



A RETROSPECTIVE STUDY OF CLINICAL PROFILE AND PROGNOSTIC OUTCOMES OF NASOPHARYNGEAL CARCINOMA IN A TERTIARY CANCER CARE CENTRE IN SOUTH INDIA

Oncology

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ABSTRACT

Introduction: Nasopharyngeal carcinoma (NPC) is a rare head and neck malignancy in most parts of the world that varies with races and geographical location. The reported incidence of NPC in Indian subcontinent is low compared to other parts of the world except in some ethnic groups in north-eastern region. Most of the patients with NPC present in locally advanced stage; the prognosis as reported in literature being poor. So we conducted this retrospective study to analyze the clinical profile and prognostic outcome to various treatment approaches in NPC in our tertiary care center.

Material and methods: Patients with histopathologically proven nasopharyngeal carcinoma who attended SVIMS University cancer center from January 2010 to June 2015 were included in the study. All pts were planned to receive EBRT with either conventional 2D technique or 3D-CRT or IMRT and concurrent chemotherapy with cisplatin and adjuvant chemotherapy with 5-FU and cisplatin. Response assessment was started after 2 months post radiotherapy by clinical examination, endoscopy and imaging as appropriate.

Results: A total of 28 patients reported to radiotherapy OPD presenting with nasopharyngeal mass or neck node were taken into the study. 25 patients were found to have nasopharyngeal carcinoma and 3 patients have lymphoma. Median age of presentation was 49 years (12 – 69 years). Male to female ratio was 1:1.6. Out of 25 patients of NPC, three patients presented with metastatic disease and 22 patients were treated with radical radiotherapy. The two years overall survival (OS) was 36% (median survival time was 14.25 months).

Conclusion: Most of the patients in our study presented with locally advanced disease whose prognosis is poor in terms of OS as per the literature review. However the two year OS in our study appeared to be more dismal because of poor performance status of patients and relatively small incidence of NPC at our center. IMRT appeared to be the better modality of radiotherapy than conventional 2D and 3D-CRT.

KEYWORDS

clinical profile, nasopharyngeal carcinoma

Introduction:

Nasopharyngeal carcinoma (NPC) is a rare malignancy in most parts of the world with age adjusted incidence of < 1 per 1,00,000 population¹. It shows highly variable racial and geographical distribution. The age-adjusted incidence rate (per 100,000 people per year) among men ranges from 0.6 in the United States and Japan 5.4 in Algeria, 5.8 in the Philippines, 11.0 in Singapore, 17.2 among Eskimos, and Aleuts in Alaska, 17.8 and 26.9 in Hong Kong and Guangdong province in Southern China respectively.^{2,3,4,5} Despite high incidence of head and neck cancers in Indian subcontinent, reported incidence of NPC is low compared to other parts of the world except in some ethnic groups in North-eastern region where the incidence ranges from 0.6 to 4.3⁷. To say this, many parts of the country are lacking established cancer registries and moreover there was no separate consensus for NPC as it is included in head and cancers and not studied separately. So we conducted this retrospective study to know the clinical profile of NPC in our cancer center.

Material and methods:

Patients with histopathologically proven nasopharyngeal carcinoma who attended SVIMS cancer centre from January 2010 to June 2015 were included in the study. Nasopharyngoscopy, CT/MRI was done to know the local extent of disease as indicated. Chest X-ray, U/S abdomen, bone scan (as indicated) was done as a part of metastatic work up. Staging was done according to American Joint Committee on Cancer (AJCC) staging manual 2010. All pts were planned to receive EBRT with either conventional 2D technique or 3D-CRT or IMRT and concurrent chemotherapy with cisplatin and adjuvant chemotherapy with 5-FU and cisplatin. First follow up was asked 1 month after completion of RT and subsequently monthly for first 3 months, 2 monthly up to 1 year and then every 4 monthly from 2nd year as a part of institutional protocol. Response assessment was done after 2 months post radiotherapy by clinical examination, endoscopy and imaging as appropriate.

Statistical analysis: Data was recorded on a predesigned proforma and

managed using Microsoft Excel 2013. The association between two categorical variables was evaluated by Chi-square (χ^2) test. Local control and survival rates were calculated by the Kaplan Meier method and the significance level was set at 5% (i.e. 95% confidence interval). All the analysis was done using SPSS software version 21.

Results:

A total of 28 patients presenting with nasopharyngeal mass or neck node were taken into the study. After histopathology and immunohistochemistry, 25 patients were found to have nasopharyngeal carcinoma and 3 pts have lymphoma. Twenty five patients of NPC were included in the final analysis of which 10 patients (40%) were males and 15 patients (60%) were females. Patient characteristics according to age and sex were shown in table 1. Median age of presentation was 49 years ranging from 12 – 69 years. Incidence of NPC in Rayalaseema region was 0.24/100000 population with 0.19/100000 in males and 0.3/100000 in females. Male to female ratio of 1:1.6.

Out of 25 patients of NPC, two patients presented with metastatic disease. 22 patients were treated with radical radiotherapy either by conventional 2D technique or 3- dimensional conformal radiotherapy 3D-CRT or intensity modulated radiotherapy (IMRT). Patient characteristics according to tumor (T) stage, node (N) stage, prognostic stage group and histopathology were shown in table 2.

Of 22 patients who received radical radiotherapy, 20 patients were able to complete the treatment. One patient could not able to complete the treatment because of poor general condition. 1 patient died after receiving 54Gy of radiotherapy. Out of 20 patients who completed radical RT, 17 pts had complete response after 2 months post radiotherapy and 3 pts had partial response with residual neck node (figure 2).

Regarding chemotherapy, of twenty two pts who received radical treatment, nineteen patients received concurrent chemotherapy. Seven

patients received adjuvant chemotherapy, three patients received neoadjuvant chemotherapy. One patient received neoadjuvant, concurrent and adjuvant chemotherapy. Three patients did not receive any type of chemotherapy. The two year overall survival was 36% (median survival time was 14.25 months) (figure 3). In subset analysis, the 2 year OS by IMRT was found to be superior than conventional 2D and 3D- CRT treatment (70% vs 27%) which has been shown in Figure4.

Discussion:

A total of 28 patients presenting with nasopharyngeal mass or neck node were taken into the study. After histopathology and immunohistochemistry, 25 patients were found to have nasopharyngeal carcinoma and 3 pts have lymphoma. Incidence of NPC as estimated by our hospital based cancer registry (our tertiary care center being the major referral institute in Rayalaseema region of Andhra Pradesh) was 0.24/100000 population with 0.19/100000 in males and 0.3/100000 in females. Male to female ratio of 1:1.6. This is in contrast to most of the studies in literature where male to female ratio is 2:1 to 3:1⁶

Nasopharyngeal cancer accounts for 0.68% of all cancers attending to SVIMS cancer center. Most common cancer being carcinoma uterine cervix accounting for 36.6% of all cancers followed by head and neck accounting for 29.1% (excluding NPC). Low incidence of NPC in this region is attributed to very low or no consumption of smoked fish and foods containing nitrosamines because regular consumption of smoked foods and foods containing nitrosamines is not a part of routine food habits in this area. In our study more patients were presented between 40 and 60 years of age (60%) and less number of patients were <20yrs (8%). Classic bimodal age distribution as per the literature (first peak between 15 to 25 years of age, with the second peak at 50 to 59 years of age)^{9, 10, 11} was not seen in our study. The prognosis of locally advanced NPC is poor as mentioned in literature. Studies by Wang et al, showed 5 year overall survival in Stage III/IV NPC receiving conventional radiotherapy was 27% and 29% respectively¹². In another series by Ma et al treating 30 patients with IMRT, 2 years OS was 90%.¹³ In our study 2 year OS with IMRT was 70% as compared to 27% with conventional 2D and 3D-CRT treatment of NPC which can be attributed to more advanced stage of disease at presentation, poor performance status of patient and small number reported. All the patients presented with locally advanced disease (three patients presented with intracranial extension of disease). Only seven patients received adjuvant chemotherapy as planned. Many patients couldn't able to receive chemotherapy (either concurrent or adjuvant) as planned because of poor general condition, nutritional status and compromised renal function. This might be the reason for less 2 year overall survival (36%). Despite improvements in radiation treatment planning and delivery techniques, general condition and nutritional status of the patient are also very important and should be considered in order to improve cure rates and survival rates of the cancer. In conclusion, we would proclaim that most of the patients in our study presented with locally advanced disease whose prognosis in form of DFS and OS as per the literature review is poor. However the two year OS as reported in our study appeared to be more dismal and disappointing, may be due to advanced nature of disease at presentation, poor performance status of patients and relatively small reported incidence of NPC at our center. IMRT appeared to be the better modality of radiotherapy than conventional 2D and 3D-CRT.

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Table 1: Patient characteristics

AGE (YEARS)	NO. OF PATIENTS (%) (n = 25)
< 20	2 (8)
20 – 30	4 (16)
30 – 40	2 (8)
40 - 60	2 (8)
> 60	15 (60)
SEX	
MALE	10 (40)
FEMALE	15 (60)

n – Total number of patients

Table 2: Tumor characteristics

T STAGE	No. of patients (%) (n = 22)
T1	4
T2	1
T3	10
T4	7
N STAGE	
N0	2
N1	3
N2	12
N3	5
STAGE GROUP	No. of patients (%) (n = 25)
Stage III	10
Stage IVA	7
Stage IVB	5
Stage IVC	3
HISTOPATHOLOGY	No. of patients (%) (n = 25)
Moderately differentiated	1 (4)
Poorly differentiated	11 (44)
Undifferentiated	11 (44)
Adenoid cystic	1 (4)
Lymphoepithelioma	1 (4)

Table 3: Incidence of NPC in various parts of the world compared to our study

Region	Incidence
US and Japan	0.6
Southern China	17.8
Eskimos and Aleuts in Alaska	17.2
Singapore	11.0
Algeria	5.4
Mumbai and West India	0.71
North East India ⁷	
Nagaland, Assam	4.3, 0.6
Present study (a major Tertiary care center in AP)	0.24

Table 4: Comparison of our study with a study by Kwong et al.⁸

	Kwong et al	Present study
Stage of disease	III - IVB	III - IVB
No. of patients	50	22
Median follow up (in months)	25	14.2
Overall survival (%)	92	36

Figure 1: Patient characteristics according to treatment technique

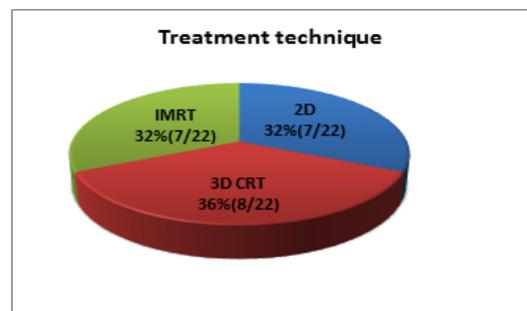


Figure 2: Response after 2 months post radiotherapy

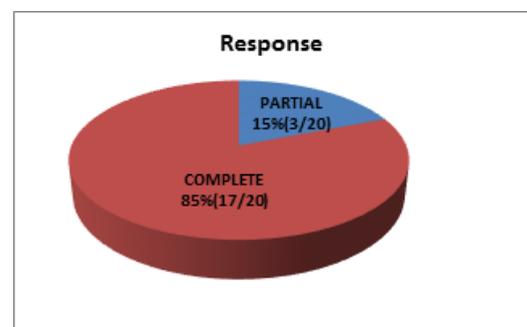


Figure 3: Two year Overall survival

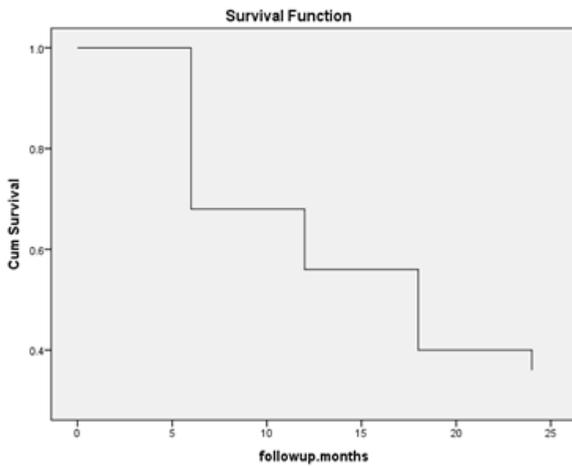
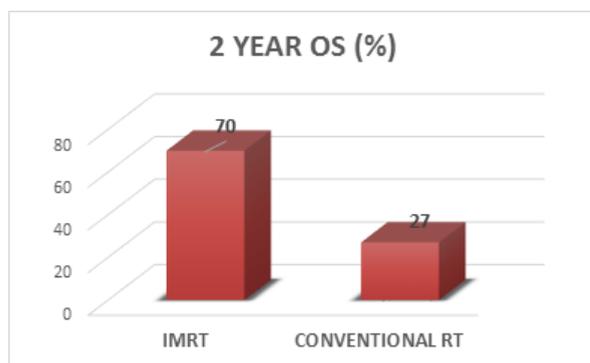


Figure 4: Two year OS comparison between IMRT and conventional RT



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