

Do Tumor Board Recommendations Influence the Decisions of Clinicians in Planning the Treatment of Head and Neck Cancers?

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ABSTRACT

Objective: The aim of this study is to compare the decisions made at established tumor board meetings for planning the treatment of head and neck cancer patients with the individual treatment decisions of clinicians who attended the meetings.

Material and Methods: A total of 188 patients with head and neck tumors were included in this study, all of whom had been evaluated at weekly tumor board meetings at our clinic. The tumor board consisted of otolaryngologists, radiation oncologists, medical oncologists, pathologists, and radiologists. Before the board meetings, all data belonging to the patients were given to the otolaryngology surgeons and radiation oncologists who were to attend. Their treatment preferences were asked of them individually. The treatment options that clinicians recommended individually prior to board meetings were compared with the decisions made by the tumor board.

Results: It was observed that 34% (64 cases out of 188) of the individual decisions made by ENT surgeons and 34.6% (65 cases out of 188) of those made by radiation oncologists changed following tumor board meetings. There was a statistically significant difference between the treatment options offered individually by both ENT surgeons and radiation oncologists and the treatment recommendations made by the tumor board.

Conclusion: According to the data we obtained, the recommendations for treating patients with head and neck cancers made by the tumor boards may differ from the personal decisions of attending clinicians. Therefore, to make decisions that ensure the highest quality patient care, we believe it is necessary to evaluate all patients with head and neck tumors at multidisciplinary tumor board meetings regardless of cancer stage.

Keywords: Head and neck cancer, multidisciplinary team, tumor board

INTRODUCTION

Head and neck cancers are among the most common malignancies in the world and encompass the lips, oral cavity, salivary glands, oropharynx, nasopharynx, larynx, hypopharynx, and skin. According to a 2018 report by the International Agency for Research on Cancer, head and neck cancers comprise the seventh most common types of cancer

with 890,000 new cases per year (1). Many factors, such as tumor stage, pathology evaluation, and patient comorbidity, are taken into account during cancer treatment. However, the differences in medical branches' clinical approaches and the varying clinical experience of doctors can impact treatment preferences, even when patient criteria are the same. As for all other malignancies for the last 30 years, tumor boards have played an important role in determining treatment

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modalities for head and neck malignancies (2). The diversity and experience of tumor board members, who come from many different disciplines, have proven to be more efficient in evaluating and managing disease (3).

In the past, tumor patients were referred to the relevant surgical branch and passed on to oncology departments only if necessary (4). In addition, for patients who were considered inoperable, an oncologist’s opinion was often requested regarding palliative treatment (4-6). Today, legal procedures and technological advancements in the field of chemotherapy and radiotherapy have increased the importance of a multidisciplinary approach in planning cancer patient treatment, encouraging joint decisions rather than relying solely on individual ones made by single practitioners (3, 5, 7).

St. Thomas Aquinas said, “Quia parvus error in principio magnus est in fine” (A small error at the outset is a large one in the end) (8). Given that cancer treatment is long-term, choosing an appropriate first step in the treatment process is of paramount importance. To avoid adverse conditions during treatment, it is essential to get opinions from clinicians with different specialties and to identify all relevant care opportunities before planning treatment (9). For this reason, most cancer centers decide on patient treatment at tumor board meetings, although there is no legal requirement to do this in most countries. At our tertiary center, medical specialists dealing with cancer surgery organize tumor board meetings, where clinicians share their knowledge and experience with other professionals. In this study, the effectiveness of tumor boards was investigated by comparing the individual treatment preferences of ENT surgeons and radiation oncologists with the recommendations given by tumor boards for patients diagnosed with head and neck cancers.

MATERIALS AND METHODS

This study obtained the approval of the Samsun Research and Training Hospital Ethics committee (approval ID: 2020/0213) and evaluated the treatment modalities of patients diagnosed with head and neck cancers at our otolaryngology clinic. These cases were discussed at tumor board meetings held between January 2018 and January 2020.

At our hospital, tumor board meetings are held weekly. Board members consist of otolaryngologists, radiation oncologists, medical oncologists, radiologists, pathologists, and psychiatrists, as well as swallowing therapists, speech therapists, respiration therapists, and psychologists. Clinicians from different specialties are also invited to meetings when necessary. All patients diagnosed with head and neck cancers are discussed at the tumor board meetings regardless of cancer stage. Treatment plans are made in line with the decisions made at the meetings.

In this study, the files of all patients to be discussed at tumor board meetings containing test results, age, and gender information were provided to ENT surgeons and radiation

oncologists who regularly attended tumor board meetings. Patient names were removed from the files to avoid influencing the opinions of clinicians regarding treatment. These clinicians were then asked to choose a treatment modality for the given patient from various options, such as surgery, radiotherapy (RT), chemotherapy (CT), chemoradiotherapy (CRT), follow-ups, and additional examinations/tests (such as radiological imaging, nuclear imaging, clinical assessment, and re-biopsy). The initial treatment modalities as suggested by clinicians were compared with treatment recommendations decided by the board. The differences between these decisions were also evaluated according to tumor stage.

Patients who were to be operated on in the first tumor board were evaluated as new patients in the postoperative tumor board. Therefore, surgery and adjuvant CRT were classified separately for the same patient. However, patients who were discussed at tumor board meetings after they had completed additional tests were excluded from the study, since a consensus on their treatment was previously reached.

In statistical comparisons between groups, a t-test was used for continuously changing data, while a chi-squared test was used for discontinuous data. In all measurements, a *p*-value < 0.05 was considered statistically significant. All statistical analyses were conducted using SPSS Statistics 24.0 (IBM SPSS Statistics for Windows, NY, USA).

RESULTS

In the 188 cases of head and neck tumors included in the study, the mean participant age was 62±11.16 years (between 25–95). 161 (85%) of the patients were male and 27 (15%) were female. The histology, regions, and stages of the evaluated tumors are outlined in Table 1.

In comparing the treatment decisions suggested by the tumor board with the individual clinician decisions, it was observed that individual ENT surgeon decisions changed in 64 cases (34%) and those of radiation oncologists changed in 65 cases (34.6%). When the rate of change according to the stages was compared, the highest was seen in stage 3 (44,4%) in ENT surgeons and in stage 2 (43,5%) in radiation oncologists (Figure 1).

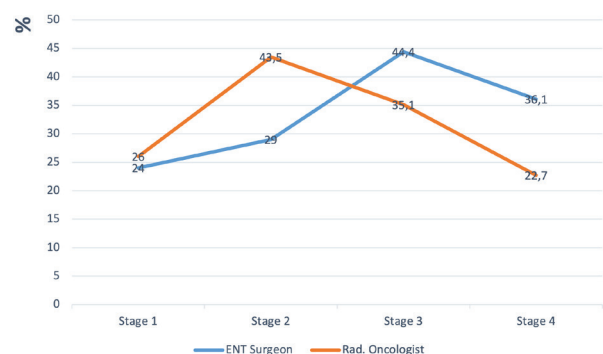


Figure 1: The rates of change of the decisions of radiation oncologists and ent surgeons according to stages.

Table 1: Information regarding histology, region and stage of the tumors evaluated.

	Number of tumors evaluated (n)	Percentage (%)
A. Histology		
Squamous Cell Carcinoma	163	86.7
Adenocarcinoma	1	0.5
Mucoepidermoid Carcinoma	3	1.6
Neuroendocrine Tumor	2	1.1
Adenoid Cystic Carcinoma	3	1.6
Spindle Cell Carcinoma	3	1.6
Basosquamous Carcinoma	4	2.1
Carcinoma Ex Pleomorphic Adenom	1	0.5
Undifferentiated Carcinoma	4	2.1
Oncocytoma	1	0.5
Chondrosarcoma	2	1.1
Lymph Epidermal Tumor	1	0.5
B. Tumor Region		
Larynx	115	61.2
Hypopharynx	3	1.6
Oropharynx	6	3.2
Oral Cavity	28	14.9
Paranasal Sinuses	5	2.7
Skin	12	6.4
Nasopharynx	7	3.7
Salivary Glands	7	3.7
Neck Metastasis of Unknown Origin	5	2.7
C. Tumor Stage		
Stage 1	50	26.5
Stage 2	62	32.9
Stage 3	54	28.7
Stage 4	22	11.7

A comparison of the initial treatment preferences of ENT surgeons with the recommendations given by the tumor board according to tumor stage is detailed in Table 2. The rate of change in the decisions of ENT surgeons at all tumor stages was statistically significant (p -value at Stage 4=0.011, p -value at other stages <0.001).

Comparisons of the initial treatment preferences of radiation oncologists with those recommended by the tumor board based on tumor stage are provided in detail in Table 3. Similarly, the rate of change in the decisions of radiation oncologists at all tumor stages was found to be statistically significant (p -value at Stage 4 = 0.011, p -value at other stages <0.001).

DISCUSSION

Treating head and neck cancers is a complex process that can be affected by the tumor pathology, cancer stage, and the patient's general condition (3, 7, 10). Given the diversity of treatment options, such as surgery, radiotherapy, chemotherapy or combined therapy, the role of the multidisciplinary approach in this process is significant (9, 11). In addition, after the treatment of the primary disease, the opinions of speech therapists, nutritionists, dentists, and psychologists about treating potential comorbidities are invaluable (11). For this reason, tumor boards, which enable a more practical application of the multidisciplinary approach by gathering clinicians of different specialties and allow a rapid exchange of ideas, lead to more efficient treatment decisions. It is also known that tumor boards can influence the decisions of individual specialists (4).

The compliance of decisions made at tumor board meetings with treatment preferences of individual specialists has been studied before, but research is limited about treatment decision compliance according to tumor stage in head and neck cancers. In their study, Markus et al. (2) compared tumor board decisions with the pre-meeting decisions of surgeons and oncologists about 172 head and neck cancer patients and observed changes in pre-meeting preferences for 52 patients (30%). In another study evaluating pediatric cancer patients discussed at tumor board meetings, it was shown that proposed treatment options changed following meetings in 35% of cases (12). Similar to the studies in the literature, a 34% change in proposed treatment decisions following board meetings was observed in the current study. A change over 30 percent is a significant difference. Specialists tend to prefer treatment procedures in their field of expertise. In this study, oncologists emphasized the rt option more frequently in their first choice at all stages and it was observed that surgeons preferred the ct and crt option less in their first choice. In our study, these decisions come to the fore especially at stage 2 for radiation oncologists and at stage 3 for ENT surgeons.

In Markus et al. (2), it was observed that the treatment preferences of medical or radiation oncologists were more likely to change after board meetings than those of oncology surgeons. In addition, regardless of squamous cell carcinoma or skin malignancies, the initial treatment choices of medical or radiation oncologists did not include surgical intervention, and the rate of change in their decisions after board meetings was statistically significant. The findings of the current study demonstrate that radiation oncologists initially preferred radiotherapy for early disease stages, but the rate of change in their decisions after tumor board meetings was found statistically significant.

Although the influence of tumor boards' recommendations on the individual preferences of clinicians is known, there is limited evidence for the effectiveness of these decisions on treatment outcomes (10, 13, 14). A meta-analysis in the

Table 2: The comparison of initial treatment preferences of ENT surgeons with tumor board decisions according to tumor stage.

Stage			Total	Tumor board recommendation					Change rates n (%)
				Surgery	RT	CRT	Follow-up	Additional test	
Stage 1	ENT surgeon preference	Surgery	11	8	3	0	0	0	3 (27.2)
		RT	28	3	22	2	0	1	6 (21.4)
		CRT	1	1	0	0	0	0	1 (100)
		Follow-up	9	2	0	0	7	0	2 (22.2)
		Additional test	1	0	0	0	0	1	0 (0)
	Total	50	14	25	2	7	2	12 (24)	
Stage 2	ENT surgeon preference	Surgery	33	28	4	1	0	0	5 (15.1)
		RT	6	0	3	2	0	1	3 (50)
		CRT	3	2	0	0	0	1	3 (100)
		Follow-up	17	1	5	0	9	2	8 (47)
		Additional test	3	1	0	0	0	2	1 (33.3)
	Total	62	32	12	3	9	6	18 (29)	
Stage 3	ENT surgeon preference	Surgery	28	17	2	7	0	2	11 (39.2)
		RT	13	3	7	3	0	0	6 (46.1)
		CRT	6	1	1	4	0	0	2 (33.3)
		Follow-up	5	0	4	0	1	0	4 (80)
		Additional test	2	0	1	0	0	1	1 (50)
	Total	54	21	15	14	1	3	24 (44.4)	
Stage 4	ENT surgeon preference	Surgery	6	4	0	2	0	0	2 (33.3)
		RT	7	0	4	3	0	0	3 (42.8)
		CRT	8	0	2	6	0	0	2 (25)
		Additional test	1	0	0	1	0	0	1 (100)
	Total	22	4	6	12	0	0	8 (36.1)	
Total	ENT surgeon preference	Surgery	78	57	9	10	0	2	21 (26.9)
		RT	54	6	36	10	0	2	18 (33.3)
		CRT	18	4	3	10	0	1	8 (44.4)
		Follow-up	31	3	9	0	17	2	14 (45.1)
		Additional test	7	1	1	1	0	4	3 (42.8)
	Total	188	71	58	31	17	11	64 (34)	

The initial preferences of ENT surgeons have changed in 64 patients (34%). ($p=0.011$ in Stage 4, $p<0.001$ in other stages)

literature investigating tumor board decisions over a span of approximately 20 years emphasized that the rate of change in decisions was between 4% and 45% after tumor board meetings, but there was not enough evidence to substantiate that the revised decisions led to better treatment (14). In this meta-analysis, only one study about head and neck tumors was examined, and the rate of change was reported as 27% (15). In their study, Boxer et al. (13) reviewed the outcomes of 504 lung cancer patients discussed at tumor board meetings, out of 988 patients referred to their clinic. They concluded that tumor board decisions provided treatment modalities that increased quality of life but did not alter life expectancy. Large patient cohorts and attentive planning are required to evaluate the long-term effects of individual treatment approaches and

recommendations given by tumor boards for patients with head and neck cancers.

Considering cost and treatment effectiveness, some authors argue that only advanced head and neck cancers should be discussed at tumor board meetings. In addition, they also suggest that the board recommendations for early-stage malignancies do not have significant superiority over individual clinician decisions (7, 10). Contrary to these views, the findings obtained in this study suggest that there was a statistically significant difference between the treatment approaches of tumor boards and individual specialists, including those for early-stage head and neck cancer patients.

Table 3: The comparison of initial treatment preferences of radiation oncologists with tumor board decisions according to tumor stage.

Stage			Total	Tumor board recommendation					Change rates n (%)
				Surgery	RT	CRT	Follow-up	Additional test	
Stage 1	Radiation oncologist preference	Surgery	10	7	3	0	0	0	3 (30)
		RT	28	5	21	1	0	1	7 (25)
		CRT	1	0	0	1	0	0	0 (0)
		Follow-up	10	2	1	0	7	0	3 (30)
		Additional test	1	0	0	0	0	1	0 (0)
		Total	50	14	25	2	7	2	13 (26)
Stage 2	Radiation oncologist preference	Surgery	14	14	0	0	0	0	0 (0)
		RT	32	16	11	2	1	2	21 (65.6)
		CRT	4	2	0	1	0	1	2 (50)
		Follow-up	12	0	1	0	8	3	4 (33.3)
		Total	62	32	12	3	9	6	27 (43.5)
Stage 3	Radiation oncologist preference	Surgery	21	15	0	5	0	1	6 (28.5)
		RT	15	3	11	1	0	0	4 (26.6)
		CRT	14	3	1	8	1	1	6 (42.8)
		Follow-up	3	0	3	0	0	0	3 (100)
		Additional test	1	0	0	0	0	1	0 (0)
		Total	54	21	15	14	1	3	19 (35.1)
Stage 4	Radiation oncologist preference	Surgery	3	2	0	1	0	0	1 (33.3)
		RT	8	0	6	2	0	0	2 (25)
		CRT	11	2	0	9	0	0	2 (18.1)
		Total	22	4	6	12	0	0	5 (22.7)
Total	Radiation oncologist preference	Surgery	48	38	3	6	0	1	10 (20.8)
		RT	83	24	49	6	1	3	34 (40.9)
		CRT	30	7	1	19	1	2	11 (36.6)
		Follow-up	25	2	5	0	15	3	10 (40)
		Additional test	2	0	0	0	0	2	0 (0)
		Total	188	71	58	31	17	11	65 (34.6)

The initial preferences of radiation oncologists have changed in 65 patients (34,6%). ($p=0.001$ in Stage 4, $p<0.001$ in other stages)

CONCLUSION

This study investigated the effectiveness of tumor boards by comparing individual treatment preferences of ENT surgeons and radiation oncologists with the recommendations made in tumor boards for patients diagnosed with head and neck cancers. The aim of this study was not to evaluate the outcomes of doctors' treatment decisions, but rather to investigate the compatibility of their preferred treatment options with those of the tumor board as a whole. It should be noted that results may vary depending on individual treatment centers according to clinician experience and the clinics' technical allowances. In light of our findings, we emphasize the importance of tumor boards in practicing a multidisciplinary clinical approach and evaluating all cancer patients, including early-stage patients.

Ethics Committee Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (University of Health Sciences Samsun Education and Research Hospital Clinical Research Ethics Committee dated 13.02.2020 and numbered 2020/0213) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Peer-Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- G.A., N.F.T., M.D.M., S.A., A.Ö.; Data Acquisition- G.A., N.F.T., M.D.M., S.A., A.Ö.; Data Analysis/Interpretation- G.A., N.F.T., M.D.M., S.A., A.Ö.;

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