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Symptomatology in Head and Neck Cancer: A Quantitative Review of 385 Cases

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Abstract: Symptom durations in head and neck cancer patients analyzed as a function of tumor stage suggest a reversal of the "common sense" notion that patients with early disease generally present with a shorter symptomatic period. A possible explanation is that variation in stage at diagnosis is primarily due to intrinsic differences in tumor aggressiveness rather than patient delay. This would imply that early detection programs may be incapable of realizing the potential for improved survival commonly ascribed to them. (*Am J Public Health* 70:520-522, 1980.)

Symptoms occurring in conjunction with cancer are well documented in the clinical literature. However, the information provided is usually qualitative in character. Quantitative augmentation of symptomatology information for specific disease sites is thus seen to be a worthwhile objective. A study was therefore undertaken involving head and neck cancer patients. Results include symptom occurrence rates and correlations of symptom duration with stage of disease and symptom type.

Methodology

The Department of Otolaryngology, State University of New York at Buffalo, maintains a data base on head and neck cancer patients treated at affiliated hospitals. Data extracted from hospital charts and physician reports are coded for computer storage. A symptom classification scheme was developed with 78 entries, enabling representation of each classified symptom by a two-digit code.

Information on symptoms is elicited at the time of admission work-up by the house staff. If several symptoms are mentioned, the duration of each is recorded whenever possible. Stage of disease is derived from the physician's clinical description, utilizing a standard classification procedure.[1] At the time of this investigation, information was available on 385 patients having no prior history of head and neck cancer.

Results

The 385 patients reported 1026 symptoms. The 16 most frequent symptom codes, accounting for 71 per cent of all reported symptoms, are presented in Table 1. Frequencies for selected tumor sites are also presented.

A parameter of particular interest is symptom duration (from first perception to diagnosis). The earliest (i.e., longest duration) symptom is viewed as an approximate measure of patient delay in seeking medical evaluation. Not all symptom durations were recorded. Specifically, the data include 539 symptom durations in 358 patients, 304 of whom had stageable tumors. Most of the 507 unspecified durations were judged to be for secondary symptoms with imprecisely perceived starting points.

Figure 1 presents smoothed distribution curves of longest symptom duration for 304 head and neck cancer patients as a function of tumor stage. The smoothing, to reduce random fluctuations, was accomplished by an available computer routine.[2] For any duration on the abscissa, the ordinate specifies the per cent of patients of given stage disease whose longest symptom duration exceeds the abscissa value. For example, 40 per cent of patients with Stage I tumors had symptoms longer than 6 months, whereas only 20 per cent of Stage IV patients exceeded this symptom duration. Note that 3 to 12 per cent of the patients had symptom durations in excess of 18 months.

The expectation that symptom durations are generally

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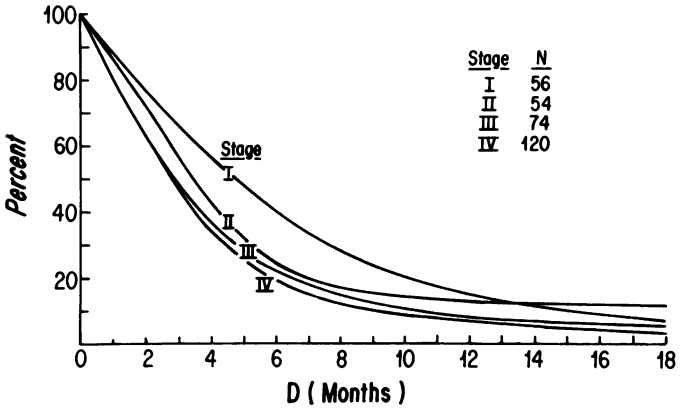

FIGURE 1—Per Cent of Patients Having Longest Symptom Duration Greater than D, by Stage of Disease

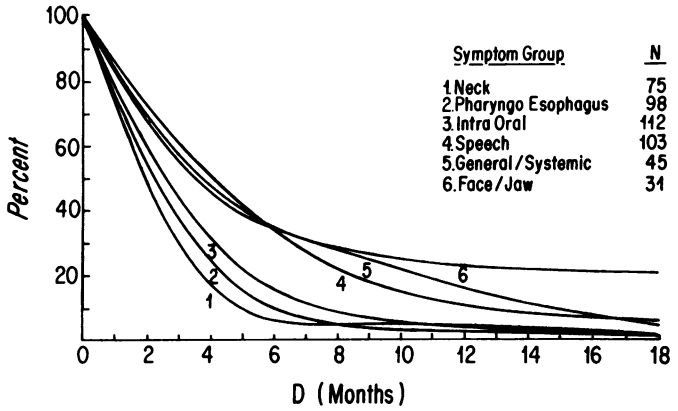

FIGURE 2—Per Cent of Symptoms within Given Group Having Duration Greater than D

shorter in early stage cancer patients is not supported by the Figure. In fact, one sees a slight reverse trend which is marginally confirmed by a Kendall correlation coefficient of −.10 between symptom duration and disease stage ($p = .01$).

The possible dependence of symptom duration on type of symptom was next explored. Symptom codes were aggregated into nine functional or anatomical groups, viz.: speech, pharyngoesophagus, intraoral, neck, face/mandible, nasal/sinus, ear, breathing, and general/systemic symptoms. The smoothed distributions of symptom duration within six of the nine groups (with largest N) are shown in Figure 2. All symptoms with quantified duration (not just the earliest symptom for each patient) were utilized here. Symptoms within three of the groups, namely, neck, pharyngoesophagus, and intraoral, appear to give rise to substantially earlier patient response (mean = 3.2 months) than symptoms within the speech, face/mandible and general/systemic groups (mean = 6.0 months). This hypothesis was tested using a t-statistic for difference in means. In applying the test, multiple symptom durations reported by individual patients were assumed to be completely correlated, hence reducing the number of independent observations. The difference in the two population means was found to be statistically significant ($p < .0003$).

Conceivably, within one or more of the six relatively homogeneous symptom groups, the relationship between symptom duration and stage of disease differs from the aggregate results in Figure 1. To investigate this possibility, the lowest and highest quartiles of symptom durations within each symptom group were extracted and the distribution of stage computed for the two extreme quartiles. This was done for the four symptom groups with largest N and the results displayed in Figure 3. If the shortest duration quartile (designated on the Figure as Short Symptom Duration) were associated with early stage of disease, we should expect to see a higher percentage of Stage I and Stage II than in the corresponding longest duration quartile. However, the reverse effect is again consistently evident in all four groups.

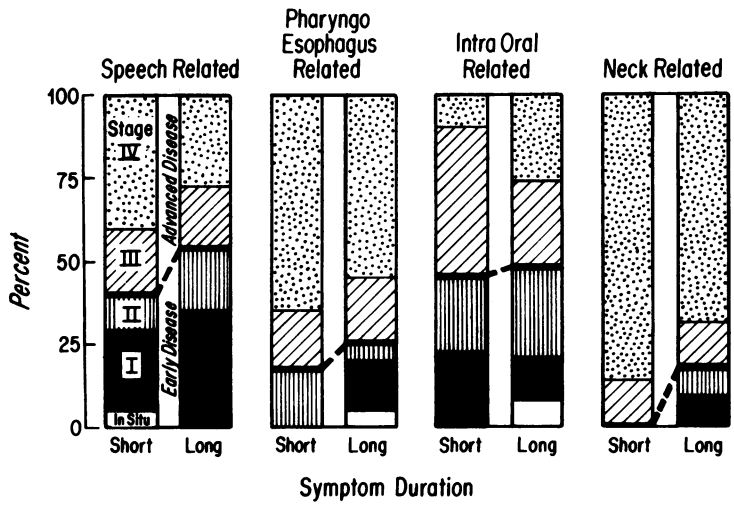

FIGURE 3—Per Cent Distribution of Stage of Disease Associated with Symptoms of Short and Long Duration, by Related Symptom Group

TABLE 1—Highest Frequency Symptoms as Per Cent of Reporting Patients

	All Head & Neck Sites (%)	Selected Individual Sites				
		Oral Cavity (%)	Oro-pharynx (%)	Hypo-pharynx (%)	Glottis (%)	Other Larynx (%)
Hoarseness	30	1	6	38	95	71
Dysphagia	23	18	37	51	8	45
Intraoral Lesion	22	63	22	0	0	0
Mass in Neck	22	12	35	38	2	17
Persistent Sore Throat/Odynophagia	21	10	57	41	8	38
Intraoral Pain	15	41	18	0	0	2
Sudden Weight Loss	14	11	25	36	3	21
Earache	9	7	18	13	3	7
Dyspnea/Orthopnea	7	2	6	10	8	19
Facial Lesion	6	6	0	5	0	0
Swelling of Neck	4	3	4	8	3	2
Hemoptysis	4	3	4	3	2	14
Weakness/Fatigue	4	4	6	10	2	0
Voice Change	4	2	4	13	6	2
Productive/Frequent Coughing	4	3	8	8	5	2
Wheezing/Stridor	4	1	2	8	2	14
Total No. of Symptoms Included Above	742	209	129	110	91	107
See All Reported Symptoms	1026	296	168	139	109	128
No. of Patients	385	112	51	39	62	42
Symptom/Patient Ratio	2.7	2.6	3.3	3.6	1.8	3.0

Discussion

Symptom tabulations for large patient series, as in Table 1, but expanded to all occurrences as well as to multiple symptom constellations, would supplement customary qualitative listings with a useful quantitative dimension.

Our major finding is the absence of a positive correlation between longest symptom duration (patient delay) and stage of disease. A similar result has been reported in a breast cancer study.[3] This finding runs counter to the common sense notion that the longer patients wait before seeking medical evaluation the more advanced their disease will tend to be. A possible explanation is that the characteristic which primarily distinguishes advanced from early stage disease is intrinsic aggressiveness of the tumor rather than longer patient delay. A recent study of breast tumor growth rate variability and association with degree of malignancy[4] presents results which tend to support this interpretation.

On the other hand, a methodological objection can be raised that the data, coming from patient recall during history and physical workup, may be unreliable. Because of the potential significance of our finding, we recommend that corroborative studies be conducted under a protocol designed to elicit patient-reported data at a demonstrated level of accuracy and reliability.

Should the substantive explanation offered apply, one consequence is that screening or educational programs aimed at early detection, even if successful in increasing the proportions of Stage I and II cases diagnosed, may yield substantially less improvement in survival than that predicted on the basis of stage of disease alone. For example, a patient who would ordinarily have presented with Stage III disease is now detected earlier with Stage I disease. This patient, because of an innately more aggressive tumor, is not comparable to patients in the original Stage I group, and his expected survival cannot be based on historical Stage I group experience. Thus, there would be a limit to what can be achieved through screening or early detection programs. Evaluation of the efficacy of such programs must therefore go beyond demonstrating a shift to earlier tumor stage and look for actual improvements in survival or duration of disease-free period.

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