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Keywords

NPC; Computed tomography; Radiotherapy; Significant prognosticators



## ● Clinical Original Contribution

### SIGNIFICANT PROGNOSTICATORS AFTER PRIMARY RADIOTHERAPY IN 903 NONDISSEMINATED NASOPHARYNGEAL CARCINOMA EVALUATED BY COMPUTER TOMOGRAPHY

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**Purpose:** To evaluate the significant prognosticators in nasopharyngeal carcinoma (NPC).

**Methods and Materials:** From 1984 to 1989, 903 treatment-naive nondisseminated (M0) NPC were given primary radical radiotherapy to 60–62.5 Gy in 6 weeks. All patients had computed tomographic (CT) and endoscopic evaluation of the primary tumor. Potentially significant parameters (the patient's age and sex, the anatomical structures infiltrated by the primary lesion, the cervical nodal characteristics, the tumor histological subtypes, and various treatment variables) were analyzed by both univariate and multivariate methods for each of the five clinical endpoints: actuarial survival, disease-free survival, free from distant metastasis, free from local failure, and free from regional failure.

**Results:** The significant prognosticators predicting for an increased risk of distant metastases and poorer survival included male sex, skull base and cranial nerve(s) involvement, advanced Ho's N level, and presence of fixed or partially fixed nodes or nodes contralateral to the side of the bulk of the nasopharyngeal primary. Advanced patient age led to significantly worse survival and poorer local tumor control. Local and regional failures were both increased by tumor infiltrating the skull base and/or the cranial nerves. In addition, regional failure was increased significantly by advancing Ho's N level. Parapharyngeal tumor involvement was the strongest independent prognosticator that determined distant metastasis and survival rates in the absence of the overriding prognosticators of skull base infiltration, cranial nerve(s) palsy, and cervical nodal metastasis.

**Conclusions:** The significant prognosticators are delineated after the advent of CT and these should form the foundation of the modern stage classification for NPC. Copyright © 1996 Elsevier Science Inc.

NPC, Computed tomography, Radiotherapy, Significant prognosticators.

#### INTRODUCTION

Nasopharyngeal carcinoma (NPC) is prevalent in Southern China, and its annual incidence rate was 19.2 out of 100,000 in 1991 in Hong Kong. Nasopharyngeal carcinoma is unique among head and neck cancers because of its high rate of distant metastasis, undifferentiated histology, radiosensitivity, and chemosensitivity. However, despite the high rate of distant metastasis after primary radiotherapy (12, 14, 17, 21, 22, 24, 29, 33, 39, 41, 44, 47, 49), a significant proportion fails primarily locally (21, 23, 47), and local failures have been shown to predispose to distant metastasis (21).

With the advent of computed tomography (CT), the accuracy of evaluation of the extent of primary tumor and nodal metastasis has greatly improved (4, 27, 34, 40, 45,

48), thus facilitating radiotherapy planning and enhancing its precision. This should lead to an increase in loco-regional tumor control. In the present CT era, it is important to reexamine the prognosticators governing local, regional, and systemic control and survival of NPC because the previous findings may no longer be valid. To assess the impact of CT on staging systems, we initiated in 1984 a prospective investigative and treatment protocol for NPC in which all patients were evaluated by CT prior to definitive radiotherapy. This permitted a direct comparison of the Ho's (8, 10–11), the UICC (20) and the AJC (1) Stage Classifications for NPC and a detailed analysis of the prognostic variables in 659 NPC (1984–1987) (39). Now we report the analysis of 945 NPC (1984–1989), which includes the previous study patients with a longer follow-up interval. This is the largest study on CT-staged

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