

Nasopharyngeal Carcinoma: Knowledge amongst General Practitioners in Western Sydney

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Abstract

Background: The west of Sydney has a high population of Asian descent, a high risk population to nasopharyngeal carcinoma (NPC). There is a lack of primary research focused on evaluating the clinical knowledge amongst primary health providers in managing this presentation.

Method: A cross-sectional study, involving surveying 113 General Practitioner (GP) practices in the Fairfield and Bankstown city region on clinical knowledge around key aspects of epidemiology, aetiology, clinical presentation and management of Nasopharyngeal Carcinoma. 42 surveys were completed.

Results: GPs were well aware of many NPC symptoms, with over 90% recognizing epistaxis, nasal obstruction and cervical lymphadenopathy. Many GPs were aware of several aetiological factors for NPC, in particular smoking (95.2%), however a significant proportion were not aware that Epstein-Barr Virus (EBV), pre-existing Ear Nose & Throat (ENT) disease, and formaldehyde exposure were key risk factors (60%). All participants judged CT, MRI and specialist referral as useful management options but a significant proportion (29.7%) would chose to refer between 2-4 weeks from presentation outside the critical 2 weeks' time frame. Nearly half of the GPs surveyed (45.2%) believed that they had insufficient knowledge of NPC and required further information (81%).

Conclusion: GPs in the west of Sydney would benefit from further education in order to improve the diagnosis and management of these patients.

Keywords: Nasopharyngeal carcinoma; Knowledge; Physician; GP; Community

Abbreviations NPC: Nasopharyngeal Carcinoma; GP: General Practitioners

Introduction

Nasopharyngeal Carcinoma (NPC) is a squamous cell carcinoma affecting the lining of the nasopharynx [1]. It tends to occur in individuals of Asian, Middle Eastern and North African descent. The condition has reached endemic proportions in Southern China, where the incidence of NPC is 50 per 100000 [2]. It is the fifth most common malignancy in Singapore and Hong Kong [3,4].

NPC is significantly rarer in Australia, with an incidence of approximately 0.5 per 100000 [5]. However, a study conducted between 1972 and 1990, showed the incidence of NPC in Vietnamese and Chinese migrants living in NSW to be 12.3 and 17 per 100000, respectively [6]. The area of Greater Western Sydney (GWS) is a highly multicultural region with a large number of Southeast Asian migrants [7,8].

NPC is often diagnosed in its late stages due to the insidious and non-specific nature of its clinical presentation and the difficulties

inherent in examining the nasopharynx. Advanced stage NPC is associated with poor prognosis [9].

Romdhoni et al. stated that "NPC carries an excellent prognosis if treated early, but most patients presented with stage III to IV disease, which negatively affected the cure rate and increased the mortality rate" [9]. The 5 year survival rate for NPC is 81.5% for patients diagnosed at Stage I and 25.9% for patients diagnosed at Stage IV [10].

In some regions, later diagnosis of NPC may be partly caused by health inequity. According to the 2011 census, both the Fairfield and Bankstown city regions are areas of relatively low socioeconomic (SE) status, as indicated by data on household income. 28.1% of households in the Bankstown city region are in the lowest quartile group for household income [11], compared to 21% of households in Greater Sydney. In the Fairfield city region, this figure reaches 29.1% [12]. The correlation between SE disadvantage and health has been drawn by numerous studies [13], with poorer SE status associated with reduced access to primary healthcare services [14,15].

Literature suggests that insufficient awareness of NPC amongst health professionals contributes to delayed recognition. According to studies conducted in Indonesia and Malaysia, GPs in these regions lack the requisite knowledge to diagnose and refer patients with suspected NPC [16,17].

Study aims

Our study aims to evaluate the knowledge of NPC amongst General Practitioners (GPs) in the Bankstown and Fairfield city regions. In particular, we wish to determine the extent of their knowledge regarding the epidemiology, symptoms, aetiology and management of NPC. We intend to explore the opinions of GPs regarding the adequacy of their knowledge and their need for further education, and their preferences for the means of further education if this is desired.

Methodology

This project has been approved by the University of Western Sydney Human Research Ethics Committee (Approval number: H9067).

Survey development

A search of the literature for similar studies was conducted using PUBMED. The following search terms were used: "Nasopharyngeal neoplasms" [MeSH]+ "awareness"; "Nasopharyngeal neoplasms" [MeSH]+ "general practitioners"; and "Nasopharyngeal neoplasms" [MeSH]+ "knowledge". This yielded two studies, both of which included their questionnaires for assessing GP knowledge of NPC. We used the structure of these questionnaires to create the general framework for our survey. We divided our survey into six sections, in order to determine: Participant demographic and qualifications (1); Knowledge of NPC in the areas of epidemiology (2), aetiology (3), symptoms (4), and management (5); and Source of knowledge and desire for further education (6). Questions consisted of multi-tick boxes, close-ended questions, and sliding scales. A draft survey was tested by two GPs from the University of Western Sydney, Department of General Practice, with the final survey reflecting their feedback.

Recruitment and data collection

GPs were recruited from GWS suburbs with a high SE Asian population. Using 2011 Census data, we identified these suburbs as the Bankstown and Fairfield City regions [7]. General Practices were sourced using the National Health Services Directory [18]. A total 113 practices were approached in person and invited to participate in the study. Participant information sheets (PIS) and surveys were directly handed to GPs where possible. As explained by the PIS, consent was implied on the GP undertaking the survey. If the GPs were not able to be directly approached, the PIS and surveys were left with the practice manager or receptionist to be given to the GP for completion by a predetermined due date. Surveys were collected in three ways: 1) Delivered and completed by the GP in the presence of the researcher

(with GP comments noted), 2) Left with the GP for completion in the absence of the researcher and picked up at a later date, 3) Left with the GP for completion in the absence of the researcher and faxed at a later date.

Data analysis

Descriptive data analysis was performed using Statistical Package for the Social Sciences 21 (SPSS). Graphs of the data output were created with Microsoft Excel. Sections 2-4 of the survey required participants to rate aetiological factors, symptoms and management options in terms of their association with NPC, likelihood in NPC and usefulness, respectively. In order to determine the 'favourable responses', a detailed review of literature was performed. According to a comprehensive list of aetiological factors by Chang and Adami, all of the factors listed in our survey were considered weakly to strongly associated [3]. For this reason, "some association" and "highly associated" were considered 'favourable responses'. In a 1997 study, Lee et al described symptom frequency in 4768 NPC patients [19]. Based on this, "somewhat likely" and "very likely" were appointed the 'favourable responses' for all symptoms, with the exception of 'facial pain and numbness' (which was deemed "unlikely" and "somewhat likely").

Results

Study participation

A total 113 practices were approached in the Fairfield and Bankstown City regions. Total 37 practices declined to participate (32.7%). A total of 79 surveys were successfully distributed to GPs. By the end of the data collection period, 42 surveys (53.2%) had been completed and returned: 16 surveys were immediately, 24 were collected at a later date, one was faxed and one was posted. The most common reasons for declined participation were GP engagement in patient consultations, busy practices, and reluctance towards extra paperwork. Some GPs stated that the study was of no relevance to them, as they had never encountered a patient with NPC.

Demographic data

Participants were relatively experienced, with a mean of 27.3 years in the field of General Practice. The most common place of birth was Vietnam (n=14, 33.3%), while over half of the participants (n=27, 64.2%) reported being born in a country in which NPC is endemic (Table 1).

Country of birth		Country of graduation		Location of practice	
Country	N (%)	Country	N (%)	Sub urban	N (%)
Vietnam	14/42 (33.3%)	Australia	30/42 (71.4%)	Cabramatta	12/42 (28.6%)
Australia	6/42 (14.3%)	India	2/42 (4.8%)	Fairfield	10/42 (23.6%)
India	3/42 (7.1%)	Egypt	2/42 (4.8%)	Bankstown	9/42 (21.4%)
Malaysia	3/42 (7.1%)	New Zealand	1/42 (2.4%)	Bonnyrigg	4/42 (9.5%)
Italy	3/42 (7.1%)	China	1/42 (2.4%)	Canley Vale	2/42 (4.8%)
Egypt	2/42 (4.8%)	Malaysia	1/42 (2.4%)	Wetherill Park	2/42 (4.8%)

Indonesia	2/42 (4.8%)	Croatia	1/42 (2.4%)	Villawood	1/42 (2.4%)
Croatia	1/42 (2.4%)	Sudan	1/42 (2.4%)	St Johns Park	1/42 (2.4%)
Cambodia	1/42 (2.4%)	Vietnam	1/42 (2.4%)	Smithfield	1/42 (2.4%)
Malaya	1/42 (2.4%)	Thailand	1/42 (2.4%)		
China	1/42 (2.4%)	Philippines	1/42 (2.4%)		
Thailand	1/42 (2.4%)				
Sri Lanka	1/42 (2.4%)				
Lebanon	1/42 (2.4%)				
Philippines	1/42 (2.4%)				
Germany	1/42 (2.4%)				

Table 1: GP demographics.

Knowledge of NPC epidemiology

The majority of GPs (n=34, 81%) correctly identified males as the gender most commonly affected by NPC. Only 10 participants (23.8%) selected the age group with the highest incidence of NPC: 65-79 years of age. Out of these 10 participants, five also identified the age group with the second highest incidence: 15-24 years of age. 83.3% of GPs (n=35) were able to name one or more ethnicity which NPC most commonly affects, i.e. Southern Chinese, Southeast Asian, Japanese, Middle-Eastern and North African [2], however, 7 participants (16.7%) were unsure or did not write an answer. Only 33.3% (n=14) of GPs believed that NPC was more common in their suburb of practice than the rest of Australia.

Knowledge of NPC aetiology

GP knowledge of aetiological factors was varied. Overall, participants were relatively well aware of cigarette smoking, dietary factors and family predisposition as risk factors for NPC, but demonstrated insufficient knowledge of other risk factors, such as Epstein-Barr Virus (EBV) and exposure to formaldehyde. The aetiological factor known by most of the GPs was cigarette Smoking (n=40, 95.2%). Several GPs expressed that their patients who were diagnosed with NPC had been smokers.

A total 71.2% (n=30) and 73.8% (n=31) correctly identified the association of NPC with dietary factors and familial predisposition respectively. Participants displayed a poor knowledge base regarding the aetiological association between NPC and EBV, with only 59.5% correctly identifying that an association exists. Many GPs questioned the inclusion of EBV as a response option in the survey as they did not believe there was any correlation. Responses also reflected an unsatisfactory awareness of the association of NPC with Pre-existing Ear Nose & Throat (ENT) Disease and Exposure to formaldehyde, with 54.8% and 46.3% of participants respectively stated there was an association.

Knowledge of NPC symptoms

Participants displayed good awareness of many of the clinical features of NPC (Table 2).

Knowledge of NPC management

The importance of referral to head and neck specialist was well apprehended, with all of the participants correctly judging referral as “useful”. The majority of participants also chose the ideal time-frame of “Within 2 weeks” to perform MRI and CT scans for patients with suspect clinical features (Table 3).

GP sources of knowledge and preferences for further education

University was the most common source of knowledge on NPC (n=25, 59.5%). This was followed by textbooks and journals (n=23, 54.8%) and the internet (n=14, 33.3%). Notably, a large proportion of GPs (n=34, 81%) reported the need for more education on NPC. There was no clear preferred mode of delivery of additional NPC education. 40.5% of participants (n=17) selected online education modules, with the same number of participants also selecting CPD courses and brochures.

Symptoms	Correct response N (%)	Aetiology	Correct response N (%)
Epistaxis	39/40 (97.5%)	EBV	25/42 (59.5%)
Nasal obstruction	38/41 (92.7%)	Cigarette smoking	40/42 (95.2%)
Nasal discharge	37/40 (92.5%)	Exposure to formaldehyde	19/41 (46.3%)
Tinnitus	30/40 (75%)	Dietary factors	30/41 (73.2%)
Deafness	26/40 (65%)	Pre-existing ENT disease	23/42 (54.8%)
Headache	33/40 (82.5%)	Family predisposition	31/42 (73.8%)
Cervical lymphadenopathy	39/41 (95.1%)		
Facial pain and numbness	25/41 (60.1%)		

Table 2: GP knowledge of NPC aetiology and symptoms.

Management	Useful N (%)	Unsure or not useful N (%)	Within ideal time frame (2 weeks) N (%)
Referral to head and neck specialist	40/40 (100%)	0/40 (0%)	29/41 (70.7%)
EBV serology	32/38 (84.2%)	6/38 (15.8%)	27/35 (77.1%)
CT Scan	39/39 (100%)	0/39 (0%)	33/40 (82.5%)
MRI Scan	40/40 (100%)	0/40 (0%)	30/39 (76.9%)

Table 3: GP knowledge of NPC management.

Discussion

Summary of findings

Our results showed that all participants excluding one had heard of NPC, and that of these, 64.3% had treated a patient with the condition. This is a substantial figure considering the relatively low incidence of NPC in Australia. Nevertheless, it reflects the high concentration of SE Asians in Fairfield and Bankstown, an ethnicity with increased risk of developing NPC. Interestingly, the majority of GPs were born in a country in which NPC is endemic. These participants may have had more exposure to the condition than those born in non-endemic countries, potentially placing them at an advantage in terms of knowledge. Despite this, almost half of the GPs (n=19, 45.2%) felt that they did not have adequate knowledge of NPC.

Our results suggest that overall; GP knowledge is could be improved to assist with early diagnosis and management of NPC. The majority performed relatively well in their knowledge of symptomatology, with over 90% affirming the relevance of cervical lymphadenopathy and nasal features. Significantly fewer GPs were aware of the condition's ability to cause changes in hearing and facial sensation. These findings indicate that GPs require further education regarding the clinical presentation of NPC, to improve the likelihood of early recognition.

On the whole, GPs lacked knowledge regarding the aetiology of NPC. Most participants affirmed the relationship between cigarette smoking and NPC, however, smoking is a well-known and non-specific risk factor, implicated in many different cancers. Approximately 1 in 4 participants were unaware of the existence of a familial predisposition towards NPC. A similar number failed to recognize an association with diet. Interestingly, the least-recognized risk factors were considerably more specific to NPC, i.e. EBV, pre-existing ENT disease, and formaldehyde exposure. Furthermore, only 25 out of 42 GPs were aware of the strong relationship between EBV and NPC.

Respondents demonstrated good knowledge of the appropriate management options for NPC. The majority of GPs correctly identified the ideal time-frame in which to perform diagnostic imaging, suggesting an awareness of the urgency of investigation. Alarming, however, 29.3% (n=12/41) of respondents would wait more than two weeks before making a referral to a Head and Neck Specialist. Delaying referral in a high-risk patient with symptoms suggestive of NPC may be highly detrimental. This highlights the need for improved GP knowledge regarding the management of patients with suspected NPC.

Study Limitations

The use of surveys

Surveys were completed in the presence of a researcher where possible. Due to high patient loads, however, many GPs were left with surveys to complete at a later time. This created the possibility that participants may have obtained their information from external sources, such as the internet or textbooks, rather than relying on their own knowledge. Hence, the use of surveys was a major limitation in this study.

Small sample size and consideration of a Post-Hoc sample size

This study was limited by its relatively small sample size (n=42). While more participants may have been recruited by expanding the study setting, we decided to restrict our study to the pre-defined regions of Bankstown and Fairfield. Given the high rates of NPC in SE Asians, we believe that this action was appropriate. It also justifies, the lack of utility of a Post-Hoc sample size, but highly suggests that given the appropriate demographic that these findings are suggest of the results of this survey. For the purpose of future studies, we highlight the need for intensive recruitment over a long period of time. This will likely yield a larger sample size, generating greater statistical power.

Survey refinement for future studies

Retrospectively, we detected two areas in which the survey could be improved. The first pertains to one question which asked if participants believed NPC was more prevalent in their area of practice. As there is no current data on the exact prevalence of NPC in specific GWS city regions, we were unable to determine the correct response to this question. The survey also lacked open-ended questions, which may have been valuable in obtaining an understanding of GPs' experiences with NPC patients.

Recommendations

Several factors contribute to the delayed diagnosis of NPC. These include the non-specific and insidious presentation of NPC and insufficient knowledge of GPs. Low socioeconomic status may be another causative factor, due its association with poor health and reduced access to health services [20]. This is of particular relevance to the Fairfield and Bankstown City regions, in which a significant number of individuals are financially disadvantaged. We recommend that GPs receive further education on NPC, in particular its presenting features, aetiological factors, associated age groups, and the importance of urgent investigation and referral. This knowledge may improve detection of high-risk individuals and expedite diagnosis, particularly in areas with a high proportion of SE Asians. Our results revealed that GPs are generally amenable to additional NPC education and we suggest a multimodal approach to information delivery, with a focus on the use of online modules, hard-copy brochures and CPD courses.

Conclusion

GPs in the Bankstown and Fairfield city regions have inadequate knowledge of NPC. In particular, there was a lack of awareness of specific symptoms of NPC, such as tinnitus, deafness and facial pain

and numbness; the age groups most affected by the condition; and the cancer's link with several aetiological factors, particularly EBV.

Declarations

Ethics (and consent to participate)

Conflict of Interest: No Authors have a discernible conflict of interest in the preparation or creation of this manuscript. Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This project has been approved by the University of Western Sydney Human Research Ethics Committee (Approval number: H9067).

Competing interests

The author(s) declare that they have no competing interests.

Authors' contributions

BF, CC, LM, NL conceived survey design and conducted survey around various GP practices. JW supervised the collection of data. BF, CC, LM, NL constructed the discussion and manuscript creation, with JW providing supervisory advice. All authors read and approved the final manuscript.

Availability of supporting data

For patient survey, supporting documentation attached. For further information relating to the 2011 census community profile, summary of possible risk factors for NPC, presenting symptoms contact the authors on [de-identified due to blinded review purposes].

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