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INCIDENCE AND PREDISPOSING FACTORS OF CANCER OF THE UPPER AERODIGESTIVE TRACT IN MUZAFFARNAGAR, UTTAR-PRADESH (A CLINICO-PATHOLOGICAL STUDY)

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ABSTRACT

A clinicopathology study of upper aero digestive tract cancers was conducted on patients, attending the department of Otorhinolaryngology & Head and Neck Surgery of Muzaffarnagar Medical College and Hospital from June 2016 to January 2017. Around 92 patients with cancers of upper aero digestive tract were examined during this time period,the youngest being 6 yr old and the eldest 80 yr old. The squamous cell carcinoma was the commonest histological type accounting for 73% of the cases and the sinonasal tract was the commonest site affected(22%),followed by larynx(19.5%),hypopharynx along with cricopharynx (18%),nasopharynx(14%), oropharynx(10%),salivary glands(9%), and oral cavity(7.5%). Most of the tumors are diagnosed in late T3/T4 stage except for glottic variety of laryngeal carcinomas most of which are usually diagnosed early in T1/T2 stage. The clinical features varied with the site of involvement.

KEYWORDS: histopathology of cancers, sinonasal tract, nasopharynx, oropharynx, oral cavity, hypopharynx, larynx.

INTRODUCTION:

The upper aerodigestive tract is a mucous membrane lined tract which extends from nares and lips to cricopharynx and glottis and is involved in the important physiological functions like respiration, chewing and swallowing of food and generation and articulation of voice and for obvious reasons the tract is first to be exposed to the inhaled or ingested carcinogens like tobacco, alcohol, occupational dust, nitrosamines and other carcinogens in food. Cancers of the upper aerodigestive tract constitute about 3.5% to 4% of all malignancies [1,2]. These include cancers of the lip, tongue, major salivary glands, gums and adjacent oral cavity, floor of mouth, tonsils, oropharynx, nasopharynx, hypopharynx and other oral regions, nasal cavity and accessory sinuses, middle ear and larynx [1,2]. The major histological type world-wide is squamous cell carcinoma (SCC), which comprised 95% of the upper aerodigestive tract cancers in the recent Surveillance, Epidemiology and End result (SEER) registries in USA [1,2,3]. In fact larynx and hypopharynx are by far the most common sites of head and neck squamous cell carcinoma[4]. Squamous cell carcinomas of the upper aerodigestive tract has a strong epidemiological background, including racial difference and environmental factors, such as alcohol and tobacco consumption , diet and viral infection, therefore a different pattern of upper aerodigestive tract cancers is expected between the Western and Asian population[1,2,3,4,5]. We hereby report a clinicopathology based statistics from a single institute in Uttar Pradesh.

This study was conducted on patients attending the department of Otorhinolaryngology & Head and Neck Surgery of Muzaffarnagar Medical College and Hospital from June 2016 to January 2017. Besides detailed clinical history and routine investigations like complete haemogram, urine examination and kidney function tests, a thorough ENT examination, which included pan-endoscopy, was done in all patients. X-ray chest, X-ray soft tissue neck and CT scan were done wherever necessary. Biopsy reports were obtained in all the patients.

OBSERVATIONS AND DISCUSSIONS:

Around 92 patients with upper aerodigestive tract cancer were diagnosed in this time period with the annual incidence of around 66 per 10,000 hospital attending population. The youngest patient was a 6 year old female with undifferentiated carcinoma of upper gingival region and hard palate and the eldest was 80 year old female with squamous cell carcinoma of nose and paranasal sinuses, the average age of presentation was 53.2 years, the highest incidence was in the 4th to 6th decade of life and the male: female ratio was 2:1 (table-1).

The commonest symptom of presentation varied with the site of involvement (table-2) and the most of the patients presented in latter stages of disease due to lack of health awareness and consideration of the initial symptoms of presentation with the inflammatory and non-neoplastic diseases of the upper aerodigestive tract.

Table-1: Cancers of upper aerodigestive tract: Age and Sex distribution

Age in years	Male	Female
0-10	-	1
11-20	-	1
21-30	2	3
31-40	12	4
41-50	18	6
51-60	19	9
61-70	7	4
71-80	2	4
Total	**60(65%)**	**32(35%)**

Table-2: Cancers of upper aerodigestive tract: Most common presenting symptoms (in descending order of frequency).

SITE	Most common symptom(frequency)
Sinonasal tract	Nasal obstruction (80%), epistaxis (60%), anosmia (30%)
Nasopharynx	Secondaries neck (90%), Nasal obstruction (30%), Otalgia (30%)
Oral cavity	Difficulty chewing (70%), lesion noticed (60%),Secondaries neck(50%)

Oropharynx	Odynophagia (70%), lesion noticed (50%), Secondaries neck (40%)
Hypopharynx	Odynophagia (70%), dysphagia (70%), Secondaries neck (50%)
Larynx	Hoarseness of voice (90%), Secondaries neck (20%)
Major salivary gland	Swelling noticed by the patient (80%), pain (30%)

90% of the cancers were epithelial in origin and only 10% non-epithelial, with squamous cell carcinoma being the commonest accounting for 73% of the total and 81% of the epithelial variety, Non-Hodgkin lymphoma was the commonest in the non-epithelial variety and accounted for 9% of total. This is in accordance with the reports from the other parts of the world[1,2,3,5,8] (table-3).

Table-3: Upper aerodigestive tract cancers. Histological type Distribution

Categories	NPNS	SITE Npx	Opx	OC	Hpx	Lx	Sg	Total
Squamous cell carcinoma	9	12	4	6	16	18	2	67(73 %)
Lymphomas	3	-	5	-	-	-	-	8(9 %)
Adenocarcinoma	3	-	-	-	-	-	2	5(6 %)
Adenoid cystic carcinomas	2	-	-	-	-	-	1	3(3 %)
Mucoepidermoid carcinomas	-	-	-	-	-	-	3	3(3 %)
Melanomas	2	-	-	-	-	-	-	2(2 %)
Undifferentiated carcinomas	-	-	-	1	-	1	-	2(2 %)
Chordoma	-	1	-	-	-	-	-	1(1 %)
Sarcomas	1	-	-	-	-	-	-	1(1 %)
Total	**20**	**13**	**9**	**7**	**16**	**19**	**8**	**92(100%)**

NPNS= Nose and Paranasal sinuses, Npx= Nasopharynx, Opx= Oropharynx, OC = Oral cavity, Hpx= Hypopharynx, Lx= Larynx, Sg= Salivary gland (major)

The cancers of the nose and paranasal sinuses were commonest accounting for 22% of the cancers of upper aerodigestive tract and the male: female ratio was 1:1(table-4). The cancers of the nose and paranasal sinuses are more common as compared to the reports from other parts of the world, 36% from the Western literature and 13% from the Asian literature [1, 2, 7]. This higher incidence of these cancers in Uttar Pradesh population could be because of the prevalent use of snuff and exposure to wood dust.

Tumors of oral cavity are more common in this part of the world accounting for only 7.5% of the tumors of upper aerodigestive tract and the male: female ratio being 1:1(table-4), while as in western world it is the commonest site for the cancers of upper aerodigestive tract accounting for more than 30% of the cancers of upper aerodigestive tract and in most parts of India, the incidence of oral cancers is as high as 50% of all cancers and oral cavity cancers are 3rd most common cancer in France [1,2,6]. This incidence of oral cavity cancers in Muzaffarnagar could be attributed to the habit of chewing of tobacco and alcohol intake in this part of Uttar Pradesh diet.

The cancers of the nasopharynx accounted for the 14% of the upper aerodigestive tract cancers and the male: female ratio was 1:1(table-4),while as in Western world it accounts for only 3.4% and in other parts of Asia for 9% [1,6]. This could be taken as the indirect evidence of the possibility of viral oncogenic infections in the Uttar Pradesh society besides other regional factors.

Table-4: Upper Aerodigestive tract cancers: Frequency and percent distribution and male: female ratio of each site.

SITE	No of cases	%age	M:F Ratio (approx.)
Nose & paranasal sinuses	20	22%	1:1
Nasopharynx	13	14%	1:1
Oropharynx(tonsils)	9	10%	2:1
Oral cavity Tongue Palate Buccal mucosa Lips	7 3 2 1 1	7.5%	1:1.5
Hypopharynx Pyriform fossae Cricopharynx	17 8 9	18%	2:1
Larynx Supraglottis Glottis	18 6 12	19.5%	8:1
Salivary glands Submandibular	8 3	9%	1:1.5
TOTAL	**92**	**100%**	**2:1**

The cancers of the oropharynx accounted for 10% of the cancers of upper aerodigestive tract and the male: female ratio was 2:1(table-4). In Western literature, it accounts for only 8% of the cancers of upper aerodigestive tract and in other parts of Asia for 13% [1,2,6]. In all the 9-patients the site of origin were the facial tonsils with Non-Hodgkin's Lymphoma accounting for about 50% of the lesions. This is in contrast to the other studies were it contributes the 20-25% of the lesions [7,8].

The cancers of the major salivary glands accounted for 9% of the cancers of upper aerodigestive tract and the male: female ratio being 1:1.5(table-4). In Western population it accounts for only 5.6% and in other parts of Asian for 6% of the cancers of the upper aerodigestive tract. The cancers of larynx accounted for 19.5% of the cancers of upper aerodigestive tract while as in western countries it accounts for 28% and in other parts of the Asia it accounts for 26% of the cancers of upper aerodigestive tract. It is the commonest site involved in the cancers of upper aerodigestive tract in most parts of Asia and the second only to the cancers of oral cavity in Western population [1,2,3,5,7]. This is the only group of the upper aerodigestive tract cancers which is diagnosed in the early T1/T2 stage because of the easily noticeable hoarseness of voice as the early presenting symptom and hence with overall better prognosis among all other cancers of the upper aerodigestive tract. The cancer is significantly commoner in males with approximate male: female ratio of 8:1(table-4).This is in accordance with the reports from other parts of the world [6].

The cancers of hypopharynx accounted for 18% of the cancers of upper aerodigestive tract and the male: female ratio was 2:1. In Western population it accounts for only 6.6% and also only 6.6% in other parts of Asia [1,2,6]. 60% of these lesions were arising from the cricopharynx and another 40% from the pyriform fossae. The higher incidence of these cancers in Muzaffarnagar (UP) population goes in accordance with the overall higher prevalence of oesophageal carcinomas in Muzaffarnagar which falls in the "Asian oesophageal cancer belt" which extends from the northern province of China to the Caspian littoral of Iran[10].

CONCLUSION:

When compared with the results available from the western literature and from some parts of Asia, the clinicopathological profile was more like the Asian regions, but still the individual regional variation could be appreciated in our study which speaks of the role of socio-economic status, lifestyles and other regional factors in the etiopathogenesis of these cancers, the use of oral tobacco and alcohol and the more incidence of cancers of oral cavity in this part of the world could be used as the indirect evidence in the role of the former in the cancers of the oral cavity, and at the same time the higher incidence of the cancers of nose

and paranasal sinuses, nasopharynx and hypopharynx in this part of the world stress the need of further studies needed in this directions.

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