Jaw bone metastases: four cases

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ABSTRACT

Objective: Metastatic tumors make up approximately one percent of all oral malignancies. Such tumors may present in the jawbones and oral soft tissues. The commonest oral site is the mandible.
Patients and methods: This is a retrospective study of four cases of metastatic tumors of the jaws seen at the Oral-Maxillofacial Department, General University Hospital of Alexandroupolis, Thrace, Greece from 1989 to 2005, representing 1% of all histologically confirmed malignant tumors at the hospital.
Results: Two cases originated from the thyroid gland, one was from the esophagus, and one from the liver. Three metastases occurred in the mandible and one in the maxilla. The oral symptoms were similar to odontogenic infections or to benign neoplasms.
Conclusions: In view of the resemblance in the presentation of metastases and other tumors affecting the jaws, a high index of clinical suspicion is advocated to ensure early, multidisciplinary care of hosts.

KEY WORDS

jawbones metastases, four patients, Thrace, Greece

Introduction

Bone metastases commonly occur following primary malignancies, but metastases to the jaws are very rare. Red marrow, believed to be necessary for the establishment and proliferation of metastases, is scant in the mature jaws; hence, instances of tumor metastases to the jaws are very few (1). It is estimated that only one percent of all oral malignancies occur due to primary malignancies elsewhere (2–6, 7). Although almost any type of malignancy can metastasize to the mouth, some are found more often than others (7). Cancers that commonly metastasize to the oral cavity originate from the breast, kidney, lung, and prostate (7–9). Metastatic lesions may mimic odontogenic infections or other conditions in the oral cavity, leading to late diagnosis. In Greece, reports on metastatic jaw tumors are rare. This report presents a series of histologically verified metastatic tumors to the jaws collected over 15 years at a Greek tertiary Oral and Maxillofacial Care Center, highlighting the problems associated with late diagnosis and the multidisciplinary implications of the disease.

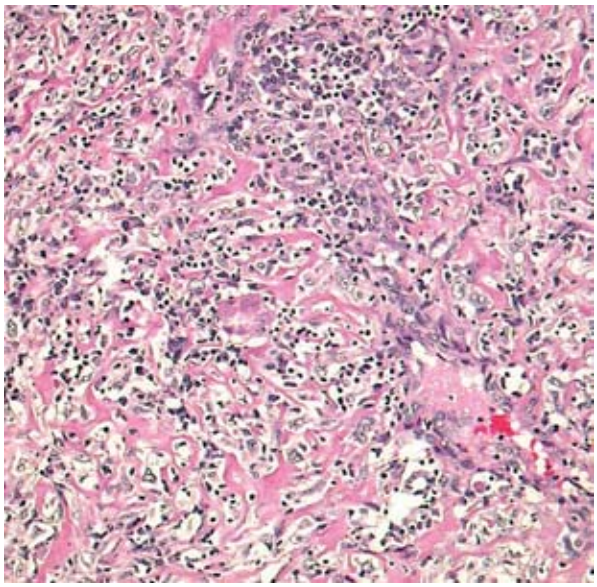

Figure 1. Metastatic papillary thyroid carcinoma. Tissue section. Hematoxylin-Eosin stain × 100.

Patients and methods

The materials for our study were obtained from records of malignant diseases of the jaws observed at the Maxillofacial Department of the University Hospital of Alexandroupolis, Thrace, Greece between 1989 and 2005. The records inspected were case notes, histology reports, and operation notes. Jaw malignancy of histologically verifiable metastatic origin was selected for analyses of age at diagnosis, gender, presenting complaints, clinical features, histological diagnosis, and treatment. Records of follow-ups were not available, and the only patient treated by the authors did not even return for a check-up.

Results

Out of 276 malignancies of the oral cavity seen between 1989 and 2005, four cases (1.4%) were of metastatic origin. The age range of the patients was from 47 to 69 years, two males and two females. Three patients presented with symptoms of jaw swellings and other features localized to the oral cavity. Only one case was treated in our department after the condition developed. The clinical details of our cases of metastatic jaw neoplasms are presented in Table 1. A 69-year-old female was deemed inoperable due to the extent of the tumor. Analgesics were administered until she died one month later at home. Histopathology revealed a metastatic papillary thyroid carcinoma (Figure 1). No post-mortem examination was performed. The second patient, diagnosed with metastatic thyroid carcinoma, was treated by jaw resection and did not return for a follow-up. One patient whose diagnosis was metastatic hepatocellular carcinoma checked himself out of the hospital (Figure 2). In the last case, the diagnosis was metastatic esophageal adenocarcinoma (Figure 3).

Discussion

Metastatic jaw tumors originate from distant body sites and exclude lesions that spread from adjacent sites or those due to local recurrence. Metastatic lesions are highly significant because their appearance may be the only symptom of an underlying malignancy and/or the first evidence of dissemination from the primary site (7, 10). The exact incidence of secondary malignancies in the jaws is difficult to ascertain because skeletal radiographic surveys are not routinely done in Greece. Even when such scans are performed, the jaws are usually excluded. Also, religious and cultural factors make it difficult to obtain consent for post mortem examina-

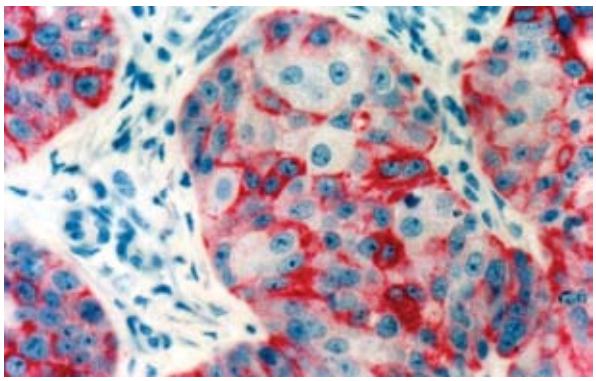

Figure 2: Metastatic hepatocellular carcinoma. Tissue section. Hepatocyte N marker immunostain × 200.

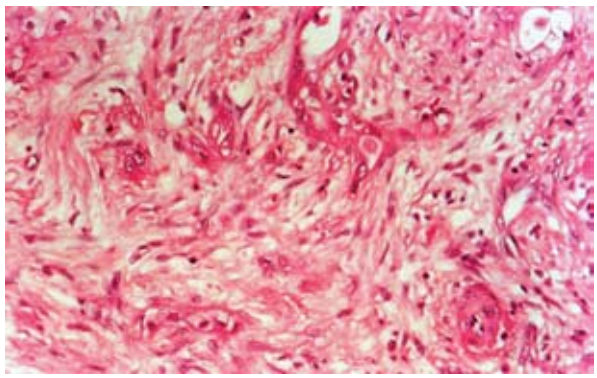

Figure 3. Metastatic esophageal adenocarcinoma. Tissue section. Hematoxylin-Eosin stain × 200.

Table 1. Clinical characteristics of four cases of jawbone metastases.

Patient	Symptoms	Histology	Origin	Affected jaw	Treatment
1	Facial swelling, pain	Metastatic cancer	Liver	Maxilla	Discharged himself
2	Facial swelling, oral mucosal ulcerations, ulcerations anterior to swelling	Adeno-carcinoma	Thyroid	Mandible	Jaw resection
3	Facial swelling, pain, oral bleedings, mucosal ulcer	Adeno-carcinoma	Esophagus	Mandible	Referred to oncologists
4*	Facial swelling, nasal obstruction, epistaxis	Adeno-carcinoma	Thyroid	Mandible	Inoperable

**Patient no. 4 died one month after diagnosis.*

tions. In the opinion of several authors, only 1% of all oral malignant neoplasm is of metastatic origin (2–6, 7). The relative frequency of 1% obtained in this series is in agreement with such a view. In a review of 110 cases of metastases to the maxilla, patients' ages ranged from 3 months to 81 years, and the overall male-to-female ratio was 1.5:1 (11). In our study there were 2 females and 2 males.

According to Batsakis (5), only 6.1% of 115 metastatic jaw tumors originated from the thyroid. In a further review of 110 cases of upper jaw metastases, 44% originated in the kidneys, 13% in the bronchi, 9% in the breast, 7% in the testicles, 6% in the uterus, 5% in the thyroid, 5% in the colon and rectum, 5% in the stomach, and 3% in the prostate (11). Hanahan and Weinberg (12) have brilliantly described the processes involved in the detachment of tumor cells from the primary cancer site, their transport through the lymphatics or blood stream, and the establishment of a metastatic tumor site. The literature indicates that metastases are more frequent in the mandible than the maxilla due to the paucity of active red marrow in the latter (1, 4, 6, 13). Other oral sites of metastatic tumor are the gingiva, buccal mucosa, soft palate, and the tongue (7). Tumor metastases to the jaws occur through the blood because the jawbones lack lymphatics (6). Among 18 metastases to the jawbones, 15 were to the mandible and 3 to the maxilla (7).

Oral metastases may present symptoms such as pain, cheek swelling, tooth loosening, paresthesia, epistaxis, and cervical lymphadenopathy (7, 11), or rarely as a pathological fracture in the mandible (14). It may also occur as a solitary radiolucency of the jawbone (10). Symptoms of jaw metastasis may be observed before detection of the primary tumor or after surgical extirpation of the primary malignancy (7, 10, 15, 16). In our series, three of four patients presented with features localized to the oral cavity, and one case of adenocarcinoma of the thyroid came with symptoms of neck swelling that later ulcerated. All the patients we studied came with a considerable delay, after extractions of loose teeth, incision and drainage, or antibiotic therapy at peripheral health centers.

In conclusion, metastases to the oral cavity are quite uncommon among the Greek population. They usually present with symptoms similar to odontogenic infections and benign tumors, causing a delayed diagnosis and treatment. Careful examination and a high degree of clinical suspicion as well as a multidisciplinary approach are suggested.

REFERENCES

1. Batsakis JG, McBurney TA.: Metastatic neoplasms to the head and neck. Surg Gynecol Obstet 1971;133:673–7.

2. Meyer HL, Shklar G.: Malignant tumors metastatic to mouth and jaws. Oral Surg Oral Med Oral Pathol 1965;20:350–62.

3. Bernstein JM, Montgomery WW, Balogh K. Jr: Metastatic tumors to the maxilla, nose and paranasal sinuses. Laryngoscope 1966;76:621–50.

4. McDaniel RK, Luna MA, Stimson PG. Metastatic tumours in the jaws. Oral Surg Oral Med Oral Pathol 1971;31:380.

5. Batsakis JG. Tumours of the head and neck: clinical and pathological considerations. 2nd ed. Baltimore: Williams & Wilkins; 1979.

6. Zachariades N, Kumoura F, Vairaktaris E, Mezitis M. Metastatic tumours to the jaws; a report of seven cases. J Oral Maxillofac Surg 1989;47:991–6.

7. Van der Waal RIF, Buter J, van der Waal I. Oral metastases: report of 24 cases. Br J Oral Maxillofac Surg 2003;41:3–6.

8. Verbin RS, Bouquet JE, Guggenheimer J, Barnes L, Peal RL. Cancer of the oral cavity and oropharynx. In: Barnes L, editor. Surgical pathology of the head and neck. New York: Marcel Dekker; 1985. p. 333–60.

9. Bhaskar SN. Synopsis of oral pathology. Mosby, St Louis. 1986;330–60.

10. Anil S, Lal PM, Gill DS, Beena VT. Metastasis of thyroid carcinoma to the mandible. Case report. Aust Dent J 1999;44:56–7.

11. Harrison D, Lund VJ. Tumours of the upper jaw. New York: Churchill Livingstone; 1993.

12. Hanahan D, Weinberg RA. The hallmarks of cancer. Cell 2000;100:57–70.

13. Zachariades N, Papanicolaou S. Breast cancer metastatic to the mandible. J Oral Maxillofac Surg 1982;40:813–8.

14. Gerhards F, Kuffner HD, Wagner W. Pathological fractures of the mandible. A review of the etiology and treatment. Int J Oral Maxillofac Surg 1998;27:186–90.

15. Achar MVR. Metastatic hypernephroma occurring in nasal septum. Arch Otorhinolaryngol 1955;62:644–8.

16. Edwards WG. Epistaxis from metastatic renal carcinoma. J Laryngol Otol 1964;78:96–102.

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