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HEAD AND NECK CANCER

Reliability of American Joint Committee's staging system as prognostic indicator

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Abstract

The present American Joint Committee (AJC) staging system for the head and neck cancer does not satisfy the criteria as a prognostic or therapeutic indicator when patients are treated initially with radiation therapy. There are certain groups of patients allocated to advanced AJC stages where the prognosis is more favorable and, thus, should not be grouped with the poor prognosis stages. Recognition of these groups is important for any treatment planning or reporting of the end results.

Key words: Head and neck cancer, staging.

Before any treatment, patients with head and neck cancer are often classified under a T, N and M staging system, as proposed by the American Joint Committee (AJC) (2). This staging system is presumed to help the clinicians not only to plan for treatment, but also in the evaluation and comparison of end results with results of other institutions and to give some indication about the prognosis. However, if this system not accurately reflects the prognoses of the patients, it is likely that all the above mentioned advantages offered by this system would not be achieved. As a consequence of this inaccuracy, the reporting of the end results as well as the recommendations for any treatment could be misleading.

Material and Methods

In order to look into the adequacy of AJC Staging System as prognostic indicator, we carried out a retrospective analysis of 1712 patients with carcinoma of the oral cavity (excluding lip), pharynx (including nasopharynx, oropharynx and hypopharynx) and larynx (including supraglottic, glottic and infraglottic lesions), who were treated primarily with high doses of radiation (60 to 75 Gy) at the Radiation Therapy Division of the University of Michigan Medical Center during the period between 1960 and 1976 during which time at least one of the authors participated in the care of these patients. Some of the results of treatment have been reported previously (1, 3–6). Patients who had treatment for recurrent disease (n=105), who failed to complete the prescribed treatment (n=63), and who had distant metastasis at the time of diagnosis (n=9) were excluded (Table 1). This report, therefore, consists of 1535 patients (oral cavity 451 patients, pharynx 831, and larynx 253) who received irradiation with curative intent. The dose of irradiation varied in accordance with the size of tumor at the primary site or in the neck. Surgery was carried out for persistent or recurrent tumors only. All patients were staged in accordance with TNM staging system as proposed by AJC (Table 2). Clinical information of all the patients was introduced into a large frame time sharing computer of the University of Michigan where appropriate programs for univariate and multivariate statistical analysis as well as survival by actuarial method are available. Since most locoregional recurrences as well as distant metastases appear within two years after treatment, a minimum follow-up period of two and a half years was considered to be adequate. As overall control of tumor is expected to result into prolonged survival, survival at 5 years was considered to be the main prognostic factor.

Results

Patients with N2 or N3 disease, regardless of their T stage, are classified as having stage IV disease under AJC staging system. They are, therefore, grouped together (Table 2). The number of patients in each T and N stage is shown in Table 3. Five year actuarial survival of patients in accordance with AJC T and N stages is shown in Table 4. It is apparent that survival of patients with T1 N0, T2 N0 and T1 N1 lesions, although belonging to AJC stages I,

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Table 1

Patients excluded from analysis

Site	Distant metastasis at diagnosis	Incomplete treatment	Tretment for recurrent tumours	Total
Larynx	0	6	0	6
Oral cavity	3	16	48	67
Pharynx	6	41	57	104
Total	9	63	105	177

Table 2

AJC T and N stages

T	N0	N1	N2, 3
T1	Stage I	Stage III	Stage IV
T2	Stage II	Stage III	Stage IV
T3	Stage III	Stage III	Stage IV
T4	Stage IV	Stage IV	Stage IV

Table 3

Number of patients in each T and N stage

T	N0	N1	N 2, 3
T1	185	24	33
T2	408	84	81
T3	223	85	117
T4	113	72	110

Table 4

T and N stage and survival

T	Survival (per cent)		
	N0	N1	N2, 3
T1	87.2	80.2	45.2
T2	79.4	53.5	37.7
T3	57.6	35.8	32.0
T4	45.5	24.5	16.8

II and III respectively, is similar and shows no statistically significant difference ($p>0.05$). It is also obvious that survival of patients belonging to the same stages, particularly stage IV, differ significantly. Patients with T4, N0 (stage IV) and T1, N2–3 (stage IV) lesions, for example, have significantly superior survival than patients with T4, N1, or T4, N2–3 lesions, also belonging to AJC stage IV ($p<0.01$).

Discussion

The classification of cancers must have a purposeful meaning in predicting prognosis. However, despite specific agreement on the TNM staging system as proposed by AJC, it continues to be vague in certain aspects of assigning the disease into various categories which actually appears to be on arbitrary grounds rather than on real results. Under these circumstances, reporting of the end result, predicting prognosis and therapy is misleading as is seen in our patients with T1 N0 M0, T2 N0 M0 and T1 N1 M0 lesions, where the survival is similar, although these patients were classified in AJC stage I, II and III respectively. They were presumed to have poorer prognoses with the advancing stage under AJC staging system. Similarly, the patients with T1 N2, 3 and T4 N0 stage IV lesions have better chance of cure than the patients with T4 N1 and T4 N2, 3 stage IV lesions, although inappropriately placed in higher AJC stages.

Favourable subsets of advanced AJC stages have also been recognized by MENDELHALL et coll. (7) and ROONEY et coll. (8). In the former report patients with T1, T2, T3 and N2a, N2b and N3a (all belonging to AJC stage IV) had a more favourable prognosis. These patients were treated with radiation therapy with or without neck dissection. ROONEY et coll. reported on a much better complete response in patients treated initially with cisplatin and 5-FU in advanced head and neck cancers (89 per cent in patients with T4 N0 (AJC stage IV) lesions). The better responses also reflected in better survival regardless of subsequent definitive therapy of surgery and/or radiation.

In summary there is a mounting evidence of the fact that certain types of lesions with a more favourable prognosis, do exist, although classified in advanced stages in the present AJC staging system. Recognition of these lesions is of importance for any treatment planning and reporting of end results.

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