RADIO-HISTOLOGIC DIAGNOSTIC CHALLENGE IN OSSIFYING FIBROMA AND FIBFOUS DYSPLASIA OF THE JAWS: A CASE REPORT

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Abstract

This article reports a case of fibro-osseous lesion, which was clinically and radiologically, diagnosed as ossifying fibroma but histologically proved to be fibrous dysplasia. A 17- year- old boy presented with an 8- months history of a swelling on the left angle of the mandible which was firm with a normal overlying skin. Radiographic evaluation of the swelling showed a well defined radiopaque mass with extension to the ramus. Based on the history, clinical and radiographic features a diagnosis of ossifying fibroma was reached. However, intra- operatively no calcified mass was found within the swelling but rather diffuse heamorrhages of the spongiosa were found. Incisional biopsy was taken from which results showed a non-capsulated lesion containing multiple trabeculae of metaplastic bone dispersed in a reactive moderately cellular vascularised fibrous stroma that was consistent with the diagnosis of fibrous dysplasia. The radiographic and histological confusion surrounding the diagnosis of these lesions are discussed.The importance of a combined approach to diagnosis is emphasized.

Introduction

Fibro-osseous lesions are characterized by the replacement of normal bone by tissue composed of collagen fibres and fibroblasts that contain varying amounts of mineralized substance, which may be bony or cementum-like in appearance (Antonellli, 1989). They are grouped into fibrous dysplasia (FD) (comprising the monostotic and polyostotic types); fibro-osseous lesions presumably arising in the periodontal ligament (periapical cemental dysplasia, localized fibro-osseous lesions, florid cemento osseous dysplasia, ossifying fibroma (OF) and cementifying fibroma); fibro-osseous neoplasms of uncertain or debatable relationship to those arising in the periodontal ligament (cementoblastoma, osteoblastoma, osteid osteoma, juvenile "active" ossifying fibroma, "agressive" ossifying/cementiossifying fibromas (Waldron, 1985). These lesions share similarities in radiographic, clinical appearance, histogenesis and although the histological appearance and; frequently the clinical and radiographic features may be similar for many of these lesions, there is a wide range of biological behaviour and treatment (Koury et al. 1995). This article reports a case of a fibro-osseous lesion which was clinically and radiographically diagnosed as ossifying fibroma but histologically proved to be fibrous dysplasia.

Case Report:

In April 2005, a 17-year-old boy presented with an 8-month history of a slowly progressive swelling on the left angle of the mandible which was firm but not mobile with a normal overlying skin. Intraoral examination revealed an expansile lesion lingually. There was no tooth displacement and the mucosa was normal. However, there were episodes of pain which were on and off in addition to limited mouth openning. No history of trauma was apparent. Full blood count showed neutrophilia (79%) and ESR was raised (26mm/hr). Radiological evaluation of the swelling showed a well defined radiopaque mass with extension to the ramus (Figure 1).

Incisional biopsy was not performed since history, clinical and radiographic features seemed to be adequate for diagnosis. Therefore a conclusive preoperative diagnosis of OF was reached. The patient was scheduled for excision of the mass. Under general anaesthesia the swelling was approached through a submandibular incision along the upper skin crease of the neck. The mandible was exposed and by using mallet and chisel, the cortical bone over the lesion was removed and the swelling explosed. Although the radiographic appearance of the lesion showed a well defined radiopaque mass no calcified mass was found within the swelling but rather diffuse haemorrhages of the spongiosa were seen. Decision was made to take incisional biopsy.

Microscopic evaluation of the incisional biopsy showed non-encapsulated lesion containing multiple trabecularly metaplastic bone dispersed in a reactive moderately cellular vascularised fibrous stroma. There were numerous basophilic reversal and resting lines in the bone trabeculae. These histologic features were consistent with a diagnosis of fibrous dysplasia (Fig.B). Since FD is a 'self-limiting' condition after the onset of puberty; the patient was taken to major theatre for osseous recontouring.

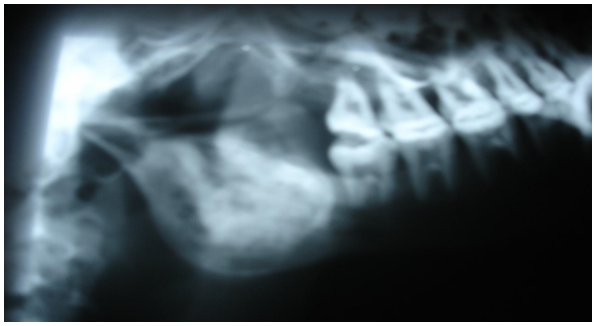

Figure 1. Lateral view of mandible showing a radiopaque mass with features consistent with Ossifying fibroma.

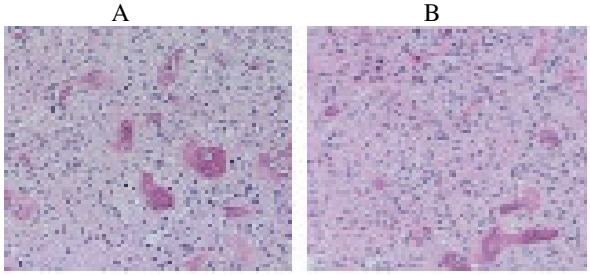

Figure A. Histopathologic features of of Fig. B. Histopathologic features of FD (X 400) (Reported case), (X400).

N.B. Both lesions present with similar histopathologic features.

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Discussion

Fibro-osseous lesions (FOLs) demonstrate a broad spectrum of clinical and radiographic findings. The ossifying fibromas (OFs) of the jaws are well circumscribed, generally slow growing lesions which enlarge in an expansile manner (Waldron, 1985). They may be completely radiolucent or show variable calcified components. Some may show mixed density: radiolucency and radiopacity. Other studies have reported cystic and ground glass patterns of appearance (Waldron, 1985; Lu et al. 1995; Mac Donald-Jankowski, 1988; Su et al. 1997). Radiographically, FD may appear as sclerotic, osteolytic (cystic type) or mixed: areas of radiolucency and radiopacity, the so called ground glass appearance (Ye XH, 1989). They have diffuse blending margins while OFs are sharply demarcated.

The importance of radiology is especially highlighted in differentiating between FD and OF thus; if the margin is well defined then the lesion is considered to be OF, whereas if it is poorly defined then it is FD. This distinction is important because OF can in most cases be treated by enucleation compared with FD which is "self-limiting" and usually need only recontouring only.

The present case was radiographically diagnosed as OF because it appeared radiopaque and well circumscribed but was histologically proved to have been FD. This shows how the clinical and radiological presentations of OF can be ambiguous. It is generally held that the radiographic presentation of FD varies according to the degree of maturation which determines the degree of opacification (MacDonald-Jankowski, 1999). Even the histologic appearance changes with tissue maturation stages, so that the chemical composition and crystallographic features of those calcifications are likely modulated throughout the stages until maturity is reached. That is to say, the initial histologic and radiographic appearance when the present lesion started to develop was different from what was later seen. According to Yoshihito et al. 1998, the development of calcified tissue in fibro-osseous lesions may be adequately categorized into the following stages:

- Osteolytic stage with initiation of calcification.
- Progressive stage, in which the initially isolated particles coalesce to form a solid mass.
- Inactive or mature stage.

Therefore, the present lesion appeared radiopaque probably because it was in the progressive stage of calcification when the radiograph was taken. This could also be supported by the age of the patient (17yrs) which falls into the peak age of occurrence of FD in which more calcification is expected to be found.

Although the radiographic correlation is valuable in differential diagnosis of FD and OF, some similarities in radiographic appearance may be encountered in both entities. They lack the classic clinical, radiographic and pathologic features and rather have overlapping features of both entities (Voytek et al. 1995).

The problem of overlapping of features in these lesions is probably brought about by the calcification as maturation continues. This is what raises problems in the classification and diagnosis of the two lesions. Lesions that are chiefly fibrous or fibroblastic appear radiolucent or less radiopaque than those in which calcified areas and bone trabeculae predominate. It is also suggested that the benign fibro-osseous jaw lesions may represent different stages in the evolution of a single disease process. Thus, the differential diagnosis of FD versus OF chiefly rests on a radiological criterion after the histopathologist has verified the fibro-osseous nature of the lesion.

Common histologic features of FOLs include active proliferation of fibroblasts, young and mature collagenous connective tissues, focal areas of mineralization which may resemble cementicles and/or irregular bone trabeculae and multinucleated giant cells (Antonelli, 1989). These histologic features occur in a number of jaw lesions including FD, OF, osteoblastoma, cementifying fibroma, florid osseous dysplasia, focal sclerosing osteomyelitis, Paget's disease of bone and osteosarcoma. Also the large number of possible diagnoses radiographically resembling the current case and the fact that the clinical and radiological appearance of is often ambiguous make a conclusive preoperative diagnosis and hence the surgical plan difficult. Full knowledge and correct diagnosis would prevent an unnecessary extensive operation for this lesion. Therefore, we emphasize the use of combined detailed clinical, radiological and histological features in differentiating the two diseases since establishing a definitive diagnosis through a single diagnostic modality as has been demonstrated by the present case remains difficult.

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