Metastasis of Hepatocellular Carcinoma into the Mandible with Radiographic Findings Mimicking a Radicular Cyst: A Case Report

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Abstract

Introduction: Hepatocellular carcinoma (HCC) is a common neoplasm worldwide, with more than half of the tumors associated with regional metastasis. Extrahepatic metastasis is also common, and the most frequently affected sites are the lungs, abdominal lymph nodes, diaphragm, and bone. However, HCC metastasis to the mandible is rare, with approximately 50 cases reported in the literature. **Methods:** In this report, we describe a case of HCC metastasis to the mandible at the apex of #18 root in a 62-year-old man. This patient had already been diagnosed with metastasis to pancreatic caput lymph node. The radiographic features of the mandible resembled radicular cyst and did not show typical findings of malignancy. **Results:** Under the first diagnosis of radicular cyst, root canal treatment was initially performed, and then surgical treatment of the removal of the cystic lesion and #18 extraction were performed. Finally, the lesion was diagnosed as HCC metastasis from pathological examination. Consequently, he received constitutional chemotherapy in the hepatitis unit and is now in remission. **Conclusion:** This case shows the importance of considering the differential diagnosis of malignancy. *(J Endod 2010;36:1593–1596)*

Key words

Carcinoma, diagnosis, hepatocellular carcinoma, metastasis to mandible, radicular cyst

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Hepatocellular carcinoma (HCC) is the fifth most common cancer. It is estimated that 8,500 to 11,500 new cases of HCC occur annually in the United States, with a relatively higher frequency reported in Southeast Asia including Japan (1, 2). Among all HCC patients, more than 25% of patients are reported to have extrahepatic metastasis, with 10.1% of patients showing bone metastasis (3). The preferred site is the vertebrae, followed by the ribs, sternum, and pelvis in decreasing order. The mandible is an uncommon site of extrahepatic metastasis of HCC. Here, we report a rare case of HCC metastasis to the mandible with characteristic radiographic findings mimicking radicular cyst at the apex of the molar root.

Case Report

A 62-year-old Japanese man was referred to the Department of Oral-maxillofacial Surgery, Dentistry and Orthodontics, the University of Tokyo Hospital, with a chief complaint of slight swelling and discomfort of the left mandible. The symptoms were noticed 1 month previously. He did not suffer from any paralysis, pain, or dyskinesia. He had a history of HCC caused by hepatitis C infection from a transfusion of coagulation factor VIII blood product for hemophilia A. For the treatment of HCC, he had undergone transcatheter arterial embolization and radiofrequency ablation when he was 57 years old. He later underwent resection of the S8 liver area when he was 61 years old.

The clinical examination showed a soft, painless slight swelling in the left mandibular angle region, with no trismus or neurologic problems such as mental nerve paresthesia or facial nerve paralysis. Intraorally, he had healthy dentition with good oral hygiene and a normal mucous membrane. There was slight swelling of the buccal side of the #18 gingiva. An old composite resin restoration was noted on the occlusal aspect of #18. The tooth responded negatively to electric pulp vitality test, and no discomfort or pain was noted on percussion. On the mesiobuccal aspect of the tooth, the probing depth measured 4 mm, whereas the mobility of the tooth was within normal limits. On panoramic x-ray examination, a radiolucent, well-defined lesion about 20 mm in diameter consistent with the appearance of a radicular cyst was observed at the apex of #18 (Fig. 1). Root absorption of #18 was unclear. On computed tomographic (CT) images, a smooth circular lesion was also observed in the same region. A slight resorption of the buccal cortical bone was observed on horizontal slices (Fig. 2*A* and *B*). The correlation between the apex of #18 and the circular lesion was not clear even on the CT images, and, unfortunately, dental x-ray examination was impossible because of his vomiting reflex. There were also small circular radiolucent lesions in the right mandibular body in the #29 and #30 regions. On CT images, these several small circular lesions were also observed on the relatively lingual side of the mandible.

Laboratory data revealed slight anemia (hemoglobin = 11.2 g/dL) and a decreased platelet count (8.9×10^4/mm), but other blood cell counts were within normal limits. Coagulation factors were also within normal limits, and his coagulability was as follows: prothrombin time = 12.5 seconds and 71.7%, international normalized ratio = 1.42, activated partial thromboplastin time = 54.7 seconds, and fibrinogen = 239 units. Hepatic-related factors were as follows: lactate dehydrogenase = 264 IU/L, glutamic

Figure 1. Radiologic findings: pantomography at the first referral. The red arrows indicate a radiolucent circular lesion at the apex of #18. There were also radiolucent lesions in the body of the right mandible below teeth #29 and #30.

oxaloacetic transaminase = 87 IU/L, glutamic pyruvic transaminase = 74 IU/L, gamma-glutamyl transpeptidase = 66 IU/L, and alpha-fetoprotein (ALP) = 346 IU/L. Tumor markers showed relatively high AFP and AFP-L3 (lectin 3) levels of 158.5 ng/mL and 41.1%, respectively.

At his first visit to our department, HCC metastasis to a caput pancreatic lymph node had already been diagnosed based on positron emission tomography-CT images (Fig. 2*C*), which was consistent with the high AFP level. On the PET-CT images, high accumulations were also observed at the mandibular level (Fig. 2*D*). The apex of #18 showed accumulation, and stronger accumulation was observed in the #28 region. The standard uptake value (SUV) of the apex of #18 was 4.7, and the SUV of the #28 region was 7.9 or 23.7 with artifact.

On comparison with pantomography, periodontitis and the metal-cast prosthetic of #28 were considered to be the cause of the accumulation. The SUV of the caput pancreas lymph node was 8.0 and that of the liver was 5.4. These PET-CT images were consistent with other radiologic findings.

On the basis of these findings, this lesion was diagnosed as a #18 radicular cyst with little possibility of malignant tumor or other pathology unrelated to the tooth. Because his systemic condition was poor, planned surgical treatment of #18 was amended to root canal treatment. To start the root canal treatment, a conventional endodontic access opening was made with a rubber dam placement. An access cavity was prepared, and the root canal was instrumented with stainless steel hand files until an apical stop of ISO #40 could be created. Persistent seepage of dark red, muddy exudate through the root canal diminished gradually with instrumentation. The root canal was irrigated frequently with 1.3% sodium hypochlorite followed by a final rinse with 5 mL sterile saline. Subsequently, sterilized cotton with iodine was placed, and the access cavity was temporarily sealed with sterile cotton with Sandarac Vanish (G.C., Tokyo, Japan). At the next visit, the root canal was reentered and irrigated alternately with 1.3% sodium hypochlorite and sterile saline with a crown-down technique.

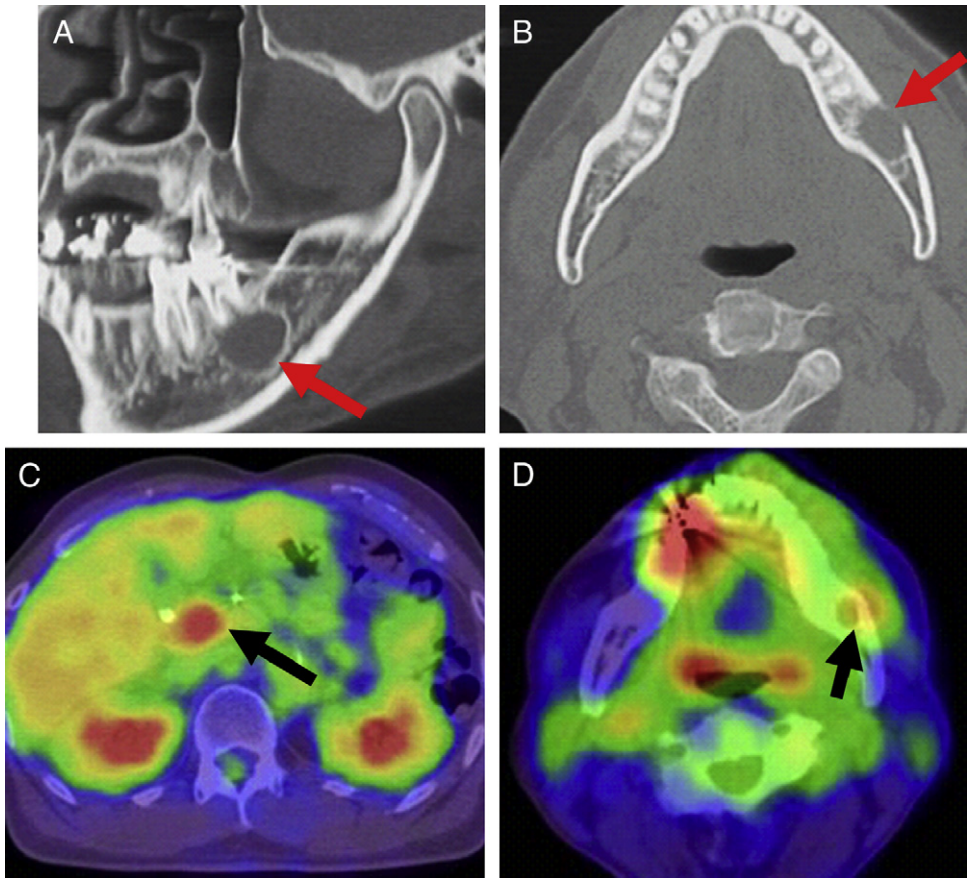

Figure 2. CT and CT-PET images: (*A*) sagittal CT image. The red arrow indicates a lesion with a clear, smooth margin resembling a radicular cyst of #18. (*B*) A horizontal CT image. The red arrow indicates slight bone absorption of the outer side of the cortical bone. (*C*) A PET image of the abdomen. The black arrow indicates pancreatic head lymph node metastasis. This diagnosis had already been made before the first referral. (*D*) A PET image of the oral region. The red spot in the right premolar region was suggested to be periodontitis of #28 by clinical symptoms. The red arrow points to yellow spot that shows less suggestion of malignancy compared with red spot. This lesion was finally diagnosed as HCC metastasis.