

Evaluation of Metastatic Neck Nodes and a Search for Primary

Nitika Gupta, Rohan Gupta, KP Singh, Sunil Kotwal, Anil Suri

Abstract

The present study was carried out to find the incidence of metastatic neck nodes with respect to different primary sites in head and neck malignancy and to find out the site of primary tumour with the help of clinical examination, pan-endoscopy and radiographic techniques. 58 patients out of the 96 cases presented with neck swelling as their chief complaint where as 38 patients presented with other symptoms and neck swelling was detected at the time of first examination. 74 (77.08%) cases had unilateral neck nodes while 22 (22.92%) had bilateral neck nodes. Average duration of appearance of the nodes was less than the average duration of other symptoms in most cancers except in cancers of the nasopharynx where the nodes appeared earlier than other symptoms. Maximum number of cases (36/96) were of carcinoma larynx (37.50%), followed by carcinoma of oropharynx (20/96) (20.83%). (Table 4) 84 (87.5%) cases were histopathologically reported as squamous cell carcinoma while there were 2 (2.08%) cases each of adenocarcinoma and papillary carcinoma.

Key Words

Metastatic, Neck Nodes, Carcinoma

Introduction

The gravity of diagnosis of cancer escapes none, be it a lay person or a physician who comes in contact with a patient having cancer. Cancer is an aberration of normal biology and as yet there is no complete answer as regards to its cause and cure. Cancers in the head and neck region are the sixth most common cancers world-wide (1) and there has been a significant increase in the global incidence of SCCHN over the past decade. At present, >6, 50, 000 new cases of head and neck cancer are diagnosed each year worldwide (2) which comprises about 5% of the incidence of cancer in males and about 2% in females. The term 'metastasis' connotes the development of secondary implants discontinuous with the primary tumour, possibly in the remote tissues. Dissemination strongly prejudices, if it does not preclude, the possibility of the cause of the disease so it is obvious that short of prevention of cancer, no achievement would confer greater benefit on patients than methods to prevent metastasis. The presence of metastases in a lymph node is said to reduce the 5-year survival rate by about 50%. (3) The appropriate staging of cervical lymph nodes is very important in the management of any head and neck primary carcinoma. For cervical lymph node staging modalities varying from traditional (clinical palpation) to newer diagnostic techniques (CT, MRI, FDG PET, USG) can be helpful, with each having its own advantages and

drawbacks. Clinical palpation of cervical lymph nodes has many false negative and false positive results. (4,5) Although Computed tomography has improved the accuracy of diagnosis of cervical metastases (6,7) but has the disadvantages of being expensive with hazards of radiation exposure (8). Ultrasound scanning has also improved the overall accuracy of diagnosis of cervical metastases (9) and has the advantages of being cheap and highly reliable method without hazards of radiation exposure. (10) The present study was carried out to study the incidence of metastatic neck nodes with respect to different primary sites in head and neck malignancy & to find out the site of primary tumour with the help of clinical examination, pan-endoscopy and radiographic techniques.

Material and Methods

The study was carried out in the department of ENT and Head and Neck Surgery, SMGS Hospital in collaboration with the department of Radiotherapy, Govt. Medical College, Jammu, for a period of two years during which a total of 96 cases of metastatic secondary neck nodes were examined and studied. The patients included in the study were selected on the basis of clinically significant neck nodes in the presence/absence of a primary growth of the head and neck region. All such cases were subjected to detailed history taking and a thorough systematic head and neck examination.

From the Deptt. of ENT, SMGS, Hospital Govt. Medical College, Jammu.(J&K), India

Correspondence to : Dr Nitika Gupta Senior Resident, Department of ENT, SMGS Hospital Govt. Medical College, Jammu. (J&K), India

Laboratory investigations comprising of complete haemogram, urine analysis and blood biochemistry were carried out in every patient. X-rays - soft tissue neck, nose and paranasal sinuses and chest were done to look for any suspicious soft tissue mass. CECT and MRI (gadolinium enhanced) were obtained in certain cases to assess the extent of neck node involvement and the primary tumour, the criteria used to diagnose a metastatic neck node was the size, peripheral enhancement and central necrosis. FNAC (fine needle aspiration cytology) was carried out on the largest palpable node. Panendoscopy was performed under local and general anaesthesia to determine the nature and extent of the growth and to take tissue for histopathological examination. All the cases were staged using the TNM staging system.

Results

During a period of 2 years, a total of 96 patients of metastatic neck nodes were seen in the department of ENT and Head and Neck surgery and the department of Radiotherapy, Government Medical College, Jammu, out of these, the primary site of malignancy could not be identified in 8 cases, inspite of using all the available diagnostic armamentarium. (Table 1) All these 96 cases were studied in detail in terms of thorough clinical history, systemic and local examination, imaging and laboratory facilities available. Keeping in view the stage of the

Table 1. Known vs. Unknown primary

Cases	Number	Percentage (%)
Total cases	96	100
Cases of metastatic cervical nodes with unknown primary	8	8.33
Cases of metastatic cervical nodes with known primary	88	91.67

disease, the available therapeutic options and patient preference, these patients were given the required treatment and were followed up as best as possible.

Out of a total of 96 cases there were, 78 (81.25%) male and 18 (18.75%) female patients with a male to female ratio of 4.33:1. The youngest patient was a 30 years old female while the eldest one was an 80 year old male patient, with maximum number of patients in the 7th decade of life. (Fig 1)

There was no clear cut professional predilection, but it was seen that majority of patients belonged to lower socio-economic strata. (Table 2)

Out the 96 patients, 76 (79.19%) patients were smokers and 20 (20.83%) patients were non-smokers. 44 patients, out of the 76 smokers were indulged in alcohol consumption and tobacco chewing. (Table 3)

58 patients out of the 96 cases presented with neck swelling as their chief complaint where as 38 patients presented with other symptoms and neck swelling was detected at the time of first examination. 74 (77.08%) cases had unilateral neck nodes while 22 (22.92%) had bilateral neck nodes. Average duration of appearance of the nodes was less than the average duration of other symptoms in most cancers except in cancers of the nasopharynx where the nodes appeared earlier than other symptoms. Maximum number of cases (36/96) were of carcinoma larynx (37.50%), followed by carcinoma of

Fig. 1 Bar Chart Showing Cases of Metastatic Neck Nodes According to Age and Sex Distribution

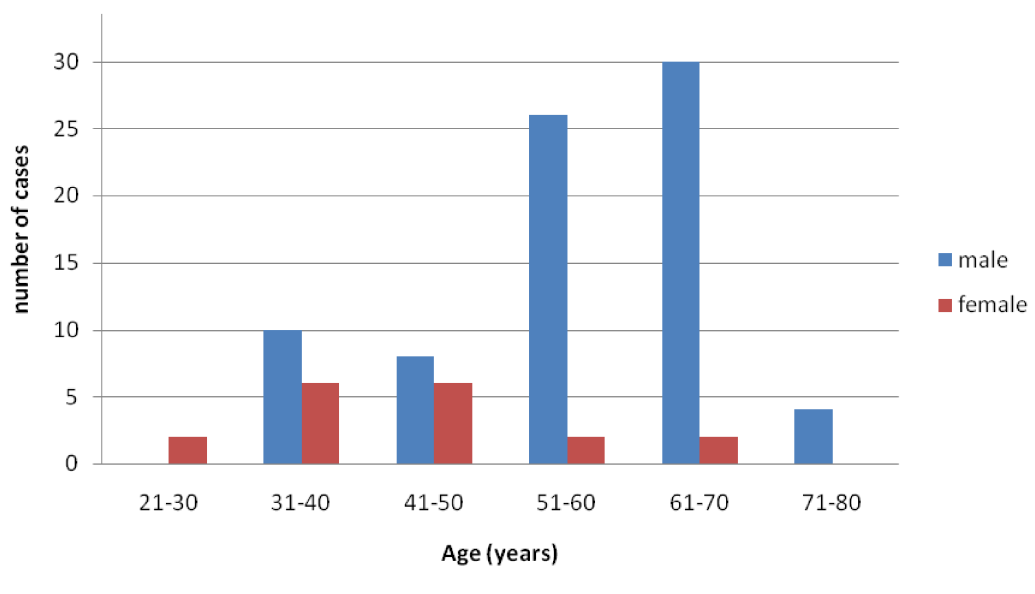


Table 2: Occupational Distribution

Occupation	Number of cases	Percentage (%)
Farmers	28	29.16
Labourers	20	20.83
Skilled workers	10	10.41
Housewives	18	18.75
Servicemen & Ex-Servicemen	8	8.33
Govt. employees	6	6.25
Businessmen	4	4.16
Hawkers	2	2.08

Table 3. Personal Habits of the patients

Personal habits	No. of cases
Smokers only	32
Smokers + Alcoholics	32
Non-smokers + Non-Alcoholics	18
Tobacco/Pan-chewers + Smokers + Alcoholics	12
Tobacco/Pan-chewers + Alcoholics	2

Table 4. Primary Sites

Primary Sites	No. of cases	Percentage (%)
Ca Hypopharynx	12	12.50
Ca Larynx	36	37.50
Ca Oropharynx	20	20.83
Ca Oral cavity	10	10.41
Ca Nasal cavity	2	2.08
Ca Nasopharynx	4	4.16
Others		
Ca Bronchus	2	2.08
Ca Thyroid	2	2.08
Unkn own primary	8	8.33

Table 5 Histopathological Features of Primary Tumours

Histopathology of primary tumour	Number of cases	Percentage (%)
Squamous cell Ca	84	87.5
Adenocarcinoma	2	2.08
Papillary carcinoma	2	2.08

differentiated squamous cell carcinoma. 16 (19.04%) cases had poor differentiation whereas 6 (7.14%) cases were undifferentiated.

Level II showed highest incidence of involvement in all head and neck cancers with the most overwhelming involvement present in cases of carcinoma oropharynx.

Table 6. Relation of N-stage of Nodes to Various Primary sites

Site	Number of cases	N ₁	N ₂	N ₃
Hypopharynx	12	4	6	2
Larynx	36	14	12	10
Oral cavity	10	2	6	2
Oropharynx	20	4	14	2
Nasopharynx	4	0	4	0
Thyroid	2	0	2	0
Bronchus	2	2	0	0
Nasal cavity	2	0	0	2
Unknown	8	2	4	2
Total	96	28	48	20

oropharynx (20/96) (20.83%). (Table 4) 84 (87.5%) cases were histopathologically reported as squamous cell carcinoma while there were 2 (2.08%) cases each of adenocarcinoma and papillary carcinoma. (Table 5) 34 (40.47%) patients of head and neck carcinoma with metastatic neck nodes had well differentiated squamous cell carcinoma while 28 cases (33.33%) had moderately

Level I, IV and V were amongst the least involved groups. Majority of the cases presented with N2 stage followed by N1 and N3 stage respectively. (Table 6, 7)

Discussion

The increasing incidence of head and neck cancers, especially in developing countries like India, has led to a lot of work on the various aspects of head and neck

Table 7: Incidence of involvement of various levels (considering all levels unilateral and bilateral)

Site	Level I	Level II	Level III	Level IV	Level V
Hypopharynx	-	6	8	-	2
Larynx	-	22	30	2	4
Oral cavity	2	8	-	-	-
Oropharynx	-	30	2	-	-
Nasopharynx	-	4	2	-	-
Thyroid	-	-	-	2	-
Bronchus	-	-	-	2	-
Nasal cavity	-	2	-	-	-
Unknown	2	2	6	-	-
Total	4	74	48	6	6

cancer. The present study which comprised of 96 cases with metastatic cervical lymph nodes, is another step to evaluate the various aspects of metastatic neck disease.

Kinsley DL *et al.* (1957) (11) had summarized that the peak incidence of head and neck cancers is later than cancers in general with a predominance of male gender and an average age of 62.4 years. Still in 1984 gave a mean age of 61-62 years and a male to female ratio of 3.5:1. Paymaster JC12 in 1963 reported that 85% cases of head and neck cancer were males and 15% were females. In the present study, male preponderance was noticed with about 81.25% cases being male and 18.75% being female, and the ratio between the two being 4.33:1, comparable to that reported by Paymaster JC (12). The average age in the present study was 58.2 years and is comparable to 62.4 years, 51 years, 55.9 years and 61-62 years as reported by Kinsey DL *et al.* (1957) (11), Leipzig (1981) (13), Zoller M *et al.* (1978) (14) and Stell PM *et al.* (1984) (15) respectively. The higher incidence in males can be attributed to excessive smoking, drinking and chewing tobacco, factors which are known to be related to aetiology of head and neck cancers. (16)

In the present study, there was no clear cut predilection of any occupational group for susceptibility to head and neck cancer to nodal metastasis. To the best of our knowledge, till date no study has shown a predominance of any particular occupation. The fact that 46 of our cases were either farmers or labourers just goes on to show the predominant occupation of the rural and the semi-urban population of this part of the country. Out of the 96 cases of head and neck cancer with cervical metastasis, no primary could be identified in 8 cases, despite using all the diagnostic and imaging modalities available with us, making the incidence of occult primary in the present study to be about 8.3%. France CJ *et al.* (1963) (17) reported 3-9% incidence of such cases whereas Coker DD *et al.* (1977) (18), Issing WJ *et al.* (2003) (19) and Wright D *et al.* (1987) (20) have recorded an incidence of 5%.

In the present study of evaluation of metastatic neck nodes, 37.5% of nodal metastasis came from laryngeal tumours. Stell PM *et al.* (1983) (16) had reported an

incidence of 24% where as a very low incidence of 7% was reported by Kinsey DL *et al.* (1957) (11).

In the study done by Kinsey DL *et al.* (1957) (11), 75% of nodal metastasis had the primary in the oral cavity, very high percentage as compared to 22.39% reported by Stell PM *et al.* (1983) (16) and 10.4% as observed in the present study. The low incidence in the present study could be attributed to low prevalence of addictions like pan-chewing, betel-nut chewing and reverse smoking. In the present study, 4.1% had a primary in the nasopharynx which is comparable to 4.24% as reported by Stell PM *et al.* (1983) (16). It, however, slightly varies from 2.06% as reported by Kinsey DL *et al.* (1957) (11). One of the factors responsible for cervical metastasis from a primary tumour is its histopathology. 95.84% cases in the present study were squamous cell carcinomas, 2.2% each, were adenocarcinomas and papillary carcinoma thyroid. Kinsley DL *et al.* (1957) (11) in their study had shown that the predominant cell type of head and neck tumours were epidermoid carcinoma (89.33%), adenocarcinomas (6.66%) and undifferentiated carcinomas only occasionally seen. Leipzig B *et al.* (1981) (13) in their study reported 67% incidence of squamous cell carcinoma and Jesse RH (1981) (21) observed an incidence of 80% while the incidence in the present study is 95.45%, being slightly higher as compared to others. Robin PE *et al.* (1980) (22) stated that adenocarcinomas are rarely associated with nodes, a finding similar to that observed in the present study. In the present study, 40.46% were well differentiated, 33.33% were moderately differentiated, 19.04% were poorly differentiated and 7.14% were undifferentiated. It was observed that well differentiated carcinomas had higher metastatic rates compared to moderately and poorly differentiated carcinomas, and these observations were quite different from those reported by Rasgon BM *et al.* (1989) (23) who had stated that the more poorly differentiated the tumour, the more aggressive it is with more chances of metastatic disease.

It was observed in this study that level II was the most frequently involved level (53.62%) followed by level

III (34.78%) and level II, was involved in all the cases of head and neck malignancies in the present study except for carcinoma of thyroid and bronchus. Leipzig B et al. (1981) (13) and Stell PM *et al.* (1983) (16) had also reported similar findings in their respective studies.

In 36 cases of carcinoma larynx, level III was involved in 30 cases whereas level II nodes were involved in 22 cases and level IV and V in 2 and 4 cases respectively. Majority of the cases of carcinoma larynx were supraglottic, with only one case of glottic carcinoma and none in the sub-glottic region. Lindberg R (1972) (24) and Wright D *et al.* (1987) (20) had also suggested a similar pattern of lymphatic spread in cases of carcinoma larynx.

Level III was again the most frequently involved level in carcinoma of hypopharynx, with next most frequently involved site being level II, while posterior triangle involvement present in only one of the cases. Lindberg R (1972) (24), Stell PM *et al.* (1983) (16) and Wright D *et al.* (1987) (20) all observed that upper, mid and lower jugular nodes were involved in decreasing order in tumours of hypopharynx, which was contrary to the observation of the present study. Late presentation of cases could be a reason for this sort of presentation. Level II was overwhelmingly involved in cases of carcinoma oropharynx in the present study while level III involvement was present in 2 cases only. These observations were similar to those reported by Kinsey DL *et al.* (1957) (11), Lindberg R (1972) (24), Stell PM *et al.* (1983) (16) and Wright D *et al.* (1987) (20). Out of the 10 cases of carcinoma oral cavity in the present study, level II nodes were involved in 8 cases and level I was involved in 2 cases which was contrary to the study conducted on 569 patients by Stell PM *et al.* (1983) (16), which reported level I to be the most commonly involved in tumours of oral cavity. The present study comprised of 4 cases of carcinoma nasopharynx with 2 cases having involvement of level II nodes and the other 2 cases having involvement of both level II and III. Level II involvement has been seen in studies conducted by Kinsey DL *et al.* (1957) (11), Lindberg R (1972) (24) and Stell PM *et al.* (1983) (16).

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