SPECTRUM OF HEAD-NECK CANCERS AT ALLAHABAD

Hemant Ahluwalia¹, S. C. Gupta², Mangal Singh³,
S. C. Gupta⁴, Vatsla Mishra⁵, P. A. Singh⁶, D. K. Walia⁷

ABSTRACT : *A retrospective study of Head-Neck malignancy was conducted at Allahabad over a period of twenty two years from 1975 to 1996. During this period, 5,386 new Head-Neck Cancer cases were reported. Peak presentation of males was in sixth decade and in females it was in fifth decade of life. The sex ratio in this series was 3:6:1 while reverse sex ratio was observed in malignancies of thyroid, alveolus-gingiva, nasal cavity and post-cricoid region. Oral cavity lesion was the predominant cancer followed by larynx and oropharyngeal malignancy. Histologically, majority (89.97%) were squamous cell carcinoma with varied differentiation. Factors responsible for the high incidence of Head-Neck Cancers are discussed. An urgent need is felt for the prevention and cessation strategies to achieve the goal of smoke free society by the year 2000 as expressed by Dr. Knoop so as to revert back the present trend of preventable Head-Neck Cancers.*

Key Words : Cancer, Head-Neck, Allahabad.

Cancer continues to be a menace despite advances in diagnosis and treatment protocols. Head-Neck cancers constitute a major health problem in India accounting for 23% of all cancers in males and 6% in females (ICMR, 1992). Majority of Head-Neck cancers are preventable cancers. Tobacco and alcohol play an important role in the aetio-pathogenesis of Head-Neck cancers. In India, the percapita consumption of cigarettes has been increased by 2% over the last decade (WHO, 1996). Estimates for the annual number of persons developing disease attributable to their tobacco habit in mid eighties included 1,08,000 annual incident cases of cancer (ICMR, 1995).

The trend of various malignancies differ in different geographical regions. India is known for diversity of its population and characteristic site pattern of risk. Spectrum of cancer varies from place to place within the country. Site specific data from the different parts of the country provide the various trends and give clues to the aetiological factors responsible for these significant variations.

This is the first report of its kind from Allahabad in which an effort has been made to put Head-Neck Cancers in perspective. With the establishment of Head-Neck Cancer Unit in the department of E.N.T., M. L. N. Medical College and Associated S. R. N. Hospital in 1991, the influx of Head-Neck Cancer has been increased. Since then, it is working as a tertiary centre for Head-Neck Cancer. Allahabad is a central eastern district of Uttar Pradesh

(U.P.) with Partapgarh, Fatehpur and Jaunpur in its north, Varanasi and Mirzapur in east, Rewa (M.P.) in south and Banda in west. Total area is 7,261 sq. km and the population is 49,21,310. Male constitute 26.2 lakhs while female population is 22.9 lakhs. Population density is 677 persons/sq.km. Rural Urban is 1:3.9. Literacy rate is 42.66% and urbanisation is 20.77%. It has 28 blocks. The main occupation is agriculture in rural areas. Temperature varies from 4-47°C. It has four big hospitals including the medical college hospitals.

MATERIALS AND METHODS

This is a single institutional retrospective study of 22 years from 1975 to 1996. The catchment area of this study was in and around Allahabad. Data was collected yearwise in the context of age, sex, religion, site of cancer and histo-pathological diagnosis. Care was taken to prevent the duplication of cases of E. N. T. and Pathology data. Various malignancies were classified according to the International Classification of disease coding system devised by W. H. O. (9th revision) using codes from 140 to 202.

RESULTS

The new Head-Neck cancer cases reported in 22 years were 5,386 with an average of 245 cases per annum. Out of total 5,386 cases, 78.40% (4,223 cases) were males and 21.60% (1,163 cases) were females with a sex ratio of 3.6:1 in this series (Table I). The majority of the cases

¹Senior Resident. ²Head, ³Asstt. Professor, ENT, ⁴Prof. & Head, ⁵Asstt. Professor. ⁶Assoc. Professor, Pathology, ⁷Asstt. Prof. S. P. M. & Biostatistician. M. L. N. Medical College & Associated S. R. N. Hospital, Allahabad (U.P.).

Table - I**Various Head-Neck malignancies and their sex-wise relative frequency.**

ICD-9 Site	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
140 Lip	174	4.12%	39	3.35%	213	3.95%
141 Tongue	603	14.28%	98	8.43%	701	13.01%
142 Salivary gl	34	0.80%	30	2.58%	64	1.19%
143 Gum	31	0.73%	36	3.09%	67	1.24%
144 Floor mouth	-	-	-	-	-	-
145 Other mouth	996	23.58%	255	21.93%	1251	23.23%
146 Oropharynx	584	13.83%	146	12.55%	730	13.55%
147 Nasopharynx	13	0.31%	3	0.26%	16	0.30%
148 Hypopharynx	245	5.80%	37	3.18%	282	5.24%
149 Pharynx etc	135	3.20%	30	2.58%	165	3.06%
150 Oesophagus	260	6.16%	201	17.28%	461	8.56%
160 Nose PNS & ME	117	2.78%	88	7.57%	205	3.81%
161 Larynx	965	22.85%	137	11.78%	1102	20.46%
162 Lung	53	1.25%	12	1.03%	65	1.21%
193 Thyroid	5	0.12%	49	4.22%	54	1.01%
200 Lymphoma to 202	8	0.19%	2	0.17%	10	0.18%
Total	4223	100.00%	1163	100.00%	5386	100.00%

Table - II**Segmental distribution of site specific data (Acc. to UICC) with sex-wise relative frequency.****Table - IIA****Oral Cavity - 2232 (41.43%)**

Site	Male		Female		Total	
	No.	percentage	No.	Percentage	No.	Percentage
Lip	174	9.64%	39	9.11%	213	9.55%
Cheek	990	54.88%	251	58.64%	1241	55.60%
Hard Palate	6	0.33%	3	0.71%	9	0.40%
Ant. Tongue	603	33.43%	98	22.89%	701	31.41%
Retromolar Trigone	-	-	1	0.23%	1	0.04%
Floor of mouth	-	-	-	-	-	-
Alveolus gingiva	31	1.72%	36	8.42%	67	3.00%
Total	1804	100.00%	428	100.00%	2232	100.00%

were in the age group of 40-70 years with a peak in the sixth decade of life. among males, 40.89%. Head -Neck Cancers were observed in the sixth decade while in females the peak presentation shifted to fifth decade of life with

37.31% cases in that decade. 6.01% cases were in younger age group of less than 35 years of age. Hindu Muslim ratio of population at Allahabad is 3:1 while the religion ratio of Head-Neck cancers in this study is 5:1.

Table - IIB**Oropharynx - 895(16.61%)**

Sub Site	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Base tongue	217	30.18%	45	25.57%	262	29.27%
Vallecullae	180	25.03%	53	30.11%	233	26.03%
Tonsils & Pillars	95	13.22%	10	5.68%	105	11.73%
Soft palate Uvula	92	12.79%	38	21.59%	130	14.53%
Missll.	135	18.78%	30	17.05%	165	18.44%
Total	719	100.00%	176	100.00%	895	100.00%

Table - IIC**Nose, Paranasal sinuses**

Sub Site	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Nasal cavity	38	32.47%	47	53.04%	85	41.46%
Nasal septum	2	1.71%	1	1.14%	3	1.46%
Paranasal sinus	72	61.54%	39	44.32%	111	54.15%
- Maxillary sinus	67	93.05%	39	100.00%	106	95.49%
- Ethmoid sinus	5	6.95%	-	-	5	4.51%
- Frontal sinus	-	-	-	-	-	-
- Sphenoid sinus	-	-	-	-	-	-
- Middle ear cleft	5	4.28%	1	1.14%	6	2.93%
Total	117	100.00%	88	100.00%	205	100.00%

Table - IID**Hypopharynx - 282 (5.23%)**

Sub Site	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Pyriform sinus	242	98.77%	10	27.03%	252	89.36%
Post Cricoid	2	0.82%	26	70.27%	28	9.93%
Post Ph. wall	1	0.41%	1	2.70%	2	0.71%
Total	245	100.00%	37	100.00%	282	100.00%

Reverse sex ratio with female preponderance was seen in Allahabad.

the malignancies of thyroid (1:10), alveolus-gingiva(1:1.2), nasal cavity (1:1.2) and post cricoid region (1:13) at

Sitewise analysis of Head-Neck malignancies (Table II A-D) reveals predominance of oral cavity cancer showing

Table - III

Histopathological profile of the site specific data of Head-Neck cancers.

HP Typing	Oral cavity	Oro pharynx	Nose PNS ME	Larynx pharynx	Hypo-gl.	Sal. pharynx	Naso-phagus	Oeso-	Thyroid	Lung	Missll age	Total	Percen
Sq.Cell CA	2066	834	136	1047	244	48	7	399	-	65	-	4846	9.97%
Grade I	1363	380	40	205	48	21	1	191	-	40	-	2289	47.23%
Grade II	506	372	44	669	82	16	2	180	-	15	-	1886	38.92%
Grade III	197	82	52	173	114	11	4	28	-	10	-	671	13.85%
Basal Cell CA	66	-	3	-	-	-	-	-	-	-	-	69	1.28%
Bassi sq. CA	40	-	-	-	-	-	-	-	-	-	-	40	0.75%
Adeno-CA	3	-	2	-	-	1	-	62	54	-	-	122	2.26%
Giant Cell tumor	2	-	5	-	-	-	-	-	-	-	-	7	0.13%
Spindle Cell CA	-	-	1	1	-	-	-	-	-	-	-	2	0.04%
Adenoid cystic CA	5	2	9	-	-	10	-	-	-	-	-	26	0.48%
Emb. Rhabdo	-	-	-	-	-	1	-	-	-	-	-	1	0.02%
TransCell CA	-	2	16	-	-	-	2	-	-	-	-	20	0.38%
Fibrosarc oma	-	-	1	-	-	-	-	-	-	-	-	1	0.02%
Lymphoma	4	7	5	1	-	-	6	-	-	-	10	33	0.61%
Anaplastic CA	33	47	17	13	35	-	-	-	-	-	-	145	2.69%
Mal. Mela noma	8	-	8	-	-	-	-	-	-	-	-	16	0.30%
Lympho Ep. CA	1	3	-	-	-	-	-	-	-	-	-	4	0.07%
Muco Ep CA	4	-	-	22	2	4	1	-	-	-	-	33	0.61%
Verr. CA	-	-	-	18	1	-	-	-	-	-	-	19	0.35%
Olf. Neuro	-	-	2	-	-	-	-	-	-	-	-	2	0.04%

CA-Carcinoma, Sl.gl - Salivary gland, Sq. Cell CA Squamous Cell Carcinoma, Basi Sq. CA-Basi Squamous Carcinoma, Emb. Rhabdo - Embryonal Rhabdomyosarcoma, Trans. Cell CA- Transitional Cell Carcinoma, Mal. Melanoma - Malignant Melanoma, Lympho. Ep CA- Lymphoepithelial Carcinoma, Muco ep CA- Mucoepidermoid Carcinoma, Verr CA - Verrucous Carcinoma, Olf. Neuro-Olfactory Neuroblastoma.

41.43% (2,232 cases) followed by larynx which constitutes 20.46% (1,102 cases). Oropharyngeal malignancy is the third commonest with 16.61% (895 cases). Among oral cavity lesions, carcinoma-cheek is on top with a share of 1,241 cases (55.60%).

Among oropharyngeal malignancies, the localised growths of valleculae were frequently seen at Allahabad. Malignancies of Nasopharynx, Post-cricoid region and middle ear cleft are rarest in Allahabad study.

Histologically, 89.97% cases were of squamous cell carcinoma with varied differentiation while adenocarcinoma were 2.26% (Table III).

DISCUSSION

Interpretation of data from a single Institution has its clear limitations. Here, we are discussing the specific malignancies in context of total Head-Neck Cancers and not all body cancers as the total number of all body cancers from 1975 is not available in Pathology data.

Head-Neck cancers at Bombay account for nearly 50% of all body cancers (Silverberg, 1981). This is a serious global health problem. The pathogenesis of 90% of epidermoid carcinoma of Head-Neck is attributed to the environmental risk factors. The risk increases in proportion to the intensity and duration of the exposure to each carcinogen. Yet, individual susceptibilities to these risk factors vary within the general population. The basis for this susceptibility may be inborn or acquired, which is still under investigation. Difference in the frequency pattern of the cancer in the different parts of India depend on the differences in environment, race and social customs.

Oral cancer is one of the ten most common cancers in the world. The highest rate of oral cancer are found in the developing world where oral cancer with pharynx combined is the third commonest site of cancer. In India, Bangladesh, Pakistan and Srilanka, it is most common and accounts for third of all cancers (WHO, 1984). Cultural differences in the use of tobacco leads to the variation in the geographic and anatomic incidence of oral and pharyngeal cancers in accordance with dose response principle. Among practising Mormons who neither smoke nor drink, cancer of oral cavity and pharynx are all but non existent. (Decker & Goldstein, 1982).

Oral cavity cancer is the commonest malignancy at

Allahabad in this study and similar trends were reported from Lucknow, Agra, Varanasi and Kanpur (Saran and Agarwal, 1982). Chewing of "dohra", an indigeneous preparation of tobacco and slacked lime in and around Allahabad is one of the major factors for this high incidence of oral malignancy. Number of Pans chewed per day by an individual is also quite high (15-25/day) in Allahabad and Varanasi districts which acts as a continuous irritant to the buccal mucosa. Betel nut chewing alone is rare in Allahabad though it is an equally important factor for Oropharyngeal malignancy in Agra and Manipuri belt (Wahi et al, 1965). Use of smokeless tobacco (Pan Parag, Zarda etc) is on sharp incline in North India and specially in Uttar Pradesh. Reports from America reveal a four fold increase in the consumption of smokeless tobacco during the last 20 years (Bailey, 1989). Incidence of Oral cancer is inclining in North India though the reports from Sweden reveal a declining trend (Decker & Goldstein, 1982).

Cancer larynx is also related to the habit of tobacco chewing and smoking (Jussawala and Deshpande, 1971). Alcohol acts as a co-carcinogen in its pathogenesis. The highest incidence of cancer-larynx is reported from Sao Paulo, Brazil and in India from Bombay followed by New Delhi (ICMR, 1992). Abnormally high incidence is also seen in Scottish women. Laryngeal malignancy is more common at Allahabad in comparison to Lucknow (Saran and Agarwal, 1984) though oropharyngeal malignancy trends are similar at different places in Uttar Pradesh.

It is estimated that a proportion of cases of laryngeal cancer could be attributed to chewing tobacco and/or smoking. The attributable risk for these two exposures combined was 78%, 28% of the cases occurred in the chewers who were non-smokers, 38% in smokers who did not chew and 34% in cases who admitted to both habits (Jayant et al, 1977).

Thyroid and Post-cricoid malignancies are known for their predilection towards females but in this study malignancies of nasal cavity and alveolus-gingiva also reveal a predilection towards female which is significant as it is not reported to date.

Histologically, squamous cell carcinoma is dominating the profile, similar trends were reported earlier also.

India is the largest producer of tobacco. Approximately 80% of India's tobacco is used for its domestic

consumption. Its consumption trends suggest that the habit of smoking is gaining ground over chewing. It appears that atleast 62% of the smoking related cancers, which is term of overall load of cancers get translated to 1/3 of the cancers of all sites, are avoidable. Estimate of the burden of the tobacco related Head-Neck cancer of all sites, are avoidable. Estimate of the burden of the tobacco related Head-Neck cancer in India for 1992 were 63,200 (Mouth), 59,800 (Pharynx and Larynx), 40,200 (Oesophagus), 32,900 (Lung) making a total of 1,96,100 cases (ICMR, 1992).

There is an urgent need for appropriate prevention and cessation strategies for smoking and smokeless tobacco products alongwith a social war against alcoholism by intense education programme to revert back the present trend of preventable Head-Neck Cancers.

CONCLUSION

Properly structured site specific satellite datas like this can augment National Cancer Registry Programme (NCRP) and is an essential indicator of the magnitude and site pattern of the cancer problem in India. It may be useful in formulating and monitoring of National Cancer Control Programme(NCCP) and preparing strategies for cancer control within the resource constraint.

REFERENCES

1. Indian Council of Medical Research (ICMR). Population based cancer registries-Biennial report, 1988-89. NCRP Scientific Publication, July 1992, ICMR, New Delhi.
2. Bulletin of the World Health Organization, 1996.
3. Bulletin of Indian council of Medical Research. Vol.25, No. 5, May. 1995.
4. Silverberg E. (1981): Cancers tatistics, CA. 31 : 13-28.
5. Bulletin of the World Health Organization, 1984.
6. Decker J. & Goldstein J. C. (1982) : Risk factors in Head and Neck Cancer. The New England Journal of Medicine, 306 no. 19:1151-1155.
7. Saran S. & Agarwal G. N. (1984-85): Cancer Pattern in Central U. P. Indian Journal of Cancer, 21:133-136.
8. Wahi P. N., KeherUshaand Lahiri B. (1965): Factors influencing oral and oropharyngeal cancers in India. British Journal of Cancer. 19:642-660.
9. Bailey B. J. (1989) : Tobaccoism in America -Twenty five years of progress. Editorial. Archives of Otolaryngology Head and Neck Surgery, 115:433-434.
10. Jussawala D. J. & Despande V. A.(1971); Evaluation of Cancer risk in tobacco chewers and smokers : An epidemiological assessment. Cancer 28:244.
11. Jayant K. et al (1977) : Quantification of the role of smoking and chewing tobacco in Oral, Pharyngeal and Oesophageal cancers. British Journal of Cancer. 35:232-235.