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Full Length Research Paper

Metastatic tumours of the oral and maxillofacial region: A retrospective analysis of 18 cases

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Metastatic tumours of the oral and maxillofacial region are uncommon comprising approximately 1% of all oral malignancies and these lesions could be the first evidence of an underlying malignancy. Most of them metastasize to the jaw bones and the commonest site is the mandible. Soft tissue involvement is rare. This paper describes 18 new cases that metastasized to the oral and maxillofacial region from gastrointestinal tract, male/ female reproductive system, liver, endocrine, thyroid, kidney and bladder.

Keywords: metastasis, mandible, primary tumour.

INTRODUCTION

Metastatic tumours of the oral and maxillofacial region are uncommon comprising approximately 1% of all oral malignancies. Most of them metastasise to the jaw bones and the commonest site is the mandible. Soft tissue involvement is rare. About 23% of cases, oral manifestation was the first indication of an undiscovered tumour at a distant site (Hirshberg et al., 2004; Hirshberg et al., 2008). Although any malignancy can metastasize to maxillofacial region, some lesions have a predilection to the region. Primary tumour is known in many of the patients at the time of the diagnosis of the metastatic tumour whereas in few cases diagnosis of the primary site was followed by the detection of the metastasis. Reports of large series of metastatic tumours to oral and maxillofacial region is sparse in the literature. Therefore, description of 18 new cases would certainly add significant knowledge to the understanding of metastatic tumours to oral and maxillofacial region.

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PATIENTS AND METHODS

Metastatic tumours of the oral and maxillofacial region presented to the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka over a period of 11 years from 1998 to 2010 were reviewed. Information with regards to age, sex, clinical presentation, radiological appearance and the site of the primary tumour were collected from clinical and histopathology records.

RESULTS

During the period of 11 years, 4305 malignant tumours of oro-facial region were diagnosed in our department. Metastatic tumours from a distant primary site were found in 18 patients (0.42%) of whom 9 were men and 9 were women (ratio 1:1). Age of the patients ranged from 41 to

Table 1. Clinico-pathological details.

Primary organ	Age/ Sex	Location	Radiological appearance	Histopathlogical diagnosis	Diagnosis of primary lesion
Ovary	82F	Submandibular region	ST	Adenocarcinoma	After
Ovary	75F	Mandible	Radiolucent lesion	Adenocarcinoma	Afetr
Rectum	60M	Mandible	Radiolucent lesion in 123/123 region	Adenocarcinoma	After
Rectum	41M	Mandible	Radiolucent lesion	Adenocarcinoma high grade	After
Rectum	61F	Labial sulcus	Alveolar bone erosion (ST)	Adeno carcinoma	After
Colon	54F	Mandible	Mixed radiolucency	Adenocarcinoma	Before
Colon	63M	Mandible	Radiolucent lesion	Papillary Adenocarcinoma	After
Prostate	68M	Mandible	Radiolucent lesion	Adenocarcinoma (Low grade)	Before
Prostate	60M	Mandible	Radiolucent lesion	Adenocarcinoma (poory differentiated)	Before
Prostate	52M	Papillary lesion on Soft palate	Palatal bony erosion (ST)	Carcinoma	After
Prostate	77M	Mandible	Radiolucent lesion	Adenocarcinoma	Before
Descending Aorta	51F	Mandible	Radiolucent lesion	Malignant paraganglioma	After
Kidney	57F	Mandible	Bony erosion on ramus and tuberosity	Renal cell carcinoma	After
Kidney	56M	R/S commissure	(ST)	Renal cell carcinoma	After
Bladder	68M	Mandible	Destructive lesion on ramus	Transitional cell carcinoma	Before
Thyroid	63F	Retromolar region and tonsillar area	Erosion of ascending ramus (ST)	Follicular carcinoma	After
Liver	72F	Mandible	Radiolucent lesion	Hepatocellular carcinoma	After
Unknown	59F	Mandible	Radiolucent lesion	Papillary carcinoma	After

ST- soft tissue

82 years. The mean ages for women and men were 63 and 60.5 years respectively. Except one 41 year old male patient who had high grade rectal adenocarcinoma, all other patients were older than 50 years.

Tumours metastasizing to jaw bones were more frequent (13 cases) than to oral soft tissue (5 cases). A gender difference was observed for the most common primary site. It appeared that ovary was the commonest primary site for women and prostate was found to be the commonest for men. Clinico-pathological details are given in Table 1.

There were 5 cases of colorectal carcinoma metastasized to oral region and that was the most common primary site in the present series, followed by prostate (Koutsilieris, 1993), ovary and kidney (2 cases each). One case each from bladder, thyroid, liver, carotid body and one without a known primary were also included in the series.

In jaw bones, the most frequently affected site was the molar region of mandible (92%). Painful swelling, paresthesia and delayed healing of extraction socket appeared to be the presenting signs and symptoms. Radiolucent or lytic lesions with ill-defined margins were observed in jaw lesions radiologically. Two cases of soft tissue lesions showed bone erosion.

Approximately a month after diagnosis of primary tumour subsequent to oral metastasis two patients died and both had renal cell carcinoma with lung deposits. The patient with a malignant paraganglioma who was found to have a large tumour mass in relation to descending aorta also died few weeks after the surgery. A female patient who had metastasis from the liver also died 2 months after the diagnosis of the primary tumour.

DISCUSSION

Biologically, tumour metastasis is a complex process. At

Table 2. Ten most common malignant tumours in Sri Lanka (Ref-cancer incidence data).

	Male	Percentage	Female	Percentage
1	Lip and oral cavity	12.7	Breast	18.7
2	Trachea bronchus and lung	6.9	Cervix Uteri	8.9
3	Esophagus	5.1	Ovary	6
4	Colon and Rectum	4.0	Thyroid	6
5	Lymphoma	3.7	Esophagus	5.3
6	Larynx	3.3	Lip and oral cavity	3.8
7	Leukaemia	3.2	Colon and rectum	3.5
8	Prostate	3.1	Leukaemia	2.6
9	Unknown peimary site	2.7	Lymphoma	2.4
10	Brain	1.8	Uterus	2.4

Table 3. A comparison with the literature. (Data from ongoing analysis).

Primary site	Total to jaw bones	Total to oral soft tissues (Hirshberg, 2008)	Our series
Liver	61	11	1
Breast	86	20	-
Kidney	21	29	2
Bladder	12	3	1
Thyroid	21	2	1
Lung	80	54	-
FRS	16	11	2
MRS	33	8	4
Endocrine	11	-	1
Gastro intestinal	33	28	5
Long bones	10	14	-
Neural/brain	21	2	-
Eye	18	2	-
Skin	15	24	-
Unknown primary	56	10	1
	494	218	18

MRS- male reproductive system, FRS- female reproductive system

the beginning metastasizing clone has to detach from the primary tumour, invade the lymphatics or blood vessels, survive and travel in the circulation, extravasate and invade the target organ as a micrometastasis. In order to grow beyond the size of 2-3 mms, tumour cells have to induce angiogenesis (neovascularization) for nutrition and oxygen.

Metastases seem to prefer the haematopoetically active marrow of the skeleton. According to the literature metastases are more frequent in the mandible than maxilla due to the paucity of active red marrow in the latter (Atsakis and McBurney 1971; Zachariades and Papanicolau, 1982). Tumour metastases to the jaws occur via blood stream by embolization as jawbones lack lymphatics. Out of 18 tumours, 13 metastasized to the jawbones, were found to be in the mandible, further demonstrating this predilection.

Metastatic lesions could be the first evidence of an underlying malignancy. According to the previous studies only 1% comprised metastatic tumours out of all malignancies in oral region (Hirshberg et al., 2004). According to our experience for the study period it revealed that the figure to be 0.38%. The exact incidence of jaw metastasis is difficult to ascertain, as skeletal radiographic surveys are not routinely done in Sri Lanka. Even when such scans are performed, the jaws are usually excluded. Another reason is for the discrepancy may be the lack of post mortem data. To address this issue a prospective screening study in patients with advanced stage malignancies, in which the jaws are imaged routinely by conventional radiographs and bone scintigraphy would be helpful.

Metastases to the jaws may be the only evidence of tumour dissemination or part of generalized spread

(Verbin et al., 1985; Anil et al., 1999; Harrison and Lund, 1993). After reviewing 18 cases, we found that the primary malignancy was undetected in 72% of the cases until the oral metastasis is diagnosed. In the present report, 3 patients were found to be having metastasis in the lungs, ribs and vertebra when primary tumour was diagnosed.

As metastatic tumors to the oral region are uncommon, diagnosis of these lesions may be a challenge. The histological appearance of jaw metastasis is often poorly differentiated, making it difficult to determine the location of the primary lesion (Neville, 2002). The use of immunohistochemical stains and a thorough medical history can facilitate the correct diagnosis. Reviewing 673 reported cases from the literature, Hirshberg et al. (2007) found that the common primary sources of metastatic tumours to the oral region are cancers in the lung, kidney, liver and prostate for men and breast, female genital organs, kidney and colo-rectum for women (Table 3). In our series the most common primary site for males was identified as prostate. Though the lung carcinoma is the second most common malignant tumour in males in Sri Lanka (Table 2), it is not the common metastatic tumour to jaw bones possibly due to the poor survival rate and lack of post mortem data. In our study the common primary site is ovary in females in keeping with the findings in the literature.

Mandible was the most common site of metastases in our series as reported in the literature. Swelling, pain and paresthesia are the common presenting symptoms in most patients reported and our data also support the literature. Most of the metastatic lesions of the jaw bones are osteolytic. However, metastasis such as prostate are commonly osteoblastic (Ciola, 1981; Koutsilieris, 1993).

As follow-up information was not available for most patients, survival data cannot be ascertained. According to the previous studies, most patients with advanced disease including metastatic disease die within a year of detection of the metastasis (Neville, 2002; Lim et al., 2006).

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