

CASE REPORT

FLOATING TEETH, A FORGOTTEN PHENOMENON?

C.R. STAALMAN and A.J.M.C. AARTS¹

Abstract

The authors describe two recently encountered cases of Burkitt's lymphoma occurring in non-African children and a case of local recurrence of rhabdomyosarcoma, presenting itself with floating teeth. The development of this phenomenon and its differential diagnosis are discussed. The importance of prompt recognition of the floating teeth phenomenon by the radiologist is stressed. It is the author's experience that this phenomenon can easily be overlooked on routine craniol films.

Key-words: Myosarcoma — Jaws, radiography — Jaws, neoplasms — Teeth — Lymphoma.

The floating teeth phenomenon is a classical radiological symptom. It consists of dental structures surrounded by nonopaque tissue, which has infiltrated and replaced alveolar bone (1-5). As a result the teeth may be protruded, causing malocclusion. Most frequently this happens in the molar and premolar region. The combination of these processes gives rise to the typical radiological image: large distance between the maxillary and mandibular incisors while the floating (pre)molars touch each other.

Among the possible causes of floating teeth, Burkitt's lymphoma deserves a special place. In Burkitt's lymphoma, especially in the African form, the rate of jaw involvement is extremely high (6-10). In these cases roentgenographic evidence of jaw involvement often precedes clinical recognition (2, 5, 6, 8). Awareness of the radiologist of the possibility of this phenomenon, therefore, is an important factor in early diagnosis.

Floating teeth were originally described in Hand-Schüller-Christian disease (11), later in eosinophilic granuloma (12). During the fourth and fifth decades the opinion evolved that these conditions, together with Letterer-Siwe disease, are closely related. In 1953 the term Histiocytosis X was adopted to unify these three conditions (4, 13). Floating teeth were for a long time thought to be pathognomonic for histiocytosis X (1, 5, 13). According to the genesis of the floating teeth, however, other infiltration condi-

tions can also give rise to the phenomenon. In the pediatric age group these include giant cell granuloma, Ewing's sarcoma, leukaemia, lymphosarcoma, reticulum cell sarcoma, familial dysproteinemia and metastatic neuroblastoma. A number of other conditions can occur in the mandible, presenting with different radiographic changes (14). Biopsy is always required for definite diagnosis. Early recognition and prompt treatment of the many serious diseases connected with the floating teeth phenomenon, are of striking importance.

In the following, we describe two recently encountered cases of Burkitt's lymphoma, occurring in non-African children, in which early recognition of the floating teeth phenomenon played an important role in detecting the underlying disease. A case of local recurrence of a rhabdomyosarcoma serves as a further illustration of the phenomenon.

Case reports

Case 1

N.K., a 3-year-old boy, hurted his jaw, falling out of his chair. The pain continued and the boy also got abdominal complaints and pain in the legs.

Fourteen days later the patient was admitted to the hospital. Inspection of the mouth revealed extensive gingival swellings, bilaterally. Radiographs of the skull and an orthopantomogram were obtained. The lateral skull film (fig. 1) showed a severe malocclusion. There was a considerable distance between the upper and lower incisors, the premolars being in contact with each other. The orthopantomogram (fig. 2) revealed areas of lytic destruction of the alveolar bone around the roots of the deciduous premolars at both sides in the mandible. The anlagen of the permanent first molars and maxillary elements showed similar, though less pronounced

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1. Departments of Radiology, Emma Children's Hospital and Academic Hospital at the University of Amsterdam, Amsterdam, The Netherlands.



Fig. 1. — Case 1. Lateral skull film showing protrusion of the premolars with marked malocclusion.

changes. The named dental structures were protruded and appeared to be floating in the mouth.

In the differential diagnosis osteomyelitis was ruled out because of a normal erythrocyte sedimentation rate. A bone tumor, primary or secondary, was thought to be unlikely because of the almost symmetrical presentation of the lesions. A presumptive diagnosis of Burkitt's lymphoma was made, which was confirmed by biopsy and virological examination. The patient was subsequently treated with cytostatic regimens and radiotherapy, but the disease did not respond well. The patient died 3½ months after admittance.

Case 2

M.O., a 3-year-old boy, was admitted to the hospital with what was thought to be a polyradiculoneuropathy (Guillain-Barré). Two months before he had a rhinitis with somewhat restricted respiration. One month later the patient had low back pain, and also a thick cheek was noted. One day before admission he was not able to walk. Roentgenographic examination revealed a pansinusitis, and a spondylolisthesis L5/S1.

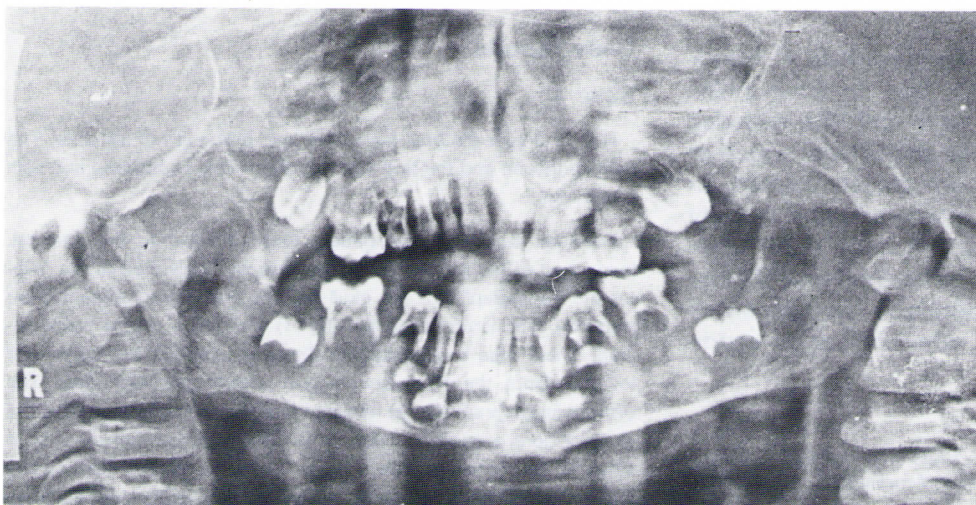


Fig. 2. — Case 1. Orthopantomogram demonstrating areas of lytic destruction around the roots of the deciduous premolars. The sockets of the molars have also disappeared.

Two weeks later the patient was taken to the pediatric intensive care unit because of problems with respiration and swallowing. The radiographs were reviewed by the pediatric radiologist. The findings on the lateral skull film were as follows (fig. 3). The deciduous premolars of the maxilla and mandible protruded, causing malocclusion. In the maxilla lytic destruction was seen around the roots of the premolars, which were eroded. In the mandible the trabecular structure of the alveolar bone was coarse and irregular. CT examination (fig. 4) showed replacement of alveolar bone by relatively dense space occupying masses, extending outside the bone. On the chest film broadening of the mediastinum was seen, obviously caused by an enlarged paratracheal lymph node.

A presumptive diagnosis of Burkitt's lymphoma was made. Further diagnostic procedures, including biopsy, bone marrow puncture and Epstein-Barr viral serology, confirmed the diagnosis. The neurologic findings were explained by a Burkitt deposit in the vertebral canal with compression of the myelum.

Subsequently, cytostatic treatment started. Five months later the patient was in a complete remission. Soon afterwards, however, recidives in the jaws and bone marrow were found. The patient died 9 months after the first admission.

Case 3

J.K., a 6 year-old girl presented with a swelling of the left mandibula. An orthopantomogram revealed an osteolytic area in the left mandibula (fig. 5), with destruction of the lamina dura and protrusion of two dental elements causing malocclusion.

Two and a half years previously the patient had been treated for a mesenchymal tumor in the same region. Irradical removal of the tumor was preceded and followed by cytostatic therapy (vincristin, actinomycin and endoxan). On the surgical specimen the tumor was reclassified as aggressive fibromatosis.

A new biopsy revealed a rhabdomyosarcoma. On revision, muscle cells were also found in the previous specimen. Therapy consisted of the same cytostatics as originally were administered. In addition radiotherapy was given with a dose up to 6200 rads. The tumor gradually decreased in size. Mandibular and dental development were seriously disturbed, but during a 4½ years follow-up no local recurrence or metastasis were noted.

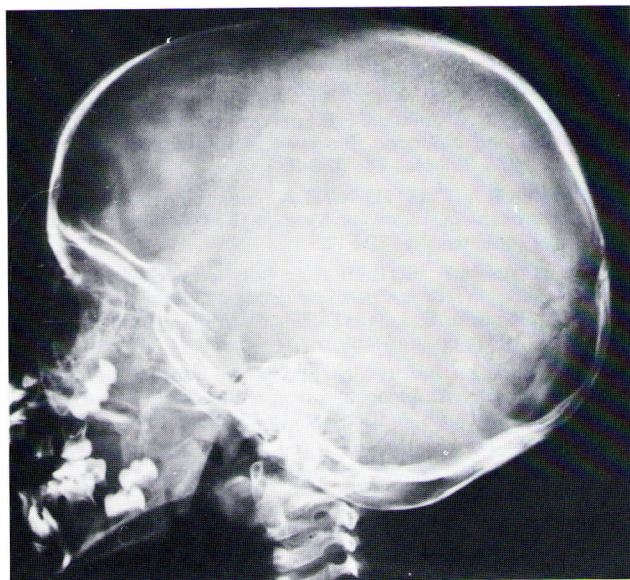


Fig. 3. — Case 2. Lateral skull film showing "floating" premolars in the maxilla and the mandible. Also malocclusion is visible.

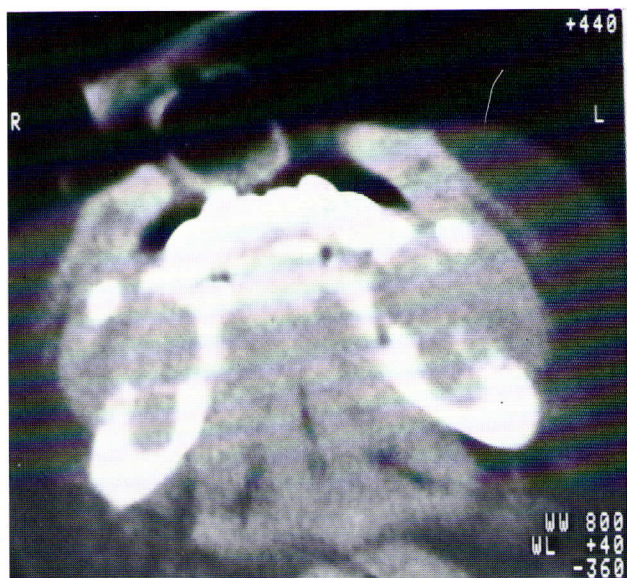


Fig. 4. — Case 2. Axial CT image demonstrating destruction of alveolar bone and replacement by dense space occupying masses, extending outside the bone.

Discussion

In daily practice unusual and/or unexpected pathology is often overlooked.

The floating teeth phenomenon is easy to recognize if one pays attention to it.

In routine skull films, as was the case in the second patient, the main attention is paid to the neurocranium and the base of the skull. In such cases eventual pathology of the facial bones is easily overlooked. Early recognition, however, is very important, as it facilitates the choice of further diagnostic procedures.

The orthopantomogram has a special place in oral and dental radiology. It gives an overview of all

teeth. The orthopantomogram is used for orthodontic reasons, for the assessment of trauma and infection, and, if conventional radiology gives doubtful or equivocal outcome. Floating teeth are not a frequently encountered phenomenon, even not in the daily practice of the oral and dental surgeon. Also here early recognition spares time and helps to prevent unnecessary diagnostic procedures.

Résumé

Les auteurs décrivent deux cas récents de lymphome de Burkitt chez des enfants non africains ainsi que celui d'un petit patient souffrant de récurrence locale d'un rhabdomyosarcome. Tous trois présentaient des « dents flottantes ».

L'apparition du phénomène des « dents flottantes », ainsi que le diagnostic différentiel auquel il peut donner lieu sont discutés.

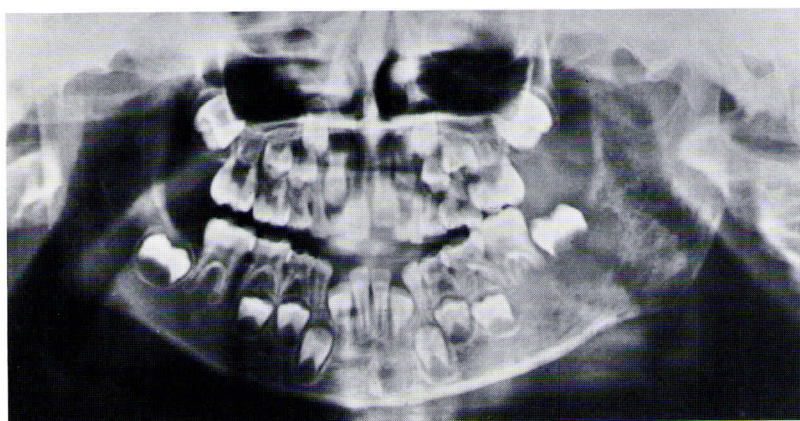


Fig. 5. — Case 3. Pantomogram showing large lytic area around the first molar in the left mandible with disappearing of the tooth socket. Protrusion of the second premolar, which touches the maxillary elements.

L'accent est mis sur l'importance que revêt l'identification précoce des « dents flottantes » par le radiologue. Selon l'expérience des auteurs, le phénomène peut facilement passer inaperçu lors de l'examen de routine des clichés radiographiques du crâne.

Samenvatting

De auteurs beschrijven twee recente gevallen van Burkitt's lymphoma bij niet-Afrikaanse kinderen, alsmede een patiënt met een lokaal recidief van een rhabdomyosarcoma. Alle 3 kinderen presenteren zich met „floating teeth”.

Het ontstaan van het floating teeth fenomeen, alsook de differentiële diagnostiek waartoe het aanleiding geeft worden besproken.

Het belang van tijdige herkenning van floating teeth door de radioloog wordt benadrukt. Naar de ervaring van de auteurs kan het fenomeen op routinematig beoordeelde schedelopnamen gemakkelijk worden gemist.

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Address reprint requests to: Dr C.R. Staalman
Department of Radiology
Academical Medical Centre
Meibergdreef 9
1105 HZ Amsterdam, The Netherlands.