

## Solid Tumour Section

### Mini Review

## Bone: Osteoblastoma

Carlos Eduardo de Andrea, Pancras CW Hogendoorn

Department of Pathology, Leiden University Medical Center, P1-30, Albinusdreef 2, 2333 ZA Leiden, The Netherlands (CEd, PCWH)

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### Identity

#### Note

Osteoblastoma (OB) is defined as a rare benign bone forming neoplasm which produces woven bone spicules, which are bordered by prominent osteoblasts (WHO, 2002).

This tumour was first described in 1932 by Jaffe and Mayer in a case report of an osteoblastic osteoid tissue-forming tumor of a metacarpal bone. It was been reported under various names, such as "osteogenic fibroma of bone" and "giant osteoid osteoma". Subsequently, in 1956, it was given its current name, when Jaffe and Lichtenstein independently proposed the term "benign osteoblastoma."

### Clinics and pathology

#### Etiology

The genetic cause of OB has not been established but there is a report of an unbalanced translocation resulting in the loss of the chromosome 17 short arm. MDM2 amplification was reported in one case and TP53 deletion at a splice region was demonstrated in an aggressive OB. Other reports described that recurrence was statistically correlated with p53 protein expression and high PCNA index.

#### Epidemiology

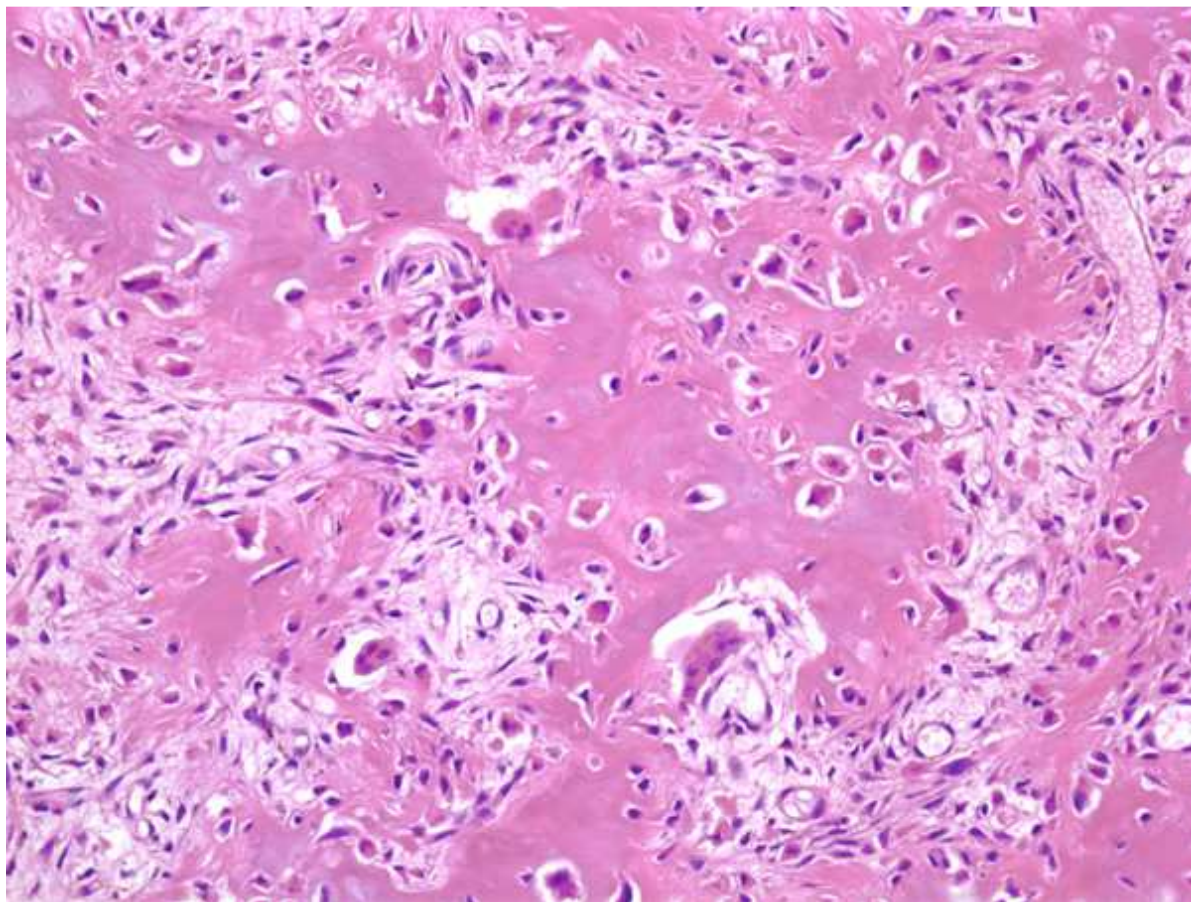
OB accounts for approximately 1% of all bone tumors. The tumor most commonly involves the vertebral column, particularly the posterior or dorsal elements, as well as the diaphyses of long bones, pelvis, talus, facial bones, and short bones of the hands and feet.

Most of the patients affected by OB are in the second or third decades of life.

Males are affected more commonly than females.



Osteoblastoma. Well delineated, radiolucent/radiopaque lesion.



Osteoblastoma. Consisting of anastomosing woven bone trabeculae, lined by a single but prominent layer of osteoblasts, and intervening hypervascular, hypocellular intertrabecular spaces.

### **Clinics**

Swelling, pain and tenderness are usually the general symptoms of OB.

The clinical presentation of the spine tumours may include back pain, scoliosis and myelopathic and/or radicular symptoms, and suggest a herniated disc.

### **Pathology**

OB is usually round to oval with a thinned cortex. If the cortex is destroyed always a thin periosteal reactive bone shell is found. Usually this tumour has an extremely rich vascular supply.

Microscopically, OB is characterized by woven bone trabeculae and osteoid, lined by a prominent, single layer of osteoblasts, and an intervening hypocellular but highly vascular stroma.

The osteoblasts are usually uniform and cytologically bland; however, about 10% of cases may be composed predominantly of "epithelioid" osteoblasts often proliferating in a multifocal pattern.

The differentiation between OB and osteosarcoma (OS) is one of the most challenging problems in Orthopedic Pathology. OBs are often progressive tumours with a propensity for locally aggressive growth. Approximately 25% of patients have radiographic and histologic aspects that may suggest malignancy, such as

epithelioid osteoblasts, bizarre cells, mitosis, and lace- or sheet-like osteoid production. The entity "aggressive osteoblastoma" was introduced by Dorfman and Weiss (1984) and Lucas et al.(1994) to describe lesions with features borderline between osteoblastoma and osteosarcoma. In OS cases, a permeative pattern of growth within intratrabecular spaces and a lack of maturation toward the periphery of the lesion have been described. The term "aggressive osteoblastoma" designates a tumor with local destructive behavior, but without metastatic potential.

### **Treatment**

When possible, en bloc resection is the therapy of choice.

### **Prognosis**

OB is a benign bone tumor with a recurrence potential as high as 22%. However, malignant transformation has been reported in rare cases and occurs in less than 1% of cases.

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