

HEAD AND NECK CANCER IN A DEVELOPING COUNTRY - A HOSPITAL-BASED RETROSPECTIVE STUDY ACROSS 10 YEARS FROM PAKISTAN

Abdul Wahid Anwer¹, Muhammad Faisal¹, Muhammad Taqi¹, Awais Amjad Malik¹, Arif Jamshed², Raza Hussain¹

¹Department of Surgical Oncology, and ²Department of Radiation Oncology, Shaukat Khanum Memorial Cancer, Hospital and Research Centre, Lahore, Pakistan

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Abstract

Purpose: Head and neck cancers (HNC) are among the most common cancers in developing countries, especially in the Southeast Asia. Oral cavity is the most commonly affected site. The risk factors are tobacco, betel nut and alcohol. The dimensions of the disease are quite different in developing countries than the western world. Poor socioeconomic status, poverty, lack of healthcare facilities and illiteracy are the factors that pose a major challenge to the management of the disease. The aim of this study is to analyse the database that has been collected over a period of 10 years showing the trends of the disease and the management outcome of these individuals.

Methods: Men and women diagnosed with HNC from 2004 to 2014 from Cancer Registry Database of Shaukat Khanum Memorial Cancer Hospital and Research Centre have been retrospectively analysed.

Results: In the 10 year period a total of 5027 patients presented to the head and neck clinic at our institution with a mean age + standard deviation of patients of 58.33 + 20.54. Oral cavity (42.6%) and larynx (13%) were the two most common sites followed by the less frequent ones. Squamous cell carcinoma ranked as the most common histological type presented to our institute (69.2%), followed by basal cell carcinoma (6.6%), mucoepidermoid carcinoma (4%), adenoid cystic carcinoma (3.6%) and 1.9% adenocarcinoma.

Conclusions: Being a third world country, the burden of the disease on the healthcare system is enormous. With limited resources and funding, there is a need to train people in the speciality and develop the National Cancer Control Program (NCCP) for better monitoring and disease control.

Key words: Developing country, head and neck cancer, health infrastructure

Introduction

Head and neck cancer (HNC) is common in several regions of the world and is on rising trend in third world population.^[1] Overall, HNC accounts for >550,000 cases worldwide annually with a male-to-female ratio increasing from 2:1 to 4:1.^[2] Almost 90% are squamous cell carcinoma. Head and neck squamous cell carcinoma (HNSCC) are the 6th leading cause of death worldwide by incidence.^[3] Tobacco, alcohol and recently HPV virus are considered to be primary risk factors.^[4] Of the total

worldwide oral cancer cases, 40% occur in Southeast Asia. High-risk countries include India, Sri Lanka, Bangladesh and Pakistan. HNSCC is the second most common cancer in men and the third most common cancer in women.^[5] Similar to other cancers, the risk of developing HNSCC also increases with age, and most HNSCC occurs in patients age 50 or older.

The average age for a smoking-related HNSCC diagnosis is 60 years (median age: 63 years), whereas the average age for smokeless tobacco-related HNSCC is 78 years.^[6] Conventional/keratinising SCC represents the vast majority (80%) of squamous carcinomas in the head and neck outside of the oropharynx and nasopharynx. Conventional HNSCCs are graded based on both the

Correspondence: Dr. Muhammad Faisal, Department of Surgical Oncology, Shaukat Khanum Cancer, Hospital and Research Centre, Lahore, Pakistan.
Email: maxfas@live.com

extent of keratinisation and cytological maturation, as well as the growth pattern, into well, moderately and poorly differentiated.^[7] Anatomic sites of HNSCC exhibit significant geographic and demographic variation due to differences in their cause.^[8] Recent studies report an increased incidence of oral tongue carcinomas arising in young caucasian women who are more likely to have never been smokers and/or drinkers.^[9] Rendering a diagnosis of SCC on a biopsy allows for further treatment planning; however, most of the prognostic factors rely on the evaluation of the resection specimen and the extent of disease. Surgery and radiotherapy serve as the primary treatment modalities in early stage disease, but for advanced tumours or those with adverse, chemotherapy has resulted in improved outcome.

Methods

Study population

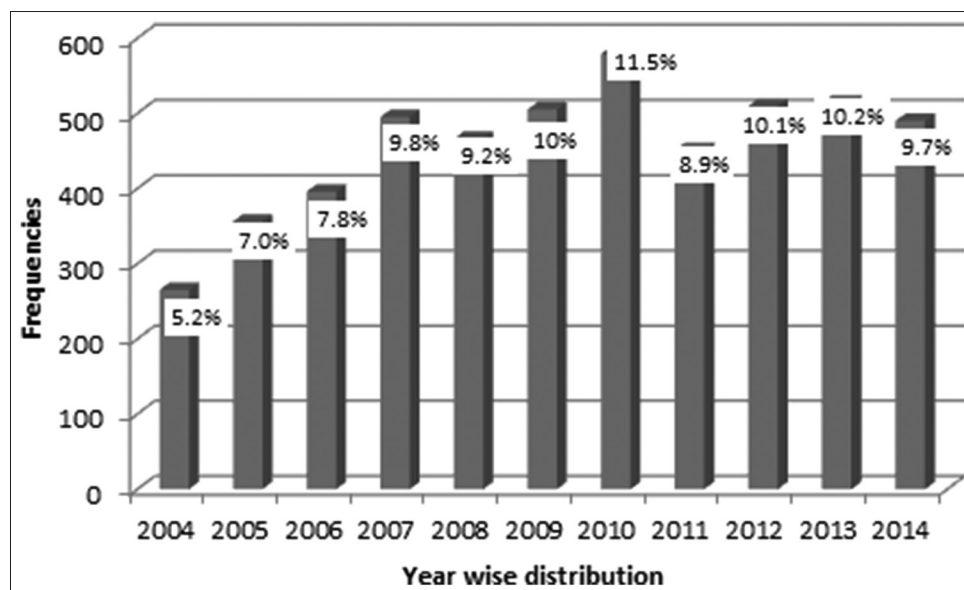
Men and women diagnosed with HNC from 2004 to 2014 from Cancer registry database of Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH and RC) comprise the following sites: Lip, oral cavity, pharynx, larynx, salivary glands, nose and ear. Demographic data for each individual including age at diagnosis, sex, risk factors, grade, stage and geographic location were all obtained from the same database.

Cancer registry and data management

The computerised cancer registry at SKMCH and RC is a data system designed for collection, management and analysis of detailed data on patients registered at the hospital. The cancer registry at the hospital has been functioning since the inauguration of the hospital in December 1994. Every year, the registry generates cancer statistics according to sex, age, demographic area, topography, morphology, stage, grade, etc. The registry uses the American Joint Committee on Cancer (7th edition) staging manual for staging all available cancer sites. Graph 1 shows the year-wise distribution of cases' registration from 2004 to 2014.

Results

A total of 5027 patients have presented to the head and neck clinic, Shaukat Khanum Memorial Cancer, Hospital and Research Centre from 2004 to 2014 with mean age + standard deviation of patients of 58.33 + 20.54. More than half of the population came from the province of Punjab 3385 (67.3%) followed by Khyber Pakhtunkhwa (KPK) province 1287 (25.6%). Overall prevalence of HNC is approximately twice 3298 (65.6%) in males. Overall 29.1% of patients had a history of smoking [Table 1]. Almost 28% of males were ex- or current-smokers in comparison to females where smoking as a risk factor is minimal <2%.



Graph 1: Year-wise registration

Table 1: Patient characteristics

Patient Characteristics	n (%)
Age (mean±SD)	58.33±20.54
Gender	
Male	3298 (65.6)
Female	1729 (34.4)
Ethnicity	
Punjab	3385 (67.3)
KPK	1287 (25.6)
Sindh	109 (2.2)
Balochistan	82 (1.6)
Afghanistan	166 (3.3)
Risk factors	
Smoking	1465 (29.1)
Naswar (chewing tobacco)	857 (17)
Pan chewing (betel leaf)	631 (12.6)
Alcohol	110 (2.2)
Stage at presentation	
0	54 (1.1)
I	691 (13.7)
II	988 (19.6)
III	1111 (22.1)
IV	2183 (43.4)
Response to chemoradiation	
Complete response	1889 (37.6)
Partial response	539 (10.7)
Stable disease	488 (9.7)
Progressive disease	105 (2.1)
On treatment	92 (1.8)

KPK: Khyber Pakhtunkhwa

Betel nut as a risk factor was approximately 3 times more common in males. Apart from all, Naswar (Snuff dipping) was almost 6 times more common in males and significantly higher (54%) population belongs to KPK province. Smoking has emerged enormously as a risk factor in the province of Punjab i.e. 78.5% as compared to other parts of the country.

Of all the sites in head and neck region, oral cavity was the most commonly involved (42.6%) site where anterior two-third of the tongue is frequently involved subsite followed by buccal mucosa and lower alveolus.

The larynx is the second most commonly involved (13%) site with most of the cases involving glottis. Skin malignancies are third on the list (11.6%), salivary glands

Table 2: Tumour distribution according to site

Site (%)	Subsite	Frequency (%)
Oral cavity 2140 (42.6)	Ant. tongue	836 (16.6)
	Buccal mucosa	476 (9.5)
	Lower alveolus	383 (7.6)
	Hard palate	124 (2.5)
	Lips	101 (2.0)
	Upper alveolus	97 (1.9)
Larynx 654 (13)	Supraglottic	73 (1.5)
	Glottic	561 (11.2)
	Subglottis	15 (0.3)
Oropharynx 98 (1.9)	Tongue base	63 (1.3)
	Tonsil	59 (1.2)
	Soft palate	12 (0.2)
Hypopharynx 358 (7.1)	Postcricoid	232 (4.6)
	Piriform sinus	104 (2.1)
	Post pharyngeal wall	33 (0.7)
Nasopharynx 408 (8.1)		
Salivary glands 348 (6.9)	Parotid	278 (5.5)
	Submandibular	62 (1.2)
	Sublingual	10 (0.2)
	Minor salivary glands	06 (0.1)
Nasal cavity 64 (1.3)		
Skin 580 (11.5)	SCC	316 (6.2)
	BCC	193 (3.8)
	Melanoma	71 (1.4)
Unknown primary 18 (0.4)		
Others 359 (7.2)		

SCC: Squamous cell carcinoma

contribute 6.9% to head and neck tumours with parotid as the most commonly involved salivary gland [Table 1].

Among all HNC, squamous cell carcinoma ranked as the most common histological type presented to our institute (69.2%), followed by basal cell carcinoma (6.6%), mucoepidermoid carcinoma (4%), adenoid cystic carcinoma (3.6%) and 1.9% adenocarcinoma.

Amongst the histologic differentiation, 2016 (40%) had well-differentiated and 1891 (37.6%) had moderately-differentiated tumours, whereas poorly differentiated and undifferentiated account for 16.9% and 5.3%, respectively [Table 2].

A significant number of patients have been accepted with an intent to cure the disease (81.1%) while only few (11.7%) have been treated with palliative intent. Majority of patients presented in advance disease, 43.4% in Stage IV disease [Table 1]. Response to chemoradiation, whether neoadjuvant or adjuvant was complete in 1889 (37.6%) patients [Table 1].

Discussion

Literature search of worldwide tendencies in the incidence of HNC demonstrates drifts of these cancers in several countries around the world.^[2,3] Our results correspond to rising trend, especially in terms of age, sex and risk factor associated to these tumours. Year-wise distribution depicts a rise in the presentation of HNC reaching up to 10% annually with majority (43.4%) of patients presenting in advance i.e., stage IV disease.

Currently, the burden of the disease on the healthcare system is much and no national population-based cancer registry setup has been established. Of the three cancer registries currently functional in Pakistan, one is target population based and two are institution based. The population-based cancer registry of Pakistan is Karachi Cancer Registry, a voting member of the International Association of Cancer Registries. It is based only on the population of South of Karachi, Sindh, which is taken by the registry as the sample population of Pakistan. Institution-based registries that have the IARC membership include SKMCH and RC, Lahore and Aga Khan University Cancer Surveillance for Pakistan, Karachi.^[10,11] Smoking and alcohol are the known risk factors associated with HNC worldwide. We also observed that 29% of our patients were smokers, followed by Naswar (chewing dried tobacco) and Paan chewing (betel leaf with areca and betel nuts). Contrary to observation to western studies, alcohol becomes the least common factor associated with HNC in Pakistan.^[12] HNC is more common in men probably due to more usage of paan, betel nut, smoking and naswar consumption. 65% of our

population is male, and this observation was also found by Khawaja *et al.* who performed KAP study on betel, areca and tobacco in Karachi.^[13] HPV-positive oropharyngeal cancer was present in 60% of our patients and we are using p16 immunohistochemistry at our diagnostic laboratory.

The variations in the incidence of cancers by subsite HNC are largely related to the relative distribution of major risk factors. Oral cavity and tongue cancers are more common in the Indo-Pak region, and nasopharyngeal and pharyngeal and/or laryngeal cancers are more common in other populations.^[14] In our study group, we found that the oral cavity was the most common site observed in 2140 (42.6%) patients. The second most common site was the larynx observed in 654 (13%) patients. Similar to our observation, Manjari *et al.* found oral cavity to be the most common and nasal cavity to be the least prevalent site affected in their series of 1471 patients over 10 years.

We usually follow HNC patients 3 monthly during 1st year, 4 monthly during 2nd year, 6 monthly during 3rd year and then yearly up to 5 years. Due to the long distances, poor socioeconomic status and increased cost of living, it is unlikely for patients to have early regular follow-ups. Our established head and neck oncology department service accepts patients through walk-in clinic who has been referred by general practitioners, dentists and other specialists with histopathological proven disease.

The major restraint in comparing the national database with the international one is the unavailability of complete information related to the HNC cases reported at public sector institutes. The need of the hour is to establish a standardised information retrieval system within all the public sector-based cancer institutes that will help in executing and monitoring National Cancer Control Program in a country like Pakistan where there is a paucity of trained oncologists, head and neck surgeons and pathologists, and government is not spending enough on healthcare system.

The major challenges for the management of HNC are lack of awareness, low socioeconomic class and literacy and thus advanced-stage presentation of disease. We recommend developing cancer control program and cancer treatment centres nationwide in response to an increase in the incidence of HNC. Surely, there is a dire need to establish smoking cessation campaign at domestic level.

The second tier of struggle for patients was a gap in diagnostic skills and treatment consensus between medical care providers and their respective facilities.

Conflict of Interest

The authors declare that they have no conflict of interest.

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