Epithelioid osteoblastoma: A histopathological dilemma between juvenile ossifying fibroma and low-grade osteosarcoma

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INTRODUCTION

Swelling of jaws with mixed opacity and lucency can have a spectrum of differential diagnosis, which includes odontogenic tumors, fibro-osseous lesions and rarely the connective tissue neoplasms. With respect to the fibro-osseous lesions, most of the time, histopathological features will be overlapping. In such cases, it is very important to arrive at a precise diagnosis for better treatment plan.[1,2]

CASE REPORT

An 11-year-old girl presented with a swelling in the lower left jaw for 8 months. History revealed that the swelling had gradually increased to the present size (2 cm × 2 cm) and that it had caused the patient no pain or discomfort. Clinically, the lesion was extending from lower right lateral incisor to right angle of the mandible, with tense blanched mucosa without any ulceration. The lesion was bony hard in consistency on palpation. Radiographically, it was predominantly radiolucent lesion with specks of radiopacities and destruction of the cortical bone leaving only a peripheral rim of cortex [Figure 1]. Because of the location and aggressiveness, differential diagnosis of ameloblastoma and keratocystic odontogenic tumor was considered.

Histopathologic features

- Irregular trabeculae of immature woven bone arranged in a homogenous or monotonous pattern in a cellular, loosely arranged fibrous stroma (mimicking Chinese letter pattern, only in certain areas). The absence of osteoblastic rimming was noted in these areas [Figure 2]
- Connective tissue stroma was highly cellular [Figure 3]. A number of ovoid/round calcifications were also observed, which could be related to psammoma-like ossicles [Figure 4]
- Most of the bony trabeculae are lined by plump osteoblasts [Figure 5]
- Presence of numerous large, polyhedral cells with abundant eosinophilic cytoplasm and eccentric nucleus (epithelioid osteoblasts [inset]) rimming the bony trabeculae and also arranged in sheets or groups [Figure 5]
- Plump osteoblasts entrapped within the bony trabeculae [Figure 6]
- Osteoclast-type giant cells resorbing the bony trabeculae [Figure 7]
- Presence of pagetoid bone with prominent reversal lines indicating alternate bone formation and resorption [Figure 8].

Differential diagnosis

- Fibrous dysplasia: Young age, history of slowly progressing lesion with duration of 8 months and histopathologic monotonous trabecular arrangement

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were favoring the diagnosis of fibrous dysplasia. However, the trabeculae rimmed by plump osteoblasts and the presence of sheets of epithelioid osteoblasts in a highly cellular stroma ruled out this possibility

- Juvenile ossifying fibroma: Age of the patient, destructive nature of the lesion and cell-rich stroma containing osteoid and bony trabeculae were suggestive of juvenile ossifying fibroma. An additional finding noted in this case was multiple foci of bony trabeculae exhibiting characteristic pagetoid pattern, distributed throughout the lesion. Although pagetoid bone is observed rarely in juvenile ossifying fibroma, this will be confined to the periphery.[1] The presence of sheets

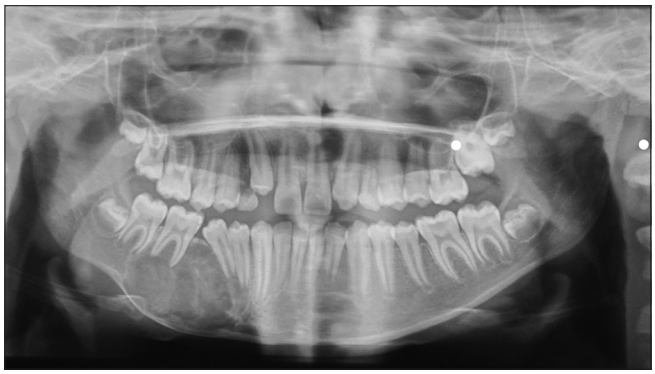

Figure 1: Radiolucent lesion with specks of radiopacities

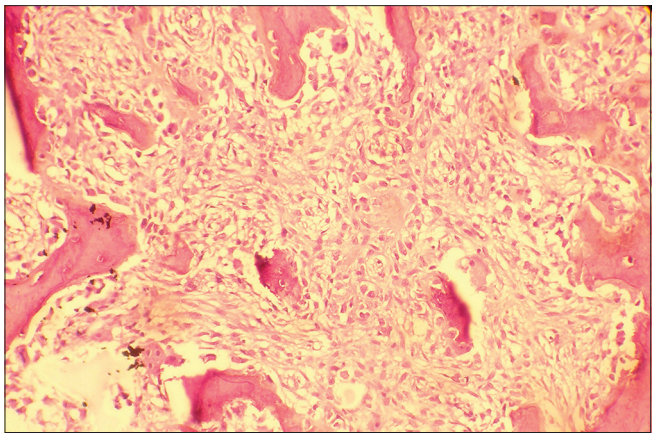

Figure 3: Highly cellular stroma (H&E, ×100)

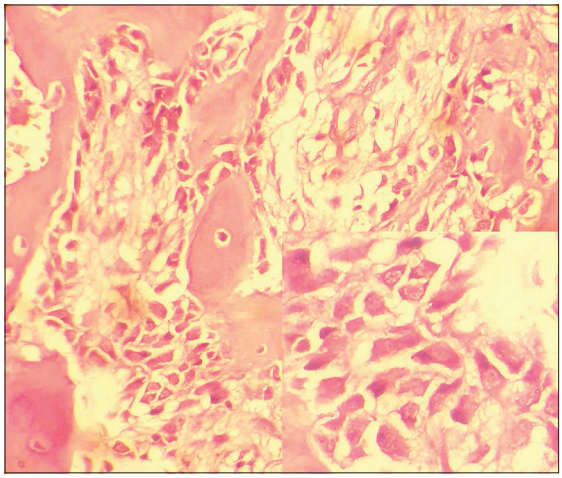

Figure 5: Plump osteoblastic rimming around the trabeculae (H&E, ×200). Inset: Epithelioid osteoblasts showing abundant eosinophilic cytoplasm and eccentrically placed nucleus (H&E, ×400)

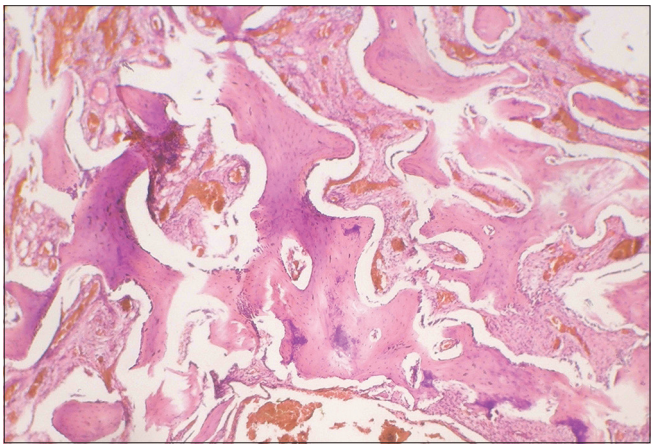

Figure 2: Monotonous arrangement of woven bone (H&E, ×40)

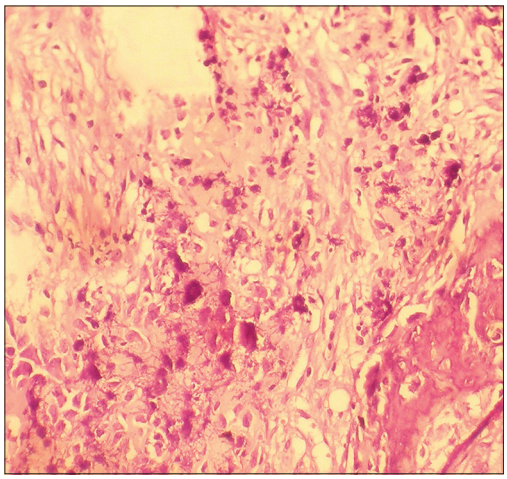

Figure 4: Calcifications resembling psammoma bodies (H&E, ×200)

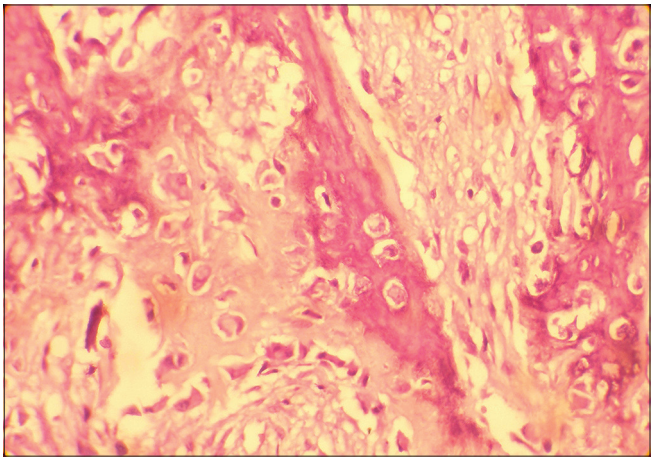

Figure 6: Trabeculae with entrapped osteoblasts (H&E, ×400)

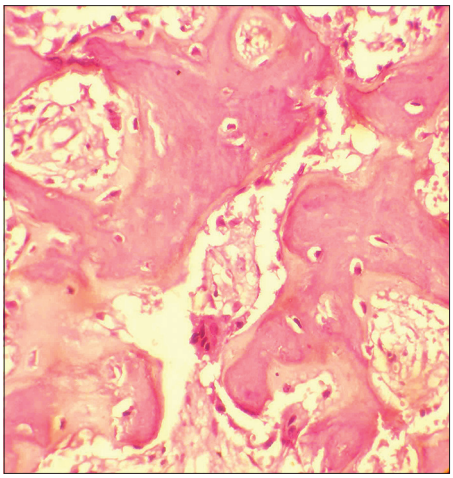

Figure 7: Osteoclastic type of giant cells (H&E, ×200)

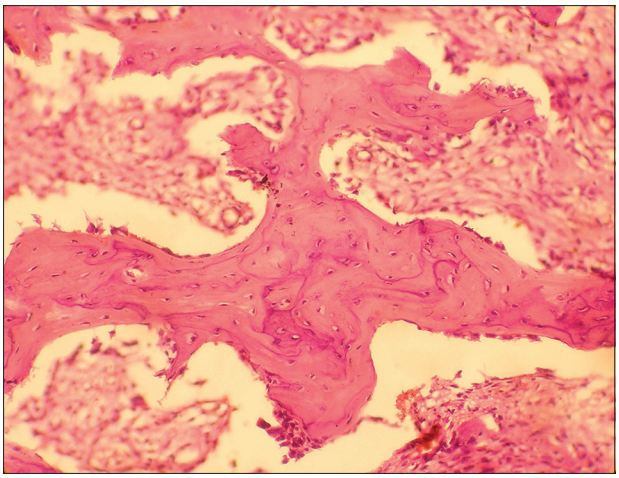

Figure 8: Pagetoid appearance in bony trabeculae (H&E, ×100)

of plump epithelioid osteoblasts also helped exclude the diagnosis of juvenile ossifying fibroma[3]

- Osteogenic osteosarcoma: Osteogenic osteosarcoma was considered as a differential diagnosis because of sheets of plump osteoblasts with regular osteoid formation. Nevertheless, the absence of atypical osteoblasts, tumor osteoid, sarcomatous stroma and atypical mitotic figures helped rule out high-grade osteosarcoma. Although the features of low-grade osteogenic osteosarcoma and aggressive osteoblastoma are overlapping, the presence of characteristic large epithelioid osteoblasts with eccentrically placed nucleus and the absence of peripheral infiltrative pattern of osteosarcoma favored the conclusive diagnosis of epithelioid osteoblastoma.[1,4]

Final diagnosis

Based on the clinicoradiologic profile and histopathological features and ruling out the possible histopathologic differential diagnoses, the final impression of an epithelioid osteoblastoma was established, which is aggressive in nature.

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Conflicts of interest

There are no conflicts of interest.

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