for a long time. In these patients, hypofractionated regimens and lower doses are usually tried.[19,20] Some studies of hypofractionated regimens reduce the hospitalization of elderly patients with almost all kinds of cancers.[21,22,23] Many studies of hypofractionated regimens in elderly head and neck patients are ongoing.[24] Hypofractionated regimens were not used in this study. Curative high doses of RT have been administered with conventional regimens.

Cetuximab is a monoclonal antibody that can be used mainly in head and neck cancer patients. Studies show the survival benefit of adding cetuximab to RT in patients with locally advanced head and neck cancer.[25,26] However, cetuximab is far from replacing cisplatin in concomitant CRT.[27,28,29] Additionally, cetuximab administered concomitantly with RT may cause an increase in side effects.[30] Our study used no immunological or targeted agent in the patients.

Completing the planned treatment scheme is also a decisive factor in predicting treatment success and taking appropriate patients to curative treatment. In the Haehl et al study, definitive or adjuvant RT was evaluated in patients over 65 with a diagnosis of head and neck cancer, and 86.6% of the patients completed the treatment.[11] In Felice's study evaluating hypofractionation, all patients could complete the RT scheme.[30] In elderly patients with head and neck cancer, better OS is achieved with standard treatments than with substandard treatments.[31] When these high treatment completion rates in elderly patients, decreased side effects due to improved RT techniques, and sub-standard treatments are associated with worse survival, curative RT can be applied in elderly patients.

In stage 4 patients with head and neck cancer, palliation can be provided with definitive doses, and definitive radiotherapy is a reasonable treatment option in this patient group, especially in patients with limited metastases. In our patient group, 37.7% of our patients were stage 4 and were treated with a definitive approach. Our survival analysis results should be evaluated within the context of this data.

The continuation of radiotherapy in patients

with head and neck cancer affects treatment success. Each day of treatment prolongation was associated with a 1.4 % loss of local control.[32] For this reason, we evaluated the status of interrupting the treatment in detail. In this study, 92.2% of the patients could complete their radiotherapy, and 94.4% had no treatment interruption—a limited number of studies in the literature focus on this issue.

One of the weakness of this study is that although frail patients over the age of 70 were included in the study, chronic side effects were not evaluated.

When the studies evaluating curative treatment in elderly head and neck cancer cases are examined, two points draw attention. First, the number of elderly patients in head and neck cancer radiotherapy is increasing, reflected in the research frequency. Second, the number of patients undergoing definitive CRT in studies has gradually increased. There are now studies focusing on radio-chemoradiotherapy. Advances in radiotherapy techniques and better critical organ protection underlie the increase in aggressive and curative treatments for elderly head and neck patients.[33, 34]

Conclusions

In patients over 70 with head and neck cancer, definitive chemoradiotherapy (CRT) is a feasible treatment with acceptable toxicity.

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