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

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Abstract

Purpose: Head and neck cancers are among the most common cancers in developing countries, especially in South East 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 health care facilities and illiteracy are the factors that pose a major challenge to the management of the disease. The aim of this study is to analyze the database that have been collected over the period of 10 years showing the trends of the disease and the management outcome of these individuals.

Methods: Men and women diagnosed with head and neck cancer from 2004-2014 from Cancer registry database of Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH & RC) have been retrospectively analyzed.

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

Keywords: 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 head and neck cancer accounts for more than 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 (HNSCC) and 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 South East Asia. In high-risk countries (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/keratinizing 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 extent of keratinization 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 because of differences in their cause [8]. Recent studies report an increased incidence of oral tongue carcinomas arising in young white 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 tumors or those with adverse, chemotherapy has resulted in improved outcome.

Methods
Study population
Men and women diagnosed with head and neck cancer from 2004-2014 from Cancer registry database of Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH & RC) comprising 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, geographic location were all obtained from the same database.

Cancer Registry and Data Management
The computerized cancer registry at SKMCH & 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 (AJCC 7th edition) staging manual for staging all available cancer sites. Graph 01 shows year wise distribution of cases registration from 2004 to 2014.

Results
A total of 5027 patients has presented to the head and neck clinic, Shaukat Khanum Memorial Cancer Hospital and Research Centre from 2004-2014 with mean age + SD of patients 58.33 + 20.54. More than half of the population came from the province of Punjab 3385(67.3%) followed by KPK (Khyber Pakhtun khwah) province 1287(25.6%). Overall prevalence of head and neck cancer is approximately twice 3298 (65.6%) in males. Overall 29.1% patients had history of smoking. (Table 01) Almost 28% of males were ex or current smokers in comparison to females where smoking as a risk factor is minimal <2%. 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 2/3rd of the tongue is frequently involved sub-site followed by buccal mucosa and lower alveolus.

Larynx is the 2nd most commonly involved (13%) site with most of the cases involving glottis. Skin malignancies are 3rd on the list (11.6%), salivary glands contribute 6.9% to head and neck tumors with parotid as the most commonly involved salivary gland (Table 01).

Among all head and neck cancers, 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 tumors, where as poorly differentiated and undifferentiated account for 16.9% and 5.3% respectively.

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 01). Response to chemo-radiation, whether neoadjuvant or adjuvant was complete in 1889 (37.6%) patients (Table 01).

<table>
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<th>Age (Mean + SD)</th>
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Table 1: Patient characteristics
Site | Sub site | 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%) | Supra-glottic | 73 | 1.5
 | Glottic | 561 | 11.2
 | Sub-glottis | 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%) | Post-cricoid | 232 | 4.6
 | Piriform sinus | 104 | 2.1
 | Post. Pharyngeal wall | 33 | 0.7
Nasopharynx 408 (8.1%) | Parotid | 278 | 5.5
 | Sub-mandibular | 62 | 1.2
 | Sub-lingual | 10 | 0.2
 | Minor salivary glands | 06 | 0.1
Nasal cavity 64 (1.3%) | Skin | SCC | 316 | 6.2
 | 580 (11.5%) | BCC | 193 | 3.8
 | Melanoma | 71 | 1.4
Unknown primary 18 (0.4%) | Others | 359 (7.2%)

Table 2: Tumor distribution according to site

**Discussion**

Literature search of worldwide tendencies in incidence of HNC demonstrate 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 tumors. Year wise distribution depicts rise in 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 health care system is much and no national population based cancer registry set up 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 (KCR), a voting member of International Association of Cancer Registries (IACR). 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 Shaukat Khanum Memorial Caner Hospital & Research Centre (SKMCH&RC), Lahore and Aga Khan University Cancer Surveillance for Pakistan (ACSP), Karachi [10, 11]. Smoking and alcohol are the known risk factors associated with HNC worldwide. We also observed 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 are more common in men probably due to more usage of paan, betel nut, smoking and naswar consumption. 65% of our population is male, this observation was also found by Khwaja and colleagues 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 immunohistohemistry at our diagnostic lab.

The variations in the incidence of cancers by sub-site HNC is largely related to the relative distribution of major risk factors. Oral cavity and tongue cancers are more common in the Indo-Pak region, 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 head and neck cancer patients 3 monthly during first year, 4 monthly during second year, 6 monthly during third year and then yearly up to 5 years. Because of 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 head and neck cancer cases reported at public sector institutes. The need of the hour is to establish a standardized information retrieval system within all the public sector based cancer institutes that will help in executing and monitoring National Cancer Control Program (NCCP) in a country like Pakistan where there is a paucity of trained oncologists, head and neck surgeons, pathologists and government is not spending enough on health care system.

The major challenges for the management of head and neck cancers 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 increase in 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.

Abbreviations
HNC: Head and neck cancer, HNSCC: Head and Neck Squamous Cell Carcinoma, KPK: Khayber Pakhtoon khwah, NCCP: National Cancer Control Program, SKMCH&RC: Shaukat Khanum Memorial Cancer Hospital and Research Centre.

References


