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Nasopharyngeal carcinoma—time lapse before diagnosis and treatment

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This is a descriptive study of 168 patients with nasopharyngeal carcinoma who were referred to public clinical oncology departments for primary treatment between July and September 1996. The mean duration from the onset of symptoms to histological diagnosis was 5.0 months; the duration ranged from 6.1 months (for patients presenting with nasal symptoms) to 1.8 months (for those with cranial nerve dysfunction). The mean period between the onset of symptoms and the seeking of medical advice was 2.9 months. For 54% of the patients, there was a further delay of up to 2.4 months between the initial medical consultation and referral to the appropriate specialist. The majority (84%) of patients attended public institutions for histological confirmation. The mean total time taken from the onset of symptoms to the commencement of radiotherapy was 6.5 months (range, 1.3-74.0 months)—45% of the delay was attributed to the patient, 20% to initial consultations, 14% to diagnostic arrangement, and 21% to preparation for radiotherapy. Concerted efforts are needed to minimise further the time between the onset of symptoms and treatment. A substantial reduction in this delay can be achieved if both public and primary care doctors were made more aware of the significance of relevant symptoms.

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Introduction

Nasopharyngeal carcinoma (NPC) is the third most common cancer and the third most common cause of cancer death in the local male population. The loss of working life due to NPC is substantial.¹ The extent of disease at diagnosis is the most important prognostic factor²⁻⁷: patients who have stage I NPC (using Ho's terminology⁸) have a tumour that is confined to the nasopharynx and can achieve a 5-year actuarial survival of 81%. In contrast, the median survival for patients who have distant metastases (stage V) is only 5 months.⁹

One of the significant factors associated with the presenting stage of NPC is the duration of symptoms before the establishment of the diagnosis. In a preceding retrospective study,¹⁰ it was shown that the likelihood of presenting with stage I-II diseases decreases by 2% for every extra month's delay in diagnosis. In addition to the decreased ability of completing radical radiotherapy, patients who have had symptoms for 6 months or longer before diagnosis have a significantly inferior outcome when compared with those who have

had a shorter delay in diagnosis.¹⁰ The importance of early detection cannot be overemphasised.

During 1976 to 1980 at the Queen Elizabeth Hospital, the mean duration of symptoms before NPC diagnosis was as long as 8.8 months. With efforts in public education and increasing awareness, this time lag had decreased to 7.4 months during 1981 to 1985.¹⁰ This is still undesirably long, however, and a further reduction is needed to minimise the delay in presentation and diagnosis. There are currently no published data on the exact causes of delay in diagnosis for the NPC patients from the previous study.¹⁰ The purpose of this survey is not only to assess the current trends in the presentation of NPC patients, but also to identify opportunities for further minimisation of time lapse so that future improvements can be made and appropriately targeted.

Subjects and methods

All patients with undifferentiated or non-keratinising carcinoma of the nasopharynx who were referred to the clinical oncology departments at the Queen Elizabeth, Queen Mary, Prince of Wales, Tuen Mun, and Pamela Youde Nethersole Eastern hospitals for primary treatment between July and September 1996 were interviewed. The following data were collected:

- (1) The main presenting symptom.
- (2) The duration from the first symptom to the first medical consultation.
- (3) Whether the doctor who established the diagnosis was the first doctor consulted.
- (4) If not, the period until referral to an appropriate specialist.
- (5) The specialty and affiliation of the doctor who established the diagnosis.
- (6) Waiting time before the first appointment with a specialist.
- (7) The time taken by the specialist to attain histological confirmation of NPC and to refer the patient to a clinical oncology department.
- (8) The duration from the first appointment with a radiotherapist to the commencement of radiotherapy.

Patients with non-epidermoid malignancy of the nasopharynx or who had had previous treatment were excluded from analysis, as were three patients who failed to give a clear history of symptoms and duration. There were 168 evaluable patients. The male to female ratio was 2.2:1, and their ages ranged from 19 to 82 years (median, 50 years). All patients were staged by thorough physical examination, direct fibroscopic

examination of the upper airway, computed tomography, and chest radiography. Further metastatic work-ups (ultrasonography of the liver and bone scanning) were added for patients who had extensive lymphatic spread or symptoms suggestive of NPC metastasis.

For patients without gross distant metastases, the treatment policy was to give radical radiotherapy as far as technically feasible. Chemotherapy (mainly a cisplatin-containing regimen) was also given to those who had advanced disease or a poor response to radiotherapy.

Results

Relation between presenting symptom and delay in diagnosis

Table 1 lists the main presenting symptoms, their respective frequency, and the delay in diagnosis. The most common complaints were nasal symptoms (42.3%) and painless neck mass (41.7%). Fifteen (8.9%) patients presented with otological symptoms and seven (4.2%) presented with headache. Two patients (1.2%) were asymptomatic.

Among the symptomatic patients, the mean duration from the date of the first symptom to the date first seen by any doctor was 2.9 months (range, 0.0-61.9 months). Forty-one (24.4%) patients had symptom(s) for more than 6 months before presentation. Patients with symptoms due to cranial nerve dysfunction sought medical advice earlier than those with nasal symptoms (0.2 versus 3.6 months). The mean duration from the first medical consultation to the date of histological diagnosis was 2.1 months (range, 0.0-50.7 months). Doctors took longer to establish the diagnosis in patients who presented with otological symptoms than in those who had a neck mass (2.7 versus 1.2 months).

The mean duration from the date of the first symptom to the date of histological diagnosis was 5.0 months (range, <0.1-72.4 months). This varied from 1.8 months for patients presenting with nerve palsy to 6.1 months for those presenting with nasal symptoms (Table 1).

Time course of events leading to treatment

A detailed breakdown of the time taken for different steps leading to diagnosis and treatment are summarised in Table 2. Ninety (53.6%) patients spent a mean interval of 2.4 months (range, <0.1-48.1 months) consulting various doctors before being referred to a specialist who established the diagnosis. For the whole series, the mean interval was 1.3 months.

Only 27 (16.1%) patients had a biopsy done by

Table 1. Presenting symptoms and time lapse before attaining diagnosis

Presenting symptom	Patients, n=168 No. (%)	Median duration (range) [months]		
		Patient-related*	Doctor-related†	Total
Nasal symptom	71 (42.3)	3.6 (0.0-61.9)	2.5 (<0.1-50.7)	6.1 (<0.1-72.4)
Neck mass	70 (41.7)	2.7 (0.0-23.3)	1.2 (0.0-15.9)	3.9 (0.2-23.5)
Otological symptom	15 (8.9)	1.9 (0.0-7.7)	2.7 (<0.1-12.0)	4.6 (0.6-19.0)
Headache	7 (4.2)	2.6 (0.0-12.0)	1.8 (0.2-6.6)	4.4 (0.7-12.7)
Nerve dysfunction	2 (1.2)	0.2 (0.1-0.2)	1.7 (0.7-2.7)	1.8 (0.8-2.9)
Other	1 (0.6)	6.0	37.5	43.5
None	2 (1.2)	na	0.1 (<0.1-0.1)	0.1 (<0.1-0.1)

* Interval from first symptom to first medical consultation

† Interval from first medical consultation to date of histological diagnosis

na not applicable

Table 2. Time course of events leading to treatment

Stage	Interval (months)		
	Mean	95% range	Full range
First symptom			
↓	2.9	0.0-12.8	0.0-61.9
Appointment with first doctor			
↓	1.3	0.0-10.3	0.0-48.1
Referral to diagnostic specialist			
↓	0.2	0.0-1.6	0.0-2.9
First appointment with diagnostic specialist			
↓	0.6	0.0-1.9	0.0-37.5
Histological diagnosis			
↓	0.1	-0.2*-0.6	-0.8*-0.8
Referral to radiotherapist			
↓	0.2	0.0-0.4	0.0-0.6
First appointment with radiotherapist			
↓	1.3	0.5-2.0	0.5-3.3
Commencement of radiotherapy			

* Negative value because patients were referred to a radiotherapist before biopsy

Table 3. Time taken to arrange histological diagnosis and referral to a radiotherapist

Sector	Patients No. (%)	Mean duration (range) [months]			
		Appointment*	Biopsy†	Referral‡	Total
Private	27 (16.1)	<0.1 (0.0-<0.1)	0.1 (0.0-0.4)	0.1 (-0.1-0.2)	0.2 (0.1-0.4)
Public	141 (83.9)	0.2 (0.0-1.8)	0.7 (0.0-2.2)	0.1 (-0.9-0.6)	1.1 (0.0-3.2)
Total	168	0.2 (0.0-1.6)	0.6 (0.0-1.9)	0.1 (-0.2-0.6)	0.9 (0.0-2.7)

* Waiting time for first appointment with the diagnostic specialist

† Interval from the date of first appointment to biopsy

‡ Interval from the date of biopsy to referral to a radiotherapist

specialists in the private sector, whereas the remainder were referred to public institutes for histological confirmation. Most (n=114, 67.9%) patients were diagnosed by otolaryngologists at public hospitals, and only four (2.4%) patients were referred directly to radiotherapists for both diagnosis and treatment.

The mean interval between the date of referral to the diagnostic specialist and the date of referral to a clinical oncology department was 0.9 months (Tables 2 and 3). Specialists in the private sector offered a significantly shorter waiting time for the first appoint-

ment. In addition, these specialists could arrange biopsy and subsequent referral to clinical oncology departments more speedily. Hence, the total time taken by the private sector was shorter than that by public departments (0.2 versus 1.1 months) [Table 3].

The mean interval between the date of referral to a clinical oncology department and the date of commencement of radiotherapy was 1.4 months (Table 4). This ranged from 0.9 to 1.8 months among the different centres. While the mean waiting time for the first appointment varied from 0.1 to 0.2 months, the mean

Table 4. Time taken by different clinical oncology departments

Centre	Patients	Mean duration (range) [months]		
		Appointment*	Preparation/waiting†	Total
A	45 (27.8)	0.2 (0.0-0.6)	1.5 (0.7-3.3)	1.8 (0.9-3.4)
B	41 (25.3)	0.1 (0.0-0.4)	1.2 (0.5-2.8)	1.3 (0.6-2.9)
C	34 (21.0)	0.2 (0.0-0.6)	1.6 (0.7-2.1)	1.7 (0.8-2.2)
D	26 (16.0)	0.1 (0.0-0.2)	0.8 (0.5-1.8)	0.9 (0.5-1.9)
E	16 (9.9)	0.2 (0.0-0.4)	0.9 (0.5-1.6)	1.1 (0.6-1.7)
Total‡	162	0.2 (0.0-0.6)	1.3 (0.5-3.3)	1.4 (0.5-3.4)

* Waiting time for first appointment with radiotherapist

† Interval from the date of first appointment to commencement of radiotherapy

‡ Excluding three patients who initially refused treatment and another three who did not receive radiotherapy

duration from the first appointment to the actual commencement of radiotherapy ranged from 0.8 to 1.6 months.

The overall mean duration from the date of the first symptom to the commencement of radiotherapy was 6.5 months (range, 1.3-74.0 months). In addition to the delay in presentation, three patients took another 1.7 to 4.1 months to agree to treatment. The total delay attributable to the symptomatic patient amounted to 2.9 months (range, 0.0-61.9 months). The mean duration of each stage of the process leading to treatment, as a percentage of the total time taken was as follows: onset of symptoms to initial consultation, 45%; referral and appointment with diagnostic specialist, 20%; arrangement for diagnostic procedures, 14%; and preparation for radiotherapy, 21%.

Staging investigations that were performed at the time of diagnosis showed that 12 (7.1%) patients had stage I NPC and 63 (37.5%) had stage II NPC. The NPC in 75 (44.6%) patients had reached stage III and that in 18 (10.7%) patients had reached stage IV. All 127 patients with a duration of symptoms of less than 6 months received a complete course of radical radiotherapy; three (7.3%) of the 41 patients with symptoms lasting 6 months or more, however, were not treatable (two had advanced disease and died before the commencement of radiotherapy and the third patient defaulted).

Discussion

There is little dispute that the early detection and treatment of NPC are important for increasing the likelihood of cure for NPC patients. There is an urgent need for review of the whole management pathway so that different causes of delay can be identified and appropriate improvements can be initiated. The present detailed survey of consecutive patients referred for primary treatment in public hospitals was hence

performed. Although the current study only covered a 3-month period, the data obtained gives useful information for planning future action. The data are fairly representative because all five clinical oncology departments in Hong Kong were included and because there is little seasonal variation in referral pattern (unpublished data). It should be noted, however, that data on the onset of symptoms and initial consultations depend on patients' recall and the available medical records. As it is impossible to scientifically verify their accuracy, an in-depth statistical analysis has not been attempted—this study is thus mainly descriptive.

There has been an encouraging reduction in the interval between the onset of symptoms to the histological diagnosis of NPC in Hong Kong patients.¹⁰ Among patients who were treated between 1976 and 1985 at the Queen Elizabeth Hospital, the mean symptom duration was 8 months and 50% of patients had symptoms for 6 months or longer (classified as 'late presenters').¹⁰ The corresponding duration in this study has decreased to 5 months, and 24% of the patients were late presenters. There is certainly no ground for complacency, however: the proportion of patients with advanced stage III-IV disease remained high (56%). Further attempts for early detection are needed.

One of the most crucial steps for minimising the delay in diagnosis and treatment is a greater, concerted effort to improve public education. It took a mean duration of 2.9 months from the onset of symptoms for patients to seek medical advice (Table 2). Indeed, patient delay attributed to 45% of the total time taken from the appearance of the first symptom to the commencement of radiotherapy. In addition, more than half (54%) of the patients consulted various other doctors before being referred to an appropriate specialist, and this amounted to 20% of the total time lapse. Hence, more active steps should be taken not only to arouse public awareness about this leading cancer, but also to disseminate information on the presenting

symptoms and the most direct channels of consultation when related symptoms are noted.

It is most worrying that the two most common complaints at presentation were associated with the longest delays in diagnosis (Table 1). Approximately 42% of the patients had nasal symptom(s) and the mean duration before attaining diagnosis was as long as 6.1 months, because serious epistaxis was rare and most patients only had vague postnasal drip. The mean duration before presentation was 3.6 months; patients had to wait a further 2.5 months before the diagnosis was established. The public also failed to recognise that persistent neck mass is a sinister sign; on average, patients waited 2.7 months before going to a doctor.

While most doctors had little problem in diagnosing NPC in patients with cervical lymphadenopathy, the association with otological symptoms remained inadequately recognised: doctors required 1.2 and 2.7 months, respectively, to make a diagnosis (Table 1). The continuous medical education of all front-line clinicians is needed to ensure that this differential diagnosis will not be inadvertently missed, thus minimising the time required for its recognition.

Most (83.9%) patients were referred to specialists in public institutions for histological confirmation. Because of the introduction of a system that screens referrals to prioritise appointments, the time taken was not excessive: the total mean time taken (including waiting time for first appointment, arranging biopsy, and referral to a clinical oncology department) was 1.1 months. This is still relatively long compared with the private sector, which could provide the service within 0.2 months. Further streamlining of procedures and more speedy arrangements for radiological and pathological investigations in public hospitals are required. In addition, close liaison should be established between public institutions and the private sector. The primary health care doctor must be well informed not only about the referral procedures, but also the indications and the arrangements for urgent consultation. Indeed, patients with a high suspicion of NPC could even be referred directly to clinical oncology departments for histological confirmation and simultaneous preparation for radiotherapy.

The mean total time taken by clinical oncology departments to treat NPC patients amounted to 21% of the total time lapse. This varied from 0.9 to 1.8 months among the different public centres, although all centres managed to see the patient within 0.2

months from referral. A reduction in the waiting time for treatment depends on the availability of linear accelerators and planning facilities, as well as supporting services (eg staging investigations and dental preparation). Hence, a coordinated effort by all the departments involved is needed to improve the situation. A better cross-referral system to divert patients from centres that have a long waiting list would also help to reduce the waiting time for radiotherapy.

The detrimental effects of delaying presentation on the cancer stage and ultimate survival have been described in a preceding study.¹⁰ Furthermore, the psychological distress of waiting for a life-saving treatment is substantial.¹¹ Although the long-term outcome cannot be assessed from this descriptive survey, it was notable that 5% of patients who had had symptoms for more than 6 months died before radiotherapy could be started. The need for minimising the time lapse before diagnosis and treatment is important. The success of attempts at achieving this depends not only on patients, but also all the health care providers involved.

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