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Benign osteoblastoma of the mandible

ABSTRACT

Benign osteoblastoma is an uncommon osteoblastic tumor with osteoid and bone deposition, characterized cytologically by the abundant presence of osteoblasts. A 54-year-old man presented with a chief complaint of a painless swelling beneath the mandible, which was growing during the past 3 years. The clinical examination revealed the presence of a palpable tumor mass, which was fused by its one side to the left angle of the mandible, and its remainder was situated beneath the body of the mandible. Radiologic picture disclosed a well-circumscribed lesion in which some parts were heavily calcified. After the surgical extirpation, the pathohistological diagnosis was a benign osteoblastoma of the mandible. The major problem for pathologists is the correct differentiation between benign osteoblastoma and a number of lesions that may have similar characteristics.

Key words: *Benign osteoblastoma; Mandible; Osteoid-osteoma; Aggressive osteoblastoma; Osteosarcoma*

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INTRODUCTION

Benign osteoblastoma is an osteoid and bone forming benign tumor of bone. It is an uncommon lesion that accounts for 1% of all bone tumors and about 3% of all benign bone tumors. Usually, benign osteoblastoma occurs in the second and third decades of life, but the age range is 5-78 years. As to sex incidence, there is male predominance 2-3:1. Benign osteoblastoma can arise in any bone, but there is a predilection for the vertebra, long bones, skull and small bones of the hand and feet. Clinically, osteoblastoma is a well circumscribed, solitary lesion, which measures 2cm or more and may be as large as 12cm. Usually, the lesion is not painful, or if pain is present, it is not very responsive to salicylates. Radiologically, the picture may vary in accordance with the size of the tumor and with the extent to which the tissue is

calcified. Osteoblastomas are well circumscribed, expansive lesions with central radiopaque areas suggesting new bone formation, but it is less likely to provoke an outstanding bony sclerosis typical of osteoid osteoma. Histologically, benign osteoblastoma consists of a highly vascularized, fibocellular stroma in which there are abundant newly formed trabeculae of immature bone and osteoid. Proliferating osteoblasts are found lining the trabeculae of immature bone and osteoid. Malignant transformation (osteosarcoma) within a benign osteoblastoma is very rare (1-6).

CASE REPORT

A 54-year-old man presented with a chief complaint of a painless swelling beneath the mandible, which was growing during the past 3 years. The clinical examination revealed the presence of a firm palpable tumor mass, which was fused by its one side to the left angle of the mandible, and its remainder was situated beneath the body of the mandible. The tumor was about 7cm in its greatest diameter and well circumscribed. The skin above the lesion was stretched. The radiologic picture disclosed the lesion in which some parts of the tumor tissue

were heavily calcified. The contour of the bone in the affected area was expanded. After all examinations, the patient was operated on the Department of maxillofacial surgery of the Banja Luka Clinical centre. The operation revealed the presence of a tumor which extended from the left angle of the mandible along the muscle SCM. The tumor was excised from the mandible and extirpated completely. The material was sent to the Department of pathology where it was prepared by the standard laboratory technique: paraffin sections were stained with haematoxylin-eosin for pathohistologic analysis. After the uneventful postoperative period, the patient, feeling generally well, was discharged from the hospital.

At macroscopic examination, the extirpated tumor was an oval mass measured 6.5cm in its greatest diameter. Its surface was somewhat nodular and yellow coloured with hyperemic areas. The cut surface was predominantly red. The tumor had, on the whole, a gritty consistency, with softer parts, and evidently firmer areas of bone tissue. Besides the extirpated tumor, there was a small part of an adipose tissue, measured 2cm, in which two lymph nodes were found. At microscopic examination, the tumor

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was composed of a mass of randomly interconnecting osteoid trabeculae and open wave trabeculae of primitive osseous tissue rimmed by plump osteoblasts. The stroma surrounding the tumor bone was loose connective tissue that contained many dilated and congested capillaries, nests of osteoblasts, rare osteoclasts and spindle cells. The examined lymph nodes showed reactive changes.

Based on the histomorphologic characteristic of the tumor, the clinical facts and the radiologic findings, the diagnosis of a benign osteoblastoma mandible was established.

DISCUSSION

The major problem for pathologists is the correct differentiation between benign osteoblastoma and a number of lesions that may have similar characteristics.

Benign osteoblastoma and osteoid osteoma have almost identical histologic features. Based on this histologic similarity, in the year 1954 Dahlin and Jonson suggested a name "giant osteoid-osteoma" for the lesion that is denoted as the benign osteoblastoma in the present (1). Although it has been stated that clinical and radiologic differences between benign osteoblastoma and osteoid osteoma are much clearer, there are histologic differences between these two entities too (1-4,6-8). At microscopic examination, the bony trabeculae of osteoblastoma are slightly wider than those of osteoid-osteoma and there is less irregularity in their arrangement (2,3); the number of osteoblasts is much greater in osteoblastoma (1), but osteoma lacks giant cells and is not as well vascularized as osteoblastoma (8). On the clinical side, the benign osteoblastoma does not tend to produce pain, so characteristic of osteoid osteoma. Also, osteoblastoma is a larger lesion, which by definition exceeds 1 cm in its greatest diameter and is not generally associated with outstanding bony sclerosis typical of osteoid osteoma (2,4). In addition, some modern authors advocate that both lesions, benign osteoblastoma and osteoid osteoma, should be diagnosed as one entity (9).

Another diagnostic pitfall in connection with the benign osteoblastoma is the possibility

of its histologic confusion with osteosarcomas that are osteoblastic (bone productive) (1-4, 6-8, 10). In osteosarcoma, osteoblasts and osteocytes are pleomorphic, and the stroma is malignant. Special difficulty lies in the osteoblastomas in which there is more compactness of the bone and stroma, leading to increased cellularity. However, in the benign osteoblastoma stromal connective tissue cells are neither large nor sarcomatous, mitoses are rare, sarcoma giant cells are absent and cells enmeshed in osteoid matrix are relatively small and uniform (1,2). Bertoni et al. believe that the chief microscopic features that separate osteosarcoma from osteoblastoma is the lack of tumor maturation at the margins of osteosarcoma, with permeation of tumor into adjacent tissues, in contrast to maturation at the margins and lack of permeation into the adjacent bone (10). Also, radiologic studies may be an important aid in the difficult case (1,2).

Equally difficult is the distinction between benign osteoblastoma and aggressive osteoblastoma. The aggressive osteoblastoma occurs in the older age group than benign osteoblastoma (6). On the clinical side, this tumor shows aggressive behavior. It is able to extend into adjacent tissues and to recur in 10-21%, but does not metastasize (2,6,7,10). The histologic findings in the aggressive osteoblastoma are those that suggest the possibility of osteosarcoma rather than an obviously benign lesion. In other words, stroma may be compact and cellular, and there may be some osteoblastic pleomorphism and mitotic figures (2). Some authors advocate that lesions described as aggressive osteoblastoma are, in fact, well-differentiated osteosarcomas resembling osteoblastomas (8, 10). The diagnostic evaluation is based on the histologic features and the clinical behavior of the lesion.

Another differential diagnosis of osteoblastoma of jaw includes ossifying fibroma, condensing osteitis, Paget's disease, fibrous dysplasia, chondroblastoma, cementoblastoma, aneurismal bone cyst and giant cell granuloma (8).

CONCLUSION

As a conclusion, the importance of conceiving the individual bone tumors as clinicopathologic

entities should be pointed out again. In the delineation of differential entities, the clinical facts and radiologic findings are very important in the diagnostic evaluation of the lesion, and must be considered along with the histologic findings. At the same time, adequate representative sections of the entire lesion must be submitted to ensure an adequate histologic diagnosis.

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