

Metastatic tumours of the jaws

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ALTHOUGH METASTATIC TUMOURS of the jaws are rare, Cohen (1958) drew attention to the fact that they existed more frequently than had been suspected. Difficulty in clinical diagnosis as well as non-routine autopsy examinations of the bones of the jaws, were the two reasons he offered. Moorman and Shafer (1954) found that metastatic lesions to the jaws originated mainly from the breast, thyroid, ovary, bronchus, kidney and rectum and their spread probably took place through the vertebral system of veins.

The sites of these metastasis are found more commonly in the mandible in the tooth-bearing region, distal to the canines, rather than in the maxilla. Of the seven cases of true metastatic tumours involving the jaws, Castigliano and Rominger (1954) noted that six affected the mandible and one, both the mandible and maxilla.

Of great clinical significance is the fact that metastatic lesions of the jaws may be the first symptom of malignant disease elsewhere. There is probably no symptom of greater importance than pain and this may be accompanied by swelling. In the mandible a burning sensation and paraesthesia along the course of the inferior alveolar nerve may also be a frequent feature. Looseness of teeth may be another common sign but rarely does one encounter a pathological fracture of the jaws. Radiographs show a non-specific area of rarefaction and the only means of obtaining unequivocal confirmation is by microscopic examination of biopsy material. However, even though there is proof from histology, it is not always possible to detect the site of origin of the primary tumour.

The term, metastatic tumour, has been used in a strict sense. Invasion from primary carcinoma of the oral cavity is excluded and this allows the possible omission of a group of tumours, the epi-

dermoid carcinomas involving the oral cavity, whose clinical presentation is so classical to be readily recognised.

Clinical Summary

A study of the biopsy reports of carcinomas seen at the Department of Oral Surgery, University of Singapore, revealed there were only five cases of secondary tumours of the jaws between the period 1955 to 1971. A brief clinical summary of these cases is given below:

Case I — K.K.L. (2724/55)

This was a Chinese male, aged 40 years, who presented with a fleshy sessile growth in the mandible. The growth, with a granular surface, was relatively rapid.

Biopsy (Fig. 1) showed irregular groups of cells, varying in sizes in the corium and deeper parts. The cells were anaplastic, although the arrangement in some cells was suggestive of glandular origin. The overlying stratified squamous epithelium was normal.

Case II — Y.T. (231513/62)

This patient was a Chinese female, aged 61 years, and presented with the history of having been beaten on the chin by her grandchild with a piece of firewood. The swelling persisted in spite of penicillin injections and as the pain was getting worse, she had come from Ipoh for a consultation.

Extra-oral examination revealed a hard, bony ill-defined swelling in the chin. Intra-oral examination showed that there was a marked expansion of the buccal bone over the left side of the mandible from the canine to the first molar region.

All the anterior incisors, including the left canine and first premolar, were loose. No lymphadenopathy was detected. Radiographs showed areas

METASTATIC TUMOURS OF JAW

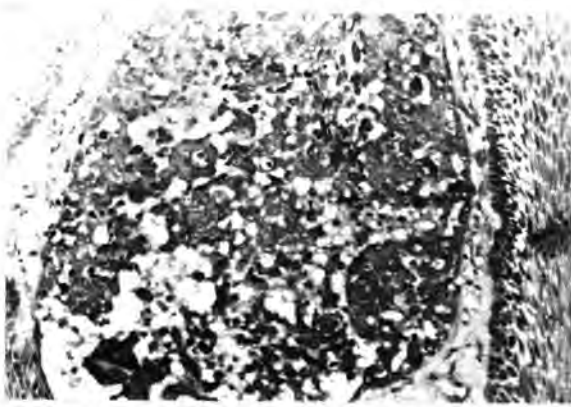


Fig. 1: Biopsy of fleshy sessile growth in the mandible showing irregular groups of cells. These cells are anaplastic although the arrangement in some cells is suggestive of glandular origin. (H & E x 400).

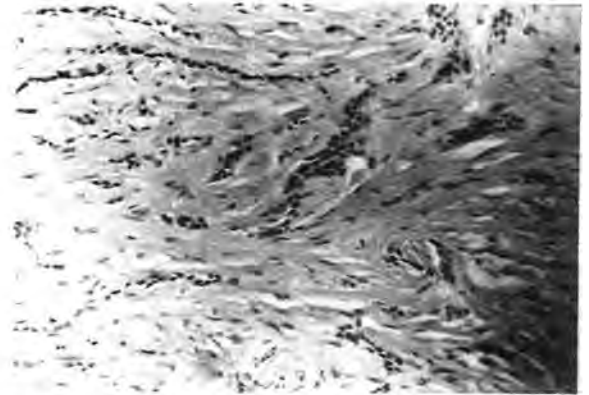


Fig. 2: Biopsy of a piece of bone of the mandible with some soft tissue attached to it. Section shows cells exhibiting both spheroidal and squamoid features. (H & E x 400).

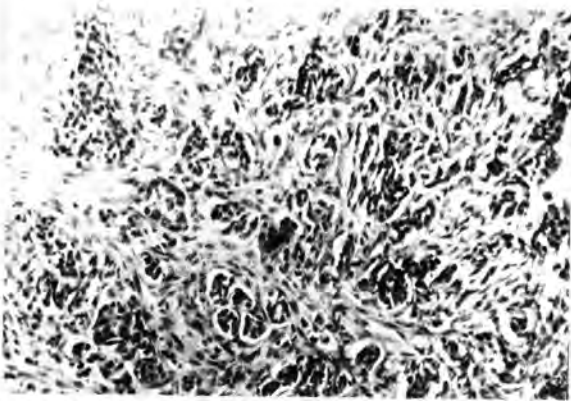


Fig. 3: Biopsy shows islands and strands of neoplastic epithelial tissue in a mature fibrous connective tissue matrix. (H & E x 400).

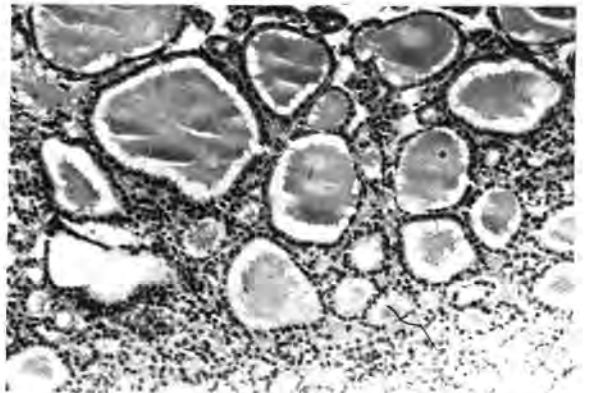


Fig. 4: Biopsy of soft tissue swelling of the mandible showing follicles of thyroid tissue containing much pink-staining colloid and lined by cuboidal cells. (H & E x 400).

of irregular resorption and bone deposition, with resorption being more prominent. There was also resorption of the roots of the incisal teeth.

Biopsy (Fig. 2) showed a carcinoma with spheroidal cells and squamoid features. A diagnosis of secondary carcinoma was made but the primary site could not be ascertained.

She was seen about six months later and on this second occasion, she presented with a swelling of the lower jaw affecting almost the entire mandible from the left first molar to the right first molar region. She also had ulceration of the chin and complained of intense pain radiating from the mandible to the basi-occiput. Radiographs showed an osteolytic lesion with many areas of ossification.

A second biopsy (Fig. 3) was done and this showed islands and strands of neoplastic epithelial

tissues in a mature fibrous connective tissue matrix. The primary site could still not be located.

Case III — L.F. (214997/62)

This was a Chinese female, aged 64 years, who presented with swelling of the right side of the mandible. The swelling was around the alveolus in the region of the three molars and had been present for one year. The swelling was soft and fleshy. The patient was also noted to have a swelling of the thyroid gland.

Biopsy (Fig. 4) showed that beneath the keratinised squamous epithelium were follicles of thyroid tissue, containing pink-staining colloid and lined by cuboidal cells. A diagnosis of secondary adenocarcinoma from the thyroid gland was made.

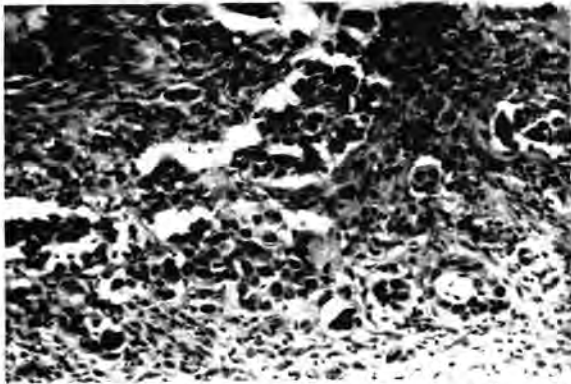


Fig. 5: Biopsy of soft tissue growth around the right mandibular molar showing groups of malignant cells displaying considerable pleomorphism and hyperchromatism. These cells have infiltrated the granulation tissue of the tooth socket. (H & E x 400).

Case IV — S. (320897/65)

This was a male Indian patient, aged 65 years, who presented with the history of a loose second molar in the right side of the mandible. This tooth was extracted by the dental officer at Tan Tock Seng Hospital the day before. A fibrous mass was seen in the region of the molar and the socket was unhealthy. The patient was an old case of bronchogenic carcinoma.

Biopsy (Fig. 5) showed groups of malignant cells which displayed considerable pleomorphism and hyperchromatism. These cells had infiltrated the granulation tissues of the tooth socket. The cells were probably epithelial in character and in view of the past history of bronchogenic carcinoma, the origin was probably from that source.

Case V — L.M.L. (558607/71)

This was a Chinese female, aged 46 years, who presented with the history of toothache two months ago. The right mandibular first premolar was extracted but the tooth socket had failed to heal. She complained of severe pain over the right mandibular region extending to the temporo-mandibular joint and also occasional headaches. She was an old case of carcinoma right breast stage II treated by radical mastectomy and followed by deep X-ray therapy in 1969 at the Outram Road General Hospital.

Physical examination showed no lymph nodes in the axilla or supraclavicular region. The left breast showed a hard lump but not attached to skin. The right side showed a S-shaped scar but with no evidence of any growths. The tooth socket was ulcerated (Fig. 6) and unhealthy. Radiographs



Fig. 6: Picture shows the unhealthy tooth socket with granulating tissues.



Fig. 7: Radiograph shows the radiolucent area in the mandible and around the right first mandibular premolar region.

showed a radiolucent area not only in the mandible but also in the skull (Figs. 7, 8).

Biopsy (Fig. 9) showed an ulcerated piece of tissue partially covered by squamous epithelium. In the sub-epithelial tissues were numerous packets of malignant cells in a fibrous stroma. There was hardly any differentiation. A diagnosis of metastatic carcinoma from a primary in the breast was made.

Discussion

It is noted that in a period of 17 years, only five cases of metastatic carcinoma were seen in the Department of Oral Surgery, University of Singapore. While only two cases showed definite primary sites (adenocarcinoma thyroid and carcinoma breast), one could only be inferred (an old case of bronchogenic carcinoma) and it was difficult to tell the primary lesions of the remaining two.

Two cases presented following extraction of teeth and one case gave the history of having



Fig. 8: Radiograph of the skull showing a metastatic lesion in addition to that found in the mandible as shown in Fig. 7.

been beaten on the chin, which presented some confusion to diagnosis.

Of the five cases, three were women and one presented with carcinoma of the breast, one with adenocarcinoma thyroid and the third with no definite primary site. Of the five cases, only one was an Indian and the rest Chinese. The Indian had a past history of bronchogenic carcinoma.

The majority of the five cases presented with lesions which were osteolytic in nature. Only two cases had severe pain involving the mandible. In all the cases, diagnosis was established only after biopsy was obtained.

Summary

- (1) Metastatic tumours of the jaws are rare but worthy of special attention.

References

- Banerjee, S.C. (1967). "Metastasis to the Mandible". *Oral Surg., Oral Med., Oral Path.*, 22:71
- Basker, S.B. (1969). "Synopsis of Oral Pathology", 3rd Edition, pp. 290-291, St. Louis: The C. V. Mosby Company.
- Cash, C.D., Roger, R.Q. and Dahlin, D.C. (1961). "Metastatic Tumours of the Jaws". *Oral Surg., Oral Med., Oral Path.*, 14:897.
- Castigliano, S.G. and Rominger, C.J. (1954). "Metastatic

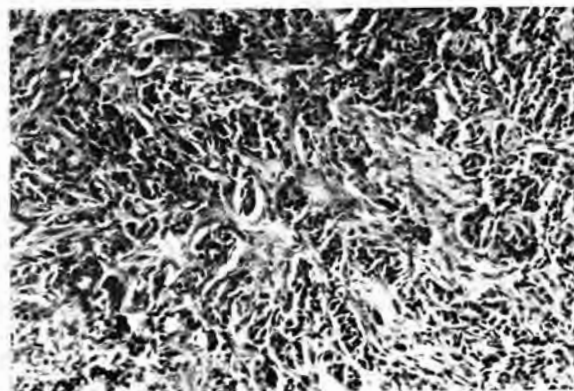


Fig. 9: Biopsy of the tissues in the unhealthy tooth socket showing numerous pockets of malignant cells in a fibrous stroma. There is hardly any differentiation. (H & E x 400).

- (2) Of the five cases studied, three were women; of these five, only one was Indian, the rest being Chinese.
- (3) From the study, only in two cases was it possible to state the primary sites, i.e. adenocarcinoma thyroid and carcinoma breast. This shows that even with biopsy confirmation, the primary site was not easy to pinpoint.
- (4) The symptomatology included pain and swelling of the jaws, "toothache" and looseness of teeth.
- (5) Radiographic examination was not diagnostic as it could represent a cyst or any inflammatory lesion and the only sure way to diagnose the condition is to think about it and to do a biopsy.

Acknowledgements

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- Malignancy of the Jaws". *Amer. J. Surg.*, 87:496.
- Clausen, F. and Poulsen, H. (1963). "Carcinoma, Metastatic to Jaws". *Acta Path. et Microbiol. Scand.*, 57:361.
- Cohen, F. (1958). "Secondary tumours of the mandible". *Ann. Roy. Coll. Surgeons, Eng.*, 23:118.
- Meyer, I. and Shklar, G. (1965). "Malignant Tumours Metastatic to Mouth and Jaws". *Oral Surg., Oral Med., Oral Path.*, 20:350.
- Moorman, W.C. and Shafer, W.G. (1954). *J. Oral Surg.*, 12:205.