ORIGINAL ARTICLE

RADIOLOGICAL PATTERNS OF HEAD AND NECK CANCERS IN KARACHI: A CLINICAL AUDIT

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ABSTRACT

BACKGROUND: Head and neck cancers are one of the most common malignancies worldwide. The purpose of this study was multislice CT scan based demographic and radiological audit of head and neck cancers in Pakistani population. **METHODS:** This was a retrospective study of all head and neck cancer cases that presented to the Karachi X-Rays and Diagnostic Center, Karachi from 01st June 2009 till 31st May 2010. The scans were performed using a 16 slice Toshiba Activion. **RESULTS:** A total of 511 patients were recorded during the study period study [342 (67%) males :169 (33%) females]. Mean age was 52 years. The most common site of the head and neck tumors was the oral cavity [353 (69%)] followed by larynx [158 (31%)]. In order of frequency, the most common oral cavity cancers were buccal mucosa (37%), tongue (17%), alveolus (09%) and lip (06%). Of the oral cavity lesions, buccal mucosa accounted for (53%), tongue (29.6%), alveolus (13%) and lip accounted for (8.6%) patients. Most patients presented with tumor stage T3. The most common nodal stage was N2b. Lung metastases were present in 87 (17%). Contralateral nodes were present in 301 (59%) patients and absent in 209 (41%). **CONCLUSION:** Head and neck malignancies are common in Pakistan. CT scan plays a significant role in the diagnosis and staging. A male predominance was noted especially for laryngeal cancers. Buccal mucosa was the commonest site in oral cancers. Presentation was found to be significantly delayed and most patients presented at an advanced stage when compared to earlier reports. We recommend a centralized data registry, public awareness campaign, and screening programs for prevention, earlier diagnosis and better treatment outcomes in Pakistani population.
Key words: head and neck cancers; buccal cavity; larynx; multislice CT; Karachi

Introduction

Head and neck cancers are one of the most common malignancies worldwide.[1] These represent neoplasms of oral cavity including skin, lips, nasal cavity and paranasal sinuses, salivary glands, pharynx and larynx. Head and neck cancers share their natural histories, epidemiology and also risk factors which include tobacco and alcohol consumption, low socioeconomic status and Human Papiloma Virus (HPV)2 and Ebstein Barr Virus (EBV).[3,4,5] Fruit and vegetable intake have an inverse relationship with the incidence of head and neck cancers according to few studies.[6,7] South Asia including Pakistan is placed among the high risk geographical zone for head and neck cancers[1] while it is relatively uncommon in the developed countries like UK.[8] For advanced disease, prognosis has not improved much in the last few decades[9] and therefore accurate and early detection is critical. CT scan remains the mainstay of head and neck cancer imaging in terms of detection of the tumor extent and staging including clinically occult disease.[10]

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This study presents a one year multi slice CT scan based demographic and radiological audit of head and neck cancers. This is to the best of our knowledge is the largest CT scan based report of head and neck cancers from Pakistan and would help to explore the pattern of this disease in our population.

Materials and Methods

This was a retrospective study of all head and neck cancer cases that presented to the Karachi X-Rays and Diagnostic Center, Karachi from 01st June 2009 till 31st May 2010. Only the radiological records were accessed retrospectively and no contact with the patient's or their families was made during the course of study. Since it was a retro-spective study and confidentiality of patients were maintained till the end so approval from ERC was not acquired. Only the undiagnosed patients with no previous staging were included in the study. All of the cases were subsequently confirmed histopathologically. Post surgical and follow up patients were not included. The scans were performed using a 16 slice Toshiba Activion. As a protocol, in our institution CT scans head and neck were done before and after administration of IV contrast as per needed. The patients were scanned from the skull base to the manubrium at 1.0 mm intervals. All the CT scan images were interpreted and reviewed by two qualified radiologists and decisions were made by consensus. The available soft copy images were reviewed at the work station.

Cancers of the oral cavity and larynx were reviewed. Oral cavity was taken as the buccal mucosa, upper and lower alveolar ridges, and the lips. The tongue was also included in the oral cavity. Tumors were staged according to the UICC (Union International for Cancer Control), TNM staging system for standardization. The site of the tumor, its tumor and nodal stages and the presence of lung metastases based on the sections through the lung obtained during the head and neck CT scan were analyzed. The rate of incidence based on age and gender of the patients was determined. Data was collected using a standardized, pre tested performa.

Patients with salivary and thyroid tumors were excluded from this study.

Results

A total of 511 patients were recorded during the study period and out of these of 342 (67%) were males and 169 (33%) were females (Fig. 1). The mean age was 52 years. Of these patients, 271 (53%) were between 51 to 60 years of age. The most common site of the head and neck tumors was the oral cavity (353 patients - 69%) followed by larynx (158 patients - 31%) (Fig. 2). In order of frequency, of the total the most common oral cavity

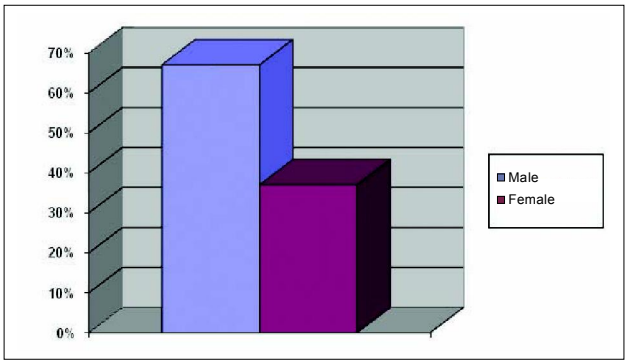

Figure 1: Gender distribution

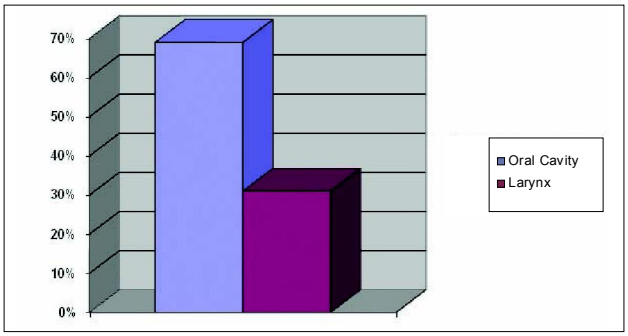

Figure 2: Breakup of cancers

cancers were buccal mucosa (189 cases - 37%), tongue (87 cases - 17%), alveolus (45 patients - 09%) and lip (31 cases - 06%) (Fig. 3). Of the oral cavity lesions, buccal mucosa accounted for 187 (53%), tongue - 104 (29.6%), alveolus – 46 (13%) and lip accounted for 30 (8.6%) patients. Most patients presented with tumor stage T3 (Fig. 4) with 82, 99, 133 and 39 cases with T1, 2, 3 and 4 stage oral cavity lesions respectively and 12, 48, 65 and 33 patients with T1, 2, 3 and 4 stage laryn-

geal lesions respectively. The most common nodal stage was N2b. Lung metastases were present in 87 (17%) patients and absent in 424 (83%). Contralateral nodes were present in 301 (59%) patients and absent in 209 (41%).

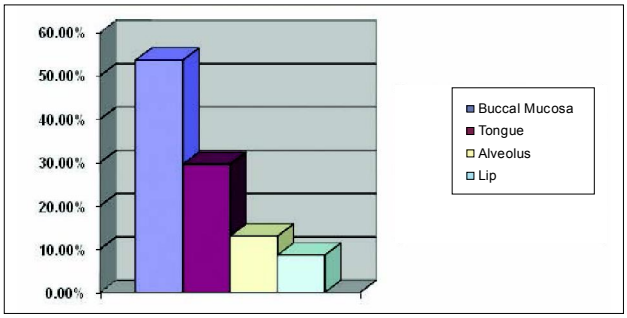

Figure 3: Localization of oral cavity tumors

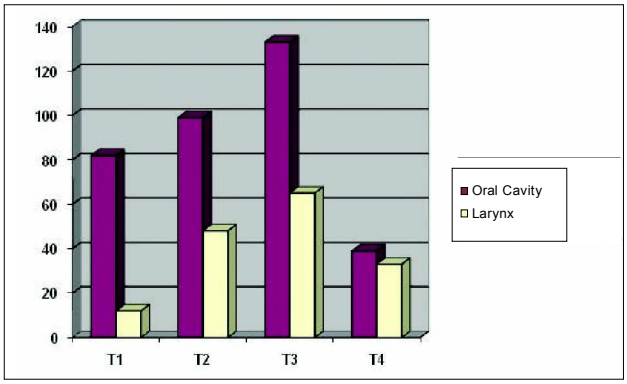

Figure 4: Staging distribution

Discussion

In the recent past, as oncologists and surgeons have tried to cure or regress many types of cancers, diagnostic imaging technology has also advanced remarkably and provided critical support in the accomplishment of the goal. Today, radiology plays a parallel and essential role in the diagnostic and therapeutic management of all types of cancers including the head and neck cancers. Varying levels of incidence of head and neck cancers are noted globally. In the Indian subcontinent, higher incidence of mouth and tongue cancers is noted. In East Asia, nasopharyngeal cancer is found to be more prevalent while the cancers of pharynx and larynx are more commonly seen in other regions.[11] Men are affected more than women globally and peak incidence is reported in the 5th-6th decade in Asians and in the 7th-8th decade in North Americans.[12]

The overall patterns of head and neck cancers reflect the prevalence of the risk factors. The high prevalence of disease in the third world countries could be attributed to the consumption of tobacco in various forms among other factors.[13] The incidence rates of head and neck cancers in Karachi are comparable to the high risk regions of the world, accounting for approximately 21% of the cancers in males and 11% in females[1] in concordance with to other reports from this region.[11,14-16] Comparing the analysis of Bhurgri et al.[1], our study confirms that in Karachi, the cancer of buccal mucosa is the most common cancer of the oral cavity (53.6%), followed by tongue (29.6%), alveolus (13.0%) and lip (8.6%) (Fig. 5). Slight increase in the incidence of tumors arising from the alveolus and the lip is noted in our study, however the incidence of the buccal mucosa and tongue lesions is comparable. In agreement with Bhurgri et al., our study also confirms the higher age of presentation compared with international literature.[1] In our study, mean age for head and neck cancers was above 50 year including laryngeal cancer. Discrepancy is seen in the age of presentation of laryngeal tumors which is considered a disease of the elderly presenting in the 5th to 6th decade.[17] The peak incidence age group was 51-60 years. Laryngeal carcinoma has shown an increasing incidence among women possibly due to increased cigarette smoking among women;[18] however, in our database, in Karachi the imbalance in the male-to-female ratio was most visible in laryngeal tumors which are many times more common in men. Not much literature is available on the association between tobacco intake and laryngeal cancer in women although rates of smoking in females have increased significantly globally.

More than two thirds of the patients present after three years of onset of the disease due to many factors resulting in advance stage of disease at onset1. If detected earlier, head and neck tumors are curable but unfortunately our study shows a higher stage at the time of presentation compared with Bhurgri et al. T3 vs. T2[1] We also looked at the nodal stage with the most common nodal stage being N2b. It was not addressed by Bhurgri et al.[1] One additional piece of data collected was the presence of the contralateral nodes in the majority

of the patients (59%) which represents a more advanced nodal stage N2c and could again be attributed to the more advanced disease stage at the time of presentation.

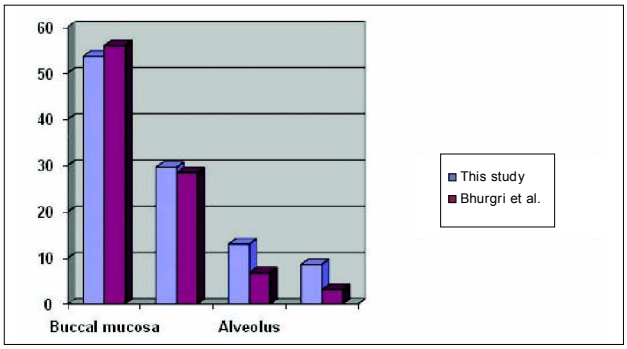

Figure 5: Comparison with local data

Conclusion

Head and neck malignancies are common in Pakistan. CT scan plays a significant role in the diagnosis and staging. A male predominance was noted especially for laryngeal cancers. Buccal mucosa was the commonest site in oral cancers. Presentation was found to be significantly delayed and most patients presented at an advanced stage when compared to earlier reports. We recommend a centralized data registry, public awareness campaign, and screening programs for prevention, earlier diagnosis and better treatment outcomes in Pakistani population.

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