



Research Article

Morphological Pattern of Nasopharyngeal Carcinomas: A Five-Year Retrospective Study at Lagos State University Teaching Hospital, Ikeja, Nigeria

Sanni Daniel A^{1,2}, Soyemi Sunday S^{1,2}, Faduyile Francis A^{1,2}, Adegboyega Olukayode A³,
Adeyinka Adesegun P⁴

¹Department of Pathology and Forensic Medicine, Lagos State University College of Medicine, Ikeja, Lagos.

²Department of Pathology and Forensic Medicine, Lagos State University Teaching Hospital, Ikeja.

³Department of Radiology, Lagos State University Teaching Hospital, Ikeja.

⁴Department of Ear, Nose and Throat Surgery, Lagos State University Teaching Hospital, Ikeja.

*Author for Correspondence:

Sanni D. A.

E-mail: ayodele_sanni@ymail.com; daniel.sanni@lasucom.edu.ng

Keywords:

Nasopharyngeal carcinoma, histological type, lymph node metastasis

ABSTRACT

Objective: This study was undertaken to evaluate the histological types, frequency, age and sex distribution of nasopharyngeal carcinoma (NPC) in Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos state.

Methods: A five-year retrospective study of all NPCs that presented to the Department of Pathology and Forensic Medicine, LASUTH between 1st January, 2014 and 31st December, 2018 was done. Relevant data consisting of the age and sex distributions, histopathological types and presence of lymph node metastasis were extracted from the departmental information system and filed documents. The data was analysed using the IBM-SPSS version 25.0. NPC is diagnosed according to the World Health Organization 2005 classification.

Results: There were 122 cases of nasopharyngeal tumours, out of which 53 (43.4%) were malignant. The malignant tumours comprised 46 (86.8%) NPCs and 7 (13.2%) others. The mean age at diagnosis of NPCs was 45 ± 20 years with male to female ratio of 3.3:1. Type II poorly differentiated carcinoma predominates and 59.3% present with lymph node metastasis.

Conclusion: NPC present more frequently at the 5th decade of life, especially in males and type II non-keratinizing carcinoma (differentiated type) is the commonest histological type.

INTRODUCTION

Nasopharyngeal carcinoma (NPC) is the malignant cancer of the epithelial lining of the nasopharynx.[1-2] NPC is defined by World Health Organization (WHO) (2005) in a more recent classification based on histological types as type I keratinizing squamous cell carcinoma, type II non-keratinizing carcinoma (differentiated) and type II non-keratinizing carcinoma (undifferentiated) and basaloid squamous cell carcinoma.[3] This is a deviation from older 1978 WHO classification of types I, II and III as squamous cell carcinoma, non-keratinizing carcinoma, undifferentiated NPC respectively.[4] The disease is rare and usually presents late due to the fact that the nasopharynx is 'hidden' with concomitant morbidity and mortality.[5]

Nasopharyngeal carcinoma is associated with EBV and the prevalence of this tumour is high in South East Asia but West Africa, including Nigeria is not free from the scourge of this disease[5-11]. Nasopharyngeal carcinoma is important as one of the commonest head and neck tumours in most health centres with well-established ENT surgery department.[8,10,12] The incidence is noted to be decreasing worldwide with improvement in adjustment of lifestyle, better diagnosis and treatment.[13-14]

This disease is commoner in the 4th decade of life and

there is preponderance of the disease amongst males.[5,8] Most presentations occur in the first time as lymph node metastases. Several studies identified cervical lymphadenopathy as the first symptom in the diagnosis of this disease.[5,8-9]

This study aims to document the histopathological characteristics, frequency, age and sex distribution of NPC in our centre. We also aim to document patients with primary diagnosis of NPC who had cervical node metastasis.

MATERIALS AND METHODS

This is a retrospective study of all cases of NPCs that presented to the Department of Pathology and Forensic Medicine between 1st January, 2014 and 31st December, 2018. The Department of Pathology and Forensic Medicine of LASUTH is a large referral centre, and it is one of the two teaching hospitals in Lagos state, populated by more than 20 million inhabitants. The tumours were classified using the latest WHO classification for NPC, 2005 edition.[3]

The laboratory receives histopathological samples from LASUTH Department of Ear, Nose, and Throat Surgery as well as general and private hospitals within and outside the state. The relevant information, especially the demographic and pathological data of the patients are retrieved from the

laboratory information system of the Department as well as filed copies of the requisition form.

The corresponding slides and blocks of patients with these tumours are retrieved. Patients without adequate information and with slides and blocks missing are excluded from this study. Patients whose slides are faded or broken were recut from the main block and re-stained with haematoxylin and eosin (H&E). The slides were reviewed by three pathologists in the study. Similarly, slides of the patients who had NPC with concomitant cervical lymph node biopsy were retrieved as well. Relevant blocks were taken when necessary, and the lymph nodes were sectioned at 4 μ , and stained with H&E.

The result of this study was analysed using Statistical Analysis for Social Sciences (SPSS) version 25.0.

Strict confidentiality was maintained; personal information and identity of these patients were not compromised.

RESULTS

There were 122 cases of nasopharyngeal tumours, out of which 53 (43.4%) were malignant tumours while 69 (56.6%) were benign. Out of 53 malignant cases seen, 46 (86.8%) were NPCs and other malignant tumours included Kaposi sarcoma, liposarcoma, Hodgkin and non-Hodgkin's

lymphoma and embryonal rhabdomyosarcoma.

The mean age at diagnosis of NPC was 45 ± 20 years with minimum and maximum ages of 3 and 84 years respectively. The modal age group was 40–49 years (28.3%), followed by 50–59 (19.6%) while the least frequent age group was 0–9 (2.2%), (Figure 1).

Among NPCs, there were 33 (71.7%) males and 13 (28.3%) females with male to female ratio of 3.3:1. There were 9 (19.6%) cases of type I NPCs, 19 (41.3%) of type II poorly differentiated and 18 (39.1%) of type II undifferentiated carcinomas. The H&E staining patterns of these tumours are shown in Figure 2.

There were 29 (63.0%) lymph node metastasis cases (Table 1). Table 2 shows that there is no significant difference in the age distribution of histological types of NPC.

There were more cases of tumours with lymph node involvement among patients within 20–69 years while other age 70 years and above showed equal chances of lymph node metastasis or not (Table 3).

Histological type II were more common in males than in females while type II-undifferentiated and II-differentiated predominate in females as shown in Table 4.

There were more cases of lymph node metastasis in males (69.7%) than in females (46.2%), though the difference was not statistically significant ($p > 0.05$) as shown in Table 5.

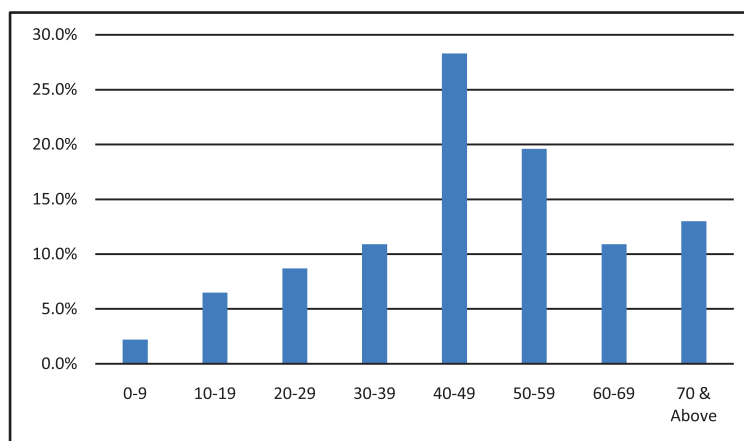


Figure 1: Age category of patients with Nasopharyngeal cancer

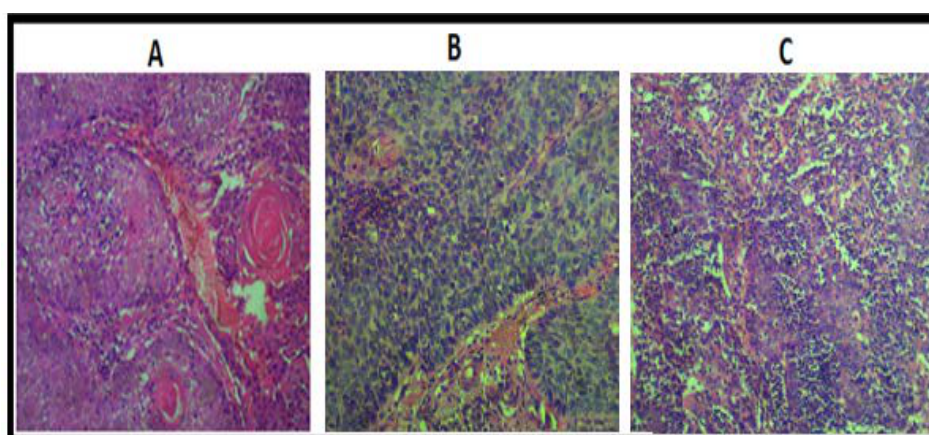


Figure 2: (A) Type I Keratinizing NPC X 100 (b) Type II Keratinizing differentiated NPC X 100 (c) Type II Non Keratinizing Undifferentiated NPC X 100

DISCUSSION

In this study, 43.4% of all nasopharyngeal tumours seen were malignant. NPCs were first diagnosed at mean age of 45 ± 20 years. This disease occurs at a later age than the mean age of diagnosis of this tumour in Benin (32.1 ± 16.7 years)[9] Maiduguri (39.0 ± 16.5 years)[7] and Sokoto (39.1)[4] but earlier than that of Ilorin (48.7 ± 15.9 years).[8] The age of diagnosis agrees with the age at diagnosis reported in South East Asia, where it is endemic in Southern China.[13-14]

The male gender is more at risk of the tumour. The male: female ratio in this centre was 3.3:1. This result is consistent with similar studies in other parts of Nigeria. Alabi *et al.* at Ilorin [8] found a ratio of 2:1, Iseh *et al.* at Sokoto [5] found it as 2.8:1 while Ekanem *et al.* at Benin [9] found the ratio as 4:1. Similar observations were also made in studies in other parts of the world; Umar and Ahmed [15] in Pakistan observed that the tumour is thrice more common in males. Mahdaviifar *et al.* [16] in 2012 documented World sex ratio of new nasopharyngeal cancers cases as 2.36 in favour of males. A male: female ratio of 2-3: 1 was reported by Cao *et al* in China,[17] where there is endemicity of the disease.

Squamous cell carcinoma is the commonest histological variant and type II differentiated disease predominate. Undifferentiated carcinomas were found to be the commonest variants by Iseh *et al.* at Sokoto [5] and Ekanem *et al* at Benin.[9]

Frequently, there is a likelihood of lymph node metastasis at the time of diagnosis. The explanation for this occurrence is most likely due to the location of the tumour. Similar observation was made by Garandawa *et al.* at Maiduguri.[7] In this study, several patients presented in the fourth decade of life with lymph node metastases. Cervical lymphadenopathy was identified as the commonest symptom of NPC by Alabi *et al.* at Ilorin, Nigeria.[8]

It is noteworthy that in this study, females present more frequently with both type II undifferentiated and type II-differentiated disease in contrast to type I disease in men. This information is important for purpose of documentation, and will be useful to policy makers for purpose of health budget, and resource allocation. It will also be useful in treatment plans to improve patient management and further research.

CONCLUSION

NPC in this study present with histological features similar to other parts of Nigeria. The disease occurs with increased frequency in the 5th decade of life, and predominantly in men. Type II-differentiated (non-keratinizing) carcinoma is the most common histological variant in this study.

ACKNOWLEDGEMENT

Nil

Conflict of Interest

The authors declare no conflicting interest

REFERENCES

1. Li Z, Zong YS. Review of the histological classification of nasopharyngeal carcinoma. *Journal of Nasopharyngeal Carcinoma*. 2014;1(15):1012-1024.
2. Speight PM, Takata T. New tumour entities in the 4th edition of the World Health Organization Classification of Head and Neck tumours: odontogenic and maxillofacial bone tumours. *Virchows Archiv*. 2018; 1;472(3):331-9.
3. Chan JKC, Bray F, McCarron P, Foo W, Lee AWM, Yip T, Kuo TT, Pilch BZ, Wenig BM, Huang D, Lo KW, Zeng YX, Jia WH. Nasopharyngeal carcinoma. In: Barnes EL, Eveson JW, Reichart P, Sidransky D, editors. *Pathology and genetics of head and neck tumours*. Kleihues P, Sobin LH, series editors. World Health Organization Classification of Tumours. Lyon, France: IARC Press, 2005:85-97.
4. Alotaibi AD, Ahmed HG, Elsbali AM. Nasopharyngeal cancer in Saudi Arabia: Epidemiology and possible risk factors. *Journal of Oncological Sciences* <http://doi.org/10.1016/j.jons.2019.01.002>.
5. Iseh K, Abdullahi A, Malami S. Clinical and Histological Characteristics of Nasopharyngeal Cancer in Sokoto, North Western, Nigeria. *West African Journal of Medicine*. 2009;28(3): 151-155.
6. Yates SM, Iliyasu Y, Ahmed SA, Liman AA. Nasopharyngeal carcinoma at the Ahmadu Bello University Teaching Hospital, Zaria: A 22-year histopathological review (1992-013). *Archives of Medicine and Surgery*. 2018; 1;3(1):24-29.
7. Garandawa HI, Ahmad BM, Ngada HA. Nasopharyngeal cancer in north-eastern Nigeria: clinical trends. *Nigerian Journal of Clinical Practice*. 2009;12(4): 379-382.
8. Alabi BS, Badmos KB, Afolabi OA, Buhari MO, Segun-Busari S. Clinico-pathological pattern of nasopharyngeal carcinoma in Ilorin, Nigeria. *Nigerian Journal of Clinical Practice*. 2010;13(4): 445-448.
9. Ekanem V, Eddo AN. Histopathological pattern of nasopharyngeal carcinoma in Benin City. *Journal of Medicine and Biomedical Research*. 2015;14(2):56-62.
10. Ochicha O, Ahmad AM. Nasopharyngeal cancer in Kano—A histopathologic review. *Nigerian Journal of Basic and Clinical Sciences*. 2019;16(1): 38-41.
11. Oladipo O, Ralph AO, Ahintola BA, Babatunde B. Histopathological pattern of nasopharyngeal malignancy in Lagos University Teaching Hospital (LUTH) Lagos Nigeria. *International Journal of Scientific & Engineering Research*. 2015;6(5):1733-47.
12. Putti TC, Tan KB. *Pathology of Nasopharyngeal Carcinoma* In: Lu JJ, Cooper JS, Lee AWM. Editors. *Nasopharyngeal Cancer Multidisciplinary Management*. Heidelberg, Springer, 2010; p. 71-80.
13. Tang LL, Chen WQ, Xue WQ, He YQ, Zheng RS, Zeng YX, Jia WH. Global trends in incidence and mortality of nasopharyngeal carcinoma. *Cancer letters*. 2016; 374(1):22-30.
14. Chua ML, Wee JT, Hui EP, Chan AT. Nasopharyngeal carcinoma. *The Lancet*. 2016;387(10022):1012-24.
15. Umar B, Ahmed R. Nasopharyngeal carcinoma, an analysis of histological subtypes and their association with EBV, a study of 100 cases of Pakistani population.

16. Asian Journal of Medical Sciences. 2014;5(4):16-20. Mahdavi N, Towhidi F, Makhsofi BR, Pakzad R, Moini A, Ahmadi A, Lotfi S, Salehiniya H. Incidence and mortality of nasopharynx cancer and its relationship with human development index in the world in 2012. World Journal of Oncology. 2016;7(5-6):109-118.
17. Cao SM, Simons MJ, Qian CN. The prevalence and prevention of nasopharyngeal carcinoma in China. Chinese Journal of Cancer. 2011; 30(2):114-119.