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METASTATIC RENAL CARCINOMA (HYPER- NEPHROMA) IN THE GINGIVA OF THE LOWER JAW

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Metastases from carcinoma of remote organs are rarely found in the gingiva. The literature contains very few reports of metastases to the gingivae although metastases from adenocarcinoma of the colon (1) and hypernephroma (2, 3) have been described.

Hypernephroma (*Grawitz's* tumour) is the most common type of renal malignant tumours in adults. The tumour is named after *Grawitz* (1883) who suggested that it arose from remnants of adrenal cortex which had become enclosed in the parenchyma of the kidney. This theory has now been rejected since it has been shown that the tumour develops from epithelial cells in the tubules of the kidney. A better name for the tumour would thus be "renal carcinoma". The term "hypernephroid" has also been suggested to describe a tumour which is similar in structure to the adrenal cortex but does not, in fact, arise from the cortex of the adrenal gland (4).

The histologic picture of these tumours varies considerably. Usually, however, they contain characteristic cells which are large and rounded with clear or vacuolated cytoplasm and prominent cell membranes. The pale appearance of the cell cytoplasm is due to its content of lipoids and glycogen. In typical

cases, the cells lie in long strands. In the stroma, which is scanty, the blood vessels are usually numerous and large. The vessel walls often seem to be composed of tumour cells; this explains the great tendency to haemorrhage (5). Metastases arise mainly by blood-borne cells passing to the lungs, bones, and liver. The regional lymph nodes are involved by extension along the lymph vessels. The rate of growth of the hypernephroma and its tendency to metastasize vary considerably. A number of cases have been described in which one or more metastases have developed and given rise to symptoms before the detection of the primary tumour (6, 7, 8).

Although the skeleton is fairly often involved by metastatic hypernephromas, these are rare in the jaws. A number of cases of metastases to the jaws have, however, been described (6, 9, 10, 11, 12). Metastases to the soft tissues of the mouth are even more rare. Single cases of metastases have been described in the soft palate (6), hard palate (13), tongue (14), lower lip (15), gingiva of the upper jaw (3) and mucous membrane on the lingual side of the mandible (2). A search of the literature failed to reveal any other report of metastatic hypernephroma localized to the gingiva in the lower jaw. The case which will be described here must thus, as far as site is concerned, be very rare.

A 60 year-old woman was referred to the Royal Dental School, Malmö, by a dental practitioner for treatment of a rapidly growing tumour in the gingiva in the anterior part of the lower jaw.

On 7th October, 1960, the patient noticed a swelling between two lower front teeth. This swelling rapidly increased in size. Pain and tenderness in the adjacent teeth then developed, along with bleeding and discharge from the tumour on biting and tooth-brushing.

On examination of the patient on 14th October, 1960, it was found that $\overline{5-1}|\overline{1-5}$ were the only teeth remaining. They were mostly carious and had advanced periodontal disease. An hour-glass shaped tumour was present between $\overline{1}$ and $\overline{2}$. It bulged out over the buccal and lingual surfaces and the incisal edges of the adjacent teeth. The crowns of these teeth had been pushed apart and an 8 mm wide diastema had formed (Fig. 1). The tumour was completely covered by epithelium and measured approximately 1×1.5 cm with its greater diameter sagittally. There

was no involvement of the floor of the mouth. Junction with the adjacent mucous membrane was sharply defined and the tumour was firmly fixed to the deeper tissues. It was firm and elastic in consistency with a lobulated surface and was slightly tender on pressure. It was mottled dark-red and pale grey in colour. No pulsations could be detected. On closing the teeth together, the upper denture impinged lightly on the tumour. A submandibular lymph node on the affected side was firm on palpation but there was no clear evidence of malignant change.

Radiographic investigation revealed no evidence of bone destruction in the area concerned.

The case history revealed that since December 1958 the patient had complained of tiredness, loss of appetite and weight, and abdominal pain localized to the lower right portion of the abdomen. The pain also radiated to the dorsal area.

On investigations in March and April 1959, urography and selective aortography revealed a tumour on the right side. There was no evidence of lung metastases. On 28th April, 1959, a nephrectomy was carried out and the removed kidney sent for histological examination.

Pathologist's Report

The kidney contained a fist-sized tumour, with a mottled yellow-red cut surface in one pole. Histologically, the tumour was composed of clear cells with small rounded nuclei and abundant pale cytoplasm, often containing fat (Fig. 3). The cells were arranged in tubular and trabecular formations and formed large solid columns. A number of mitotic figures could be seen. In some parts there was a fibrous capsule around the tumour with some fibrotic changes in the adjacent parenchyma of the kidney. The tumour was, however, penetrating through this fibrous capsule and out into the surrounding fat capsule. Sections from the hilus of the kidney showed ingrowth of tumour cells into the large vessels.

Diagnosis: *Carcinoma renis*.

After post-operative radiotherapy, the patient was recalled to the radiologic clinic for follow up. The examinations revealed recurrence of the original tumour and appearances of metastases in the lungs and liver. The most recent examination was on 7th September, 1960.

Fig. 1. The clinical appearance of the tumour before extraction of the teeth. The tumour lies between the lower left first and second incisors and has displaced their crowns.

Fig. 2. The clinical appearance of the metastasis after extraction of the remaining teeth.

Fig. 3. Photomicrograph of the primary tumour. It is composed of cells with small rounded nuclei and abundant pale cytoplasm with well-defined cell margins (clear cells). The stroma is scanty and rich in capillaries.

Fig. 4. Low-power photomicrograph of the metastasis. Under the epithelium there is a broad zone of a highly vascular granulation tissue. Clear cells are seen to the left.

Fig. 5. High-power view of the metastasis. The tumour has a remarkable similarity to the primary tumour shown in Fig. 3.

In view of the patient's medical history and the sudden appearance and rapid growth of the gingival tumour, a diagnosis of metastatic renal carcinoma seemed most likely. The actual removal of the tumour was preceded by extraction of the remaining lower teeth. Healing was uneventful (Fig. 2).

At the Department of Radiotherapy of the General Hospital, Malmö, the exophytic part of the tumour was then excised and sent for pathologic examination.

Pathologist's Report¹⁾

The gingival biopsy tissue was partly covered by a well-differentiated regular layer of stratified squamous epithelium. Under the epithelium there was a highly vascular granulation tissue infiltrated with leucocytes (Fig. 4). The deeper tissue was of different appearance. Tubules or papillary structures were present in some areas and were composed of polymorphic cells with dark atypical nuclei, many of which were in mitosis. The cytoplasm was particularly pale and markedly vacuolated (Fig. 5). This histologic picture was similar to that of the primary tumour found in 1959, and the tumour was diagnosed as metastatic renal carcinoma.

DISCUSSION

The case here described is an example of a rare type of oral metastatic carcinoma and has several points of dental interest. The patient consulted her dentist because of discomfort in her mouth and the tumour first appeared rather like an epulis. The medical history, the rapid growth of the tumour with displacement of the adjacent teeth, the marked tendency to haemorrhage, and the unusual colour all pointed to the tumour being malignant. The absence of radiographic evidence of bone destruction, the inconclusive changes in the lymph nodes, and the normal appearance of the surrounding mucous membrane did, however, tend to confuse the issue. The most probable type of benign tumour was the peripheral giant-cell reparative granuloma although fibroma or haemangioma were also possibilities.

¹⁾ The histological examination was carried out by members of the University Department of Pathology, General Hospital, Malmö, to whom the authors are indebted for permission to publish the photomicrographs.

Because of the history, it was highly suspicious that the tumour was a metastatic renal carcinoma in spite of its rare site. As was pointed out earlier, solitary metastases may be the first and only evidence of a primary tumour in the kidney and cases have been reported in which removal of the affected kidney and of the solitary metastasis has freed the patient of his malignant disease (8, 16). Early diagnosis of a metastatic hypernephroma might then be of great value. In this case, however, prognosis is poor because of recurrence of the primary tumour and metastases in lung, liver, and gingiva.

Biopsy is obviously essential to confirm the preliminary diagnosis. If possible, the whole exophytic part of the tumour should be removed for histologic examination so that a representative picture of the tumour can be obtained (Fig. 4).

Subsequent treatment in this case was radiotherapy and this also raises points of dental interest. Because of the risk of radiation osteomyelitis after surgery in an area which has been irradiated, all teeth in the pathway of the direct irradiation and all teeth with infective periapical changes should be removed. At the same time the teeth are extracted, the bone margins should be trimmed so that no loose fragments remain. Prophylactic tooth extraction admittedly delays the radiotherapy for a short time but this delay involves less risk for the patient than the complications which can involve irradiated jaws from which teeth are later extracted (17). Some believe that more complications are found in patients whose teeth are removed before radiotherapy than in those in whom extractions are not carried out (18). Nowadays, however, tooth extraction is routinely performed before any extensive irradiation is applied to the jaws.

No investigations of the significance of opening the blood vessels during tooth extraction with consequent spread of tumour cells, seem to have been reported in the literature. If a real risk of spread in this way does seem to be present, e.g. where the teeth are situated in the tumour mass, consultation between dentist and radiologist is essential to determine the best time for extractions. If teeth must be extracted from jaws which have been irradiated, massive antibiotic cover is essential.

SUMMARY

A case of metastatic hypernephroma in the gingiva of the lower jaw, without radiologic evidence of invasion of the underlying bone, is described. The tumour had the appearance of an epulis. Histologically, it was a typical clear-cell carcinoma, very similar in appearance to the primary tumour which had been removed one and a half years earlier. The importance of early diagnosis of oral malignant tumours and the significance of relating the timing of any extractions to radiotherapy are discussed.

RÉSUMÉ

MÉTASTASE D'UN CARCINOME RÉNAL (HYPERNÉPHROME) A LA GENCIVE DE LA MÂCHOIRE INFÉRIEURE

Les auteurs décrivent un cas d'hypernéphrome ayant métastasé à la gencive de la mâchoire inférieure, sans que l'os sous-jacent présente de signes radiologiques d'invasion. La tumeur avait l'aspect d'un épulis. Au point de vue histologique, c'était un carcinome à cellules claires typique, d'apparence très semblable à celle de la tumeur primaire dont l'ablation avait été faite un an et demi auparavant. La valeur du diagnostic précoce des tumeurs de la bouche et l'importance qu'il y a à subordonner la date de toute extraction à la radiothérapie font l'objet d'une discussion.

ZUSAMMENFASSUNG

ZUM ZAHNFLEISCH DES UNTERKIEFERS METASTASIERENDER NIERENKARZINOM (HYPERNEPHROM)

Beschrieben wird ein Fall eines zum Zahnfleisch des Unterkiefers metastasierender Hypernephroms ohne röntgenologische Manifestation einer Invasion des unterliegenden Knochens. Der Tumor bot das Bild einer Epulis dar. Histologisch war es ein typischer klarzellularer Karzinom, der den Primärtumor, der schon vor anderthalb Jahren entfernt worden war, sehr ähnlich aussah.

Die Wichtigkeit der frühzeitigen Diagnose von bösartigen Ge-

schwülsten in der Mundhöhle und die Bedeutung einer engen Zusammenarbeit zwischen Zahnarzt und Röntgenologe zwecks Festlegung der günstigsten Zeitpunkte für etwaige Extraktionen wurden erörtert.

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