RESEARCH ARTICLE

HISTOPATHOLOGICAL SPECTRUM OF TUMOURS OF UPPER AERO DIGESTIVE TRACT IN SURAT - A STUDY OF 156 CASES

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DOI: 10.5455/ijmsph.2013.090720133 **Received Date: 01.07.2013** **Accepted Date: 09.07.2013**

ABSTRACT

Background: Cancers of the upper aero-digestive tract (UADT) constitute 3.5-4% of all malignancies. Majority of cases are squamous cell carcinomas which are related with various epidemiologic factors.

Aims & Objective: The objective of this study is to know the histopathological spectrum of tumours of UADT.

Material and Methods: This study comprises of 156 cases of histopathological diagnosed tumours of upper aero digestive tract who attended new civil hospital, government medical college, Surat, from August 2010 to august 2012. All prospective and neoplastic cases were included and retrospective and non- neoplastic cases were excluded. Routine paraffin sectioning and staining was done and immunohistochemistry was applied when required.

Results: Out of total 156 cases of UADT, 129 malignant, 19 cases benign and 8 were carcinoma in-situ cases. In malignant cases, 124 (96.00%) cases of carcinomas, 1 (0.80%) case of sarcoma, 2 (1.60%) cases of melanoma, and 2 (1.60%) cases were of lymphomas. Most common site of carcinoma was oral cavity (tongue). Most common carcinoma was Squamous cell carcinoma. Most common site of SCC was hypo pharynx (pyriform Fossa), followed by oral cavity (tongue) and larynx (supra glottis). In benign tumours, most common site was nasal cavity (7 cases) and common varieties were Angiofibroma and Capillary Haemangioma.

Conclusion: Tumours of UADT are predominant in males affecting older age group. People with tobacco chewing, smoking, alcoholism, poor socioeconomic background, mixed diet and poor oral hygiene are more vulnerable.

Key-Words: Upper Aero Digestive Tract Tumours; Squamous Cell Carcinoma; Oral Cavity

Introduction

The upper aero digestive tract is a mucosa lined tract extending from lips and nares to glottis. Cancers of UADT constitute about 3.5 to 4 % of all malignancies.[1] It includes lip, tongue, buccal mucosa, palate, posterior pharyngeal wall, nasal cavity, nasopharynx, oropharynx, and larynx. Tumours of upper aero digestive tract are a great challenge to the modern medical science and to the patient as it often calls for a major surgery which often leads to disfiguration also. These cancers are often fatal despite combined modality treatment consisting of surgery, radiation, and chemotherapy.

Many etiological factors contribute to the development of UADT malignancy, Such as the use of all forms of tobacco, alcohol consumption, nutritional factors, poor oral hygiene, chronic inflammation, repeated traumatic irritation and viruses.[2-4] Genetic and idiopathic factors also may predispose to cancers. Alcohol and tobacco, alone or in combination, are associated with an increased risk of various cancers, including upper aero digestive tract. Both alcohol and tobacco use can increase the risk of cancer of the oral cavity and throat (pharynx) and their combined use has a multiplicative effect on risk. Also, those regions of the mouth and pharynx that are more directly exposed to alcohol or tobacco are more likely to be affected by cancer than other regions. A similar effect was found with cancer of the voice box (larynx).[3]

SCC is histologically the most common type comprising 95% of UADT tumours in Surveillance, Epidemiology, and End Results (SEER) registries in USA.[2] Different patterns of SCC in UADT tumours is expected in Asians and western population due to racial differences and alcohol, tobacco, diet and viral infections.[1,2,5]

Materials and Methods

This prospective study comprises of 156 cases of histopathological diagnosed tumors of upper aero digestive tract attended from August 2010 to

august 2012. All patients with suspected tumors of upper aero digestive tract were included and all non-neoplastic cases and retrospective cases were excluded. Patients were questioned about their socioeconomic status, dietary habits and were examined for oral hygiene. Biopsies or Specimen were received and tissue processing was done. Specimens are fixed as early as possible by 10% neutral buffered formalin & processed preferably within 24 hours of surgery of patient. After routine paraffin processing, sections were cut and stained by Haematoxylin & Eosin method and relevant panel of immunohistochemical antibodies were applied whenever required. Tissue sections were examined under light microscope. Diagnosis was made according to criteria & grading of malignant tumour. One of the sections representative of malignancy, devoid of necrosis was selected for examining the expression of different markers by IHC. In each staining series a known positive control section was taken.

Results

Table 1 shows the distribution of tumours according to age. In present study, age range was from 6 to 95 years. Most common age of presentation was between 41 to 60 years of age. Youngest patient was 6 years old and oldest patient was 95 years old. Male to Female ratio was 3.6:1. 104 (66.67%) cases of UADT had mixed diet; whereas 52 (33.33%) patients were vegetarian. 120 (77.00%) cases had poor oral hygiene and 36 (23.00%) cases had good oral hygiene. 142 (91.00%) of all cases had poor socioeconomic status and 14 (9.00%) of all cases were of middle class. Out of 156 cases, 19 (12.00%) cases were benign, 129 (83.00%) cases were malignant and 8 (5.00%) cases were Carcinoma in-situ.

Table 2 shows the distribution malignant cases of UADT under broad categories. Out of 129 malignant cases, 124 (96.00%) cases were of carcinomas, 1 (0.80%) case was of sarcoma, 2 (1.60%) cases of melanoma, 2 (1.60%) cases were of lymphomas. Most common site of carcinoma of UADT was oral cavity (tongue) followed by hypo pharynx (pyriform fossa) and larynx (supraglottis). Sarcoma, melanomas and lymphomas were seen in nasal cavity and nasopharynx.

Table-1: Age Distribution for Tumours of Upper Aero Digestive Tract

Age	N (%)
0-10	1 (0.64)
11-20	7 (4.40)
21-30	15 (9.61)
31-40	22 (14.10)
41-50	41 (26.28)
51-60	42(26.92)
61-70	22 (14.10)
>70	6 (3.85)

Table-2: Distribution Malignant of Cases of UADT under Broad Categories

Site	Carcinoma	Sarcoma	Melanoma	Lymphoma	Total
Lip	0	0	0	0	0
Tongue	29	0	0	0	29
FOM	1	0	0	0	1
Cheek	8	0	0	0	8
Gingiva	1	0	0	0	1
Palate	6	0	0	0	6
Nasal C	1	1	2	0	4
NF	3	0	0	2	5
PNS	1	0	0	0	1
PF	32	0	0	0	32
PC	2	0	0	0	2
PPW	6	0	0	0	6
SG	31	0	0	0	31
GL	2	0	0	0	2
SUB	1	0	0	0	1
Total	124 (96)	1 (0.80)	2 (1.60)	2 (1.60)	129(100)

PF: Pyriform Fossa; Nasal c: nasal cavity; NF: nasopharynx; PNS: paranasal sinuses; PC: Post cricoid region; PPW: Posterior pharyngeal wall; FOM: Floor of mouth; SG: Supra glottis; GL: Glottis; SB: Sub glottis

Table-3: Site wise Distribution of Carcinomas of UADT

SITES	SCC	VCA	BSCC	SPCC	VSCC	PDCA	NPC	SG	SmCC
Lip	0	0	0	0	0	0	0	0	0
Tongue	26	1	0	0	0	1	0	1	0
FOM	1	0	0	0	0	0	0	0	0
Cheek	6	2	0	0	0	0	0	0	0
Gingiva	0	0	0	0	1	0	0	0	0
Palate	4	0	0	1	0	0	0	1	0
Nasal C	0	0	0	0	0	0	0	1	0
NF	0	0	0	0	0	0	3	0	0
PNS	1	0	0	0	0	0	0	0	0
PF	30	0	0	0	0	2	0	0	0
PC	2	0	0	0	0	0	0	0	0
PPW	6	0	0	0	0	0	0	0	0
SG	20	0	2	0	0	0	0	0	0
GL	11	0	0	0	0	0	0	0	0
SUB	0	0	0	0	0	0	0	0	1
Total	107 (86)	3 (2.5)	2 (1.6)	1 (0.80)	1 (0.80)	3 (2.5)	3 (2.5)	3 (2.5)	1 (0.80)

Figures in bracket indicate percentage; SCC: Squamous cell carcinoma; PDCA: Poorly differentiated carcinoma; VCA: Verrucous carcinoma; NPC: Nasopharyngeal carcinoma; BSCC: Basaloid squamous cell carcinoma; SPCC: Spindle cell carcinoma; VSCC: Verrucoid squamous cell carcinoma; SG: salivary Gland; SmCC: Small cell carcinoma

Table 3 shows the site wise distribution of Carcinomas of UADT. In 124 cases of carcinomas,

most common carcinoma was Squamous cell carcinoma followed by verrucous carcinoma, poorly differentiated carcinoma and naso-pharyngeal carcinoma. Most common site of SCC was hypo pharynx (pyriform Fossa), followed by oral cavity (tongue) and larynx (supra glottis). 3 cases were of minor salivary gland, out of which 2 cases were in oral cavity [palate (mucoepidermoid carcinoma) and base of tongue (polymorphous low grade adenocarcinoma)] and one was in nasal cavity (adenoid cystic carcinoma).

Only 12% cases were benign and included epidermal cyst, fibrous dysplasia, inverted papilloma, mucocele, Pleomorphic adenoma, angiofibroma, lobular hemangioma, verrucous hyperplasia and capillary hemangioma. Most common site was nasal cavity (7 cases) and commonly seen varieties were Angiofibroma and Capillary Hemangioma. One borderline tumour (glomangiopericytoma) was also seen.

Discussion

Tumours of upper aero digestive tract are common in India. This is due to increasing trends of smoking, tobacco chewing and alcohol consumption. The pathologic aspects of UADT cancers tend to be overlooked, because most of them are squamous cell carcinomas, which are not much attractive to both pathologists and clinicians. However, the head and neck is the location with the most diverse pathologic manifestations, as it is anatomically composed not only of squamous or columnar epithelium, of either ectodermal or endodermal origin, but also of various types of mesenchymal and neural tissues. A variety of tumours of upper aero digestive tract were analysed. In present study, mean age was 50.20 years. Maximum numbers of patients were in the age group of 41 to 60 years with 41-50 (26.28%) and 51-60 (26.92 %) in cancers of UADT similar to studies done by mir sajad et al (2004 Kashmir) and franceschi et al in Italy.[6,7]

In oral tumours, maximum number of cases were seen in 41-50 (30.90%) followed by 31-40 (21.80%) which is similar to other studies (thakur B.S (1997) and Sharma et al (1964).[8,9] In tumours of UADT, male:female ratio was (3.6:1). The finding co-relates with other studies.[5,6] while in oral tumours ratio was 2.7:1 indicating males as more commonly affected similar to Mehrotra Ravi et al and Dias et al.[10,11]

We found that 91% patients were from low socioeconomic status and 9% patients were from middle class indicating that the tumours are more common in low socioeconomic group while others also reported similar findings.[12,13]

The present study shows greater incidence of malignancy in cases consuming mixed diet (66.67%) as compared to vegetarian diet (33.33%). Some studies found the protective role of vegetarian diet in development of upper digestive tract tumours stressing that people with vegetarian diet are less likely to develop malignancies.[14,15] In present study, 77% patients had poor oral hygiene and 23% patients had good oral hygiene showing oral hygiene as a risk factor for Squamous cell carcinoma of tongue.[16]

Site of the Lesion

In present study, most common site of tumours of UADT was oral cavity (tongue) followed by hypo pharynx (pyriform fossa) and larynx (supra-glottis). Sarcoma (alveolar rhabdomyosarcoma), melanomas and lymphomas (N.K.T cell lymphoma) were seen in nasal cavity and nasopharynx. The higher incidence of oral tumours in the present study as compared to other studies may be due to greater consumption of tobacco in the form gutkha, mava or other forms as compared to tobacco smoking.[2,5,6] Mir sajad et al (2004 kashmir) reported that cancers of nose and para nasal sinuses were more common followed by larynx and hypo pharynx.[6] In study done by kyung ja cho (korea) (2001) larynx was most common site (26%) followed by oropharynx, nasopharynx, hypo pharynx, paranasal sinuses and nasal cavity and salivary glands.[2] In another study larynx was the most common site (33.1%) followed by oral cavity and oropharynx, hypo pharynx and para nasal sinuses in the distribution of squamous cancers of UADT.[3]

In present study, Out of total 129 malignant cases, 124 (96.00%) cases were of Carcinomas, 1

(0.80%) case was of Sarcoma, and 2 (1.60%) cases of melanoma, 2 (1.60%) cases were of Lymphomas. Total 124 cases were of carcinomas; most common carcinoma was squamous cell carcinoma. These findings are similar to the findings of the other studies.[2,5,6] Most common site of SCC was hypo pharynx (pyriform fossa) closely followed by oral cavity (tongue). 3 cases were of minor salivary gland tumours, out of which 2 cases were in oral cavity (palate and base of tongue) and one was in nasal cavity. True sarcomas are rare in the head and neck. In this study, they accounted for 0.80% of UADT cancers, and this proportion was almost similar to those reported in the western countries (0.5-1.24%).[5]

Mucosal melanomas of the UADT account for about 1% of all malignant melanomas.[17,18] They represented 1.6% of UADT cancers in our series, while the recent U.S.A./Canadian statistics showed only 0.4% of melanoma cases.[5] Mir sajad et al (2004 kashmir), 90% of the cancers were epithelial in origin and only, 10% non-epithelial, with squamous cell carcinoma was the commonest.[6] In other studies also squamous cell carcinoma was common.[2,5]

Conclusion

Tumours of UADT are predominantly a disease of males. It usually affects older age group. But younger age group are not completely spared. People with poor socioeconomic background, mixed diet and poor oral hygiene are more vulnerable. Oral cavity tumours were the most common followed by hypopharyngeal and tumours of larynx. Tongue was the most common site in tumours of oral cavity .Carcinomas was most common, with Squamous cell carcinoma as the commonest histological variety. Maximum numbers of cases of Squamous cell carcinoma were seen in pyriform fossa. Sarcoma and lymphomas were seen in nasal cavity. Both benign and malignant salivary gland tumours were also seen. Benign (Angiofibroma and capillary haemangioma) tumours were common in nasal cavity.

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Cite this article as: Bhagat VM, Saini PK, Tailor HJ, Dudhat RB, Patel AR, Modi JP. Histopathological spectrum of tumours of upper aero digestive tract in Surat - A study of 156 cases. Int J Med Sci Public Health 2013; 2:971-974.
Source of Support: None
Conflict of interest: None declared