

Pattern of Fibro-osseous Lesions of the Jaws in Kano, Northern Nigeria

This article was published in the following Scient Open Access Journal:

Journal of Dental and Oral Health

Received April 01, 2017; Accepted April 18, 2017; Published April 25, 2017

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Abstract

Background and Objective: Fibro-osseous lesions (FOL) are a group of disorders characterized by the replacement of normal architecture of bone by a benign connective tissue matrix that displays varying amount of mineralization in the form of woven bone or cementum. They most often have overlapping histological features thereby making distinctions of the entities a diagnostic dilemma. The aim of this study was to determine frequency, age, sex, site distribution and morphological patterns of fibro-osseous lesions in Kano, Northern Nigeria.

Materials and Methods: This was a 5 year retrospective study from 2nd January, 2011 to 31st December, 2015 of all fibro-osseous lesions diagnosed at the pathology department of Aminu Kano Teaching Hospital, Kano, Nigeria.

Results: A total of sixty cases of fibro-osseous lesions were diagnosed during the five year study period. The ages range from 3 to 70 years (mean age of 26.8), and female to male ratio was 1.3 : 1. The lesions were mostly sited in the mandible (61.7%) and maxilla (38.3%). Ossifying fibroma (O F) was by far the most common histologic type (68.3%), distantly followed by fibrous dysplasia (F D) (16.7%) and other infrequent lesions comprised the remaining 15% of cases.

Conclusion: Our findings revealed that fibro-osseous lesions commonly afflicts people in their third decade and ossifying fibroma was the most predominant histological subtype in our setting. Meticulous and high index of suspicion in the context of combined clinical, radiologic and pathologic characteristics are the most suitable approach in making an otherwise challenging diagnosis.

Keywords: Fibro-osseous lesions, Ossifying fibroma, Fibrous dysplasia

Introduction

Fibro-osseous lesions (FOL) are a group of disorders characterized by the replacement of normal architecture of bone by a benign connective tissue matrix that displays varying amount of mineralization in the form of woven bone or cementum. It includes developmental, reactive/dysplastic and neoplastic lesions [1,2]. Different classification systems have been put forward by various authors [3].

This group of lesions are known to encompass common characteristics that includes common clinical, radiologic and microscopic features, hence they pose considerable diagnostic and therapeutic challenges to pathologists and clinicians. More specific diagnosis is important because the treatment varies from none to surgical recontouring to complete removal [4,5].

There has, however been no published report on FOL in Kano state, which is the largest state in Northern Nigeria, hence this review [6]. The aim of this study was to determine the frequency, age, sex, site distribution and morphological patterns of fibro-osseous lesions in Kano, Northern Nigeria and to compare our findings with those from previous studies.

Materials and Methods

This was a 5 year retrospective study from 2nd January, 2011 to 31st December, 2015 of all fibro-osseous lesions recorded in the histopathology registers, patient case notes and radiographs of the Aminu Kano Teaching Hospital, Kano, Nigeria. The following variables were obtained; frequency, age, sex, site and histopathological type.

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Histopathology slides on all cases were retrieved and reviewed by the study authors. Fresh sections were cut from archival paraffin blocks when slides could not be retrieved. All specimen had been fixed in 10% formal saline, then routinely decalcified paraffin embedding. Microtome sections were cut at 4µ and stained with haematoxylin and eosin. Diagnosis was based on world health organization classification of fibro-osseous lesions [7]. The data was subsequently analysed using SPSS version 20 and presented as frequency tables.

Results

A total of sixty cases of fibro-osseous lesions were diagnosed during the five year study period. The ages range from 3 to 70 years (mean age of 26.8), and female to male ratio was 1.3 : 1. The lesions were mostly sited in the mandible (61.7%) and maxilla (38.3%). Ossifying fibroma was by far the most common histopathologic type (68.3%) and peak incidence was seen in the 21-30 years age group with female to male ratio of 1.7:1 and mandible was the most frequent location (65.9%). Ossifying

fibroma was distantly followed by fibrous dysplasia (16.7%) and were also most common in the 3rd decade with female to male ratio of 1:1 and maxilla was the preferred site (70%). Other infrequent lesions comprised the remaining 15% of cases. Tables 1 and 2 depict relative frequency, age distribution, site and gender distribution of fibro-osseous lesions of the jaw bones in Kano, Nigeria respectively. Figures 1 and 2 show photomicrographs of ossifying fibroma and fibrous dysplasia respectively.

Discussion

There were 60 cases of clinico-radio-pathologically diagnosed FOL during the 5 year study period. Of these, 68.3% were ossifying fibroma and 16.7% were fibrous dysplasia which was comparable to studies from Ibadan, Nigeria and Ghana where ossifying fibroma constituted 50.4% and 61.5% respectively [8,9]. This is however at variance with some earlier documented reports in Nigeria and elsewhere [10-12]. Thus, there appears to be no consistent pattern within and outside the country. There is no clear cut explanation on this observed variation. Ossifying

Fibro-osseous lesions	0 – 10 years	11 – 20 years	21 – 30 years	31 – 40 years	41 – 50 years	51 – 60 years	61 – 70 years	N (frequency in %)
Ossifying fibroma	3	10	15	5	4	1	3	41 (68.3)
Fibrous dysplasia	1	3	5	1	-	-	-	10 (16.7)
CGCG	-	-	2	-	2	-	-	4 (6.7)
Aneurysmal bone cyst	1	-	1	-	1	-	-	3 (5)
Osseous dysplasia	-	-	2	-	-	-	-	2 (3.3)
Total	5	13	25	6	7	1	3	60 (100)

CGCG = central giant cell granuloma

Table 1: Relative frequency and age distribution of Fibro-osseous lesions of the jaw bones in Kano.

Fibro-osseous lesions	No of cases	Male ♂	Female ♀	Mandible	Maxilla
Cemento-ossifying fibroma	41	15	26	27	14
Fibrous dysplasia	10	5	5	3	7
CGCG	4	3	1	3	1
Aneurysmal bone cyst	3	2	1	3	-
Osseous dysplasia	2	1	1	1	1
Total	60	26	34	37	23

CGCG = central giant cell granuloma

Table 2: Site and gender distribution of Fibro-osseous lesions of the jaw bones in Kano.

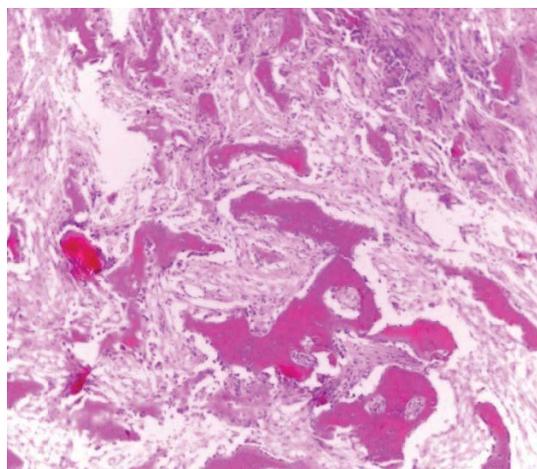


Figure 1: Ossifying fibroma of the jaw (H&E x10).

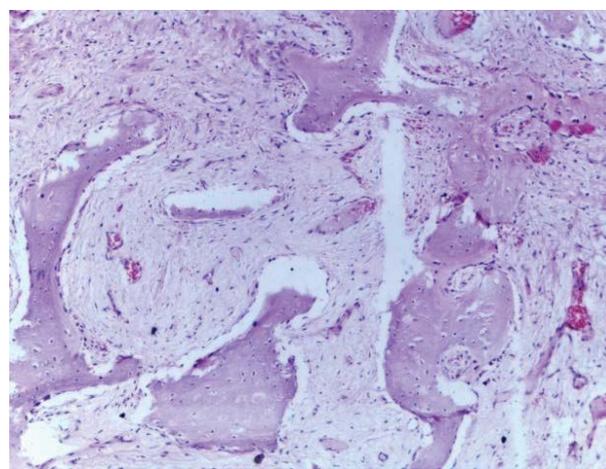


Figure 2: Fibrous dysplasia of the jaw (H&E x10).

fibroma is a benign tumor of connective tissue origin, which is asymptomatic and slow growing but may show aggressive behavior in some cases particularly when the tumor is located outside the mandible [13]. Microscopically, they are encapsulated and show a broad variation in mineralized material that may be woven bone as well as lamellar bone disposed in a moderately cellular, relatively avascular, dense fibrous stroma [14]. Radiologically, it usually appears as unilocular lesions with sharply defined, smooth, cortical borders, a feature that is used to differentiate ossifying fibroma from fibrous dysplasia. The lesion could be radiolucent, radiopaque or mixed [13]. In this appraisal, ossifying fibromas were predominantly in the 21-30 years age category, while this agrees with some reports, others have shown that it can occur at any age but more common in children and young adults [15,16]. Ossifying fibroma showed a predilection for occurrence in females than males, which correlates with other studies [17,18]. Mandible was the most common location (65.9%) and it was the most common site reported in literature [17,19]. In a few reports, there was equal distribution between mandible and maxilla [20]. Fibrous dysplasia is a benign bone lesion commonly seen in children or young adults and usually result from a developmental failure in the remodeling of primitive bone to mature lamellar bone leaving a mass of immature isolated trabeculae enmeshed in dysplastic fibrous tissue [18]. It is a slow growing painless swelling that can lead to facial deformity. Microscopically, they show irregular bony trabeculae giving the appearance of the Chinese letter pattern. These bony trabeculae are devoid of osteoblastic rimming which also distinguishes it from ossifying fibroma [18]. Radiologically, the normal bone is replaced by tissue that is more radiolucent, with a ground-glass pattern. It is bounded by a distinct rim of reactive bone [3]. In this study, the peak age of fibrous dysplasia was in the 3rd decade of life which is in agreement with other reports [15,21]. There was equal sex distribution in this series, while some Nigerian studies reported male preponderance others were inverse [10,11,19]. According to a study done by Dehingren *et al* the sex distribution varies from a higher prevalence in females than males (3 : 1) to an equal sex distribution, or even in a few instances of more cases in males than females [20]. Maxilla was the preferred site (70%) which corroborates other studies [12,16].

Our review had only 4 cases of central giant cell granuloma, 3 cases of aneurismal bone cyst and 2 cases of osseous dysplasia. This may be due to their rarity in craniofacial bones. The constraint of this review was that, it was a retrospective hospital-based study with the problems of inadequate clinical, laboratory and treatment outcome data that may be of additional prognostic significance, are best to appraise with structured prospective molecular studies. In conclusion, Our findings unveiled that fibro-osseous lesions commonly occurs in people in their third decade and ossifying fibroma was the most predominant histological subtype in our setting. Meticulous and high index of suspicion in the context of combined clinical, radiologic and pathologic characteristics are the most suitable approach to an otherwise challenging diagnosis. The need for immunological and molecular analysis remains paramount and critical to definitive diagnosis.

Conflict of interest

None declared

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Acknowledgement

We are grateful to the Chief Laboratory Scientist of Aminu Kano Teaching Hospital; Mr Sani Abubakar for laboratory technical work.

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