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Case Study

Management of Osteochondroma: A Case Series

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Abstract

Osteochondroma is a benign tumor of the bone that occurs during childhood or adolescence. It forms on the surface of bones near the growth plate and compose of bony portion with a cartilaginous cap. Asymptomatic growths are managed conservatively. Excision is done in cases of pain, discomfort or for cosmetic reasons. The aim was to conduct a review of cases of Osteochondroma managed at our institution.

Between November 2015 and April 2016, 3 cases were managed in our facility, 2 of the patients were females (ages 9 and 10) while the third patient is a male, 30years. Duration of symptoms prior to presentation ranges from 2-9years. There was a case of multiple exostoses (both shoulders, ribs, and the distal tibia) while the remaining two have solitary exostosis (pelvis and distal radius). All patients were evaluated using plain radiographs and computed tomographic scan was done for the case located within the pelvis. The indication for excision ranges froma pain and discomfort to difficulty in ambulation. All patients had excision based on the indication at evaluation. Follow up period was 24 months. There were significant improvements in the symptoms after excision and there was no case of recurrence after excision. All patients were satisfied with the procedure. Excision of symptomatic cases of solitary or multiple exostoses is the mainstay of management of this benign bone tumour.

Keywords: Osteochondroma; Childhood; Radiographs

Introduction

Osteochondroma is a cartilaginous capped benign bone tumour, on the outer surface of bones preformed by endochondral ossification [1-3] it is an outgrowth of both medullary and cortical bone that affects majorly the growth plate. The most common site of involvement is the metaphyseal region of the long bones of the limbs, like the distal femur, upper Humerus, upper tibia and fibula [4,5].

Osteochondroma also developed in flat bones such as the ilium and the scapula [6]. It can occur as a solitary condition or as multiple exostoses mainly associated with a hereditary condition known as multiple hereditary exostoses [7,8].

Historically, exostosis both solitary and multiple has been managed at the study centre but there is no publication documenting either the pattern of presentation or the outcome of surgical treatment. The present study is an attempt to document our case series and experience regarding the surgical management of symptomatic Osteochondromas.

Aim and Objective

To review cases of symptomatic Osteochondroma managed at the Abubakar Tafawa Balewa Teaching hospital Bauchi, North-eastern part of Nigeria in other to document the pattern of presentation and outcome of surgical treatment (excision).

Patients and Methods

Abubakar Tafawa Balewa University Teaching Hospital is a tertiary institution located in the Bauchi State; North-East Nigeria, established in 2010. It is a multi-specialty Hospital with about 415 bed capacity. The orthopaedic and trauma department of the hospital has been involved in the management of variety of Musculo-skeletal disorders ranging from trauma to congenital, developmental, and adult degenerative conditions.

Between November 2015 and April 2016, 3 cases of Osteochondroma were managed in our facility. All case were evaluated with plain radiographs and computed tomography with 3-Dimensional reconstruction if indicated. All cases had excision after adequate evaluation. The patients' demographics, duration of symptoms, clinical presentation, treatment offered and follow-up periods were documented for all cases.

First patient was a 30-year old man who complained of a painless left iliac fossa swelling that was noticed 2years prior to presentation, swelling was said to be slowly progresses in size causing mild pain and discomfort. On examination, a swelling was noticed in the left iliac fossa measuring 16 cm by 6 cm in size, with a well-defined edge, shiny overlying surface with no bulging veins, non-tender and bony hard in consistency (See figure 1).

Figure 1

X-ray of the pelvis; anterior-posterior and lateral views showed a bony mass extending from the anterior superior iliac spine of the left hemi-pelvis extending above the left hip joint (Figure 2). Computed tomographic scan (CT-Scan) with 3-Dimentional reconstruction (Figure 3) shows a huge bony structure with cartilaginous cap (areas of secondary calcifications) emanating from the left anterior superior iliac spine.

Figure 2

Figure 3

Under general anaesthesia, the patient was positioned supine, routine cleaning and draping was done. The tumor was approached via a longitudinal incision, the quadriceps muscle (vastus medialis and lateralis) were split along their fibres. The tumor was exposed, dissected to its base, and completely excised and sent for histology (Figure 4).

Histology shows a cartilage capped trabecular bone, with no malignant change, in consistency with Osteochondroma.

Figure 4

Second patient is a 9year old girl who presented with multiple swellings over the body since birth, the biggest was around the right posterior shoulder painless, about 6cm by 10 cm in size, non-tender with intact overlying skin, fixed to the scapula. X-ray shows bony outgrowth with cartilaginous calcifications related with the right scapula, another swelling around the inferior angle of the left scapula and on the right 8th anterior rib and the Humerus.

Under general anaesthesia patient was positioned in lateral decubitus position, routine cleaning and draping done. A horizontal incision along the Langerhans lines was done above the bulge of the tumor Intervening muscles (latissimus dorsi, infraspinatus) were dissected to expose the tumor the entire protuberance was excised from the base and sent for histology (Figure 5).

Figure 5

Histology features were in keeping with Osteochondroma.

The third patient was 10year old girl who presented with a 4years history of slowly progressive swelling on the distal 3rd of the right forearm growth was bony hard in consistency, immobile, non-tender. X-ray shows (Figure 6) a bony growth extending from the distal portion of the radius laterally.

Figure 6

Under general anaesthesia, the patient was placed in supine position, cleaning and draping was done with good exposure of surgical site. A longitudinal incision about 10cm was done on the middle of the distal 3rd of the flexor compartment of the forearm (right), the flexors of the forearms were bluntly dissected, pronator quadratus was dissected to expose the tumor which was excised (Figure 7) and sent for histology with histological diagnosis of Osteochondroma.

Result

A total of 3 patients with symptomatic Osteochondroma were seen and managed within the period under review (November

Figure 7

2015 and April 2016), 2 of the 3 patients are females; male: female sex ratio 1:2 Age ranges between 9-30 years, duration of symptoms prior to presentation ranges from 2-9 years. The cases are 2 females; age 9 and 10 and a male age 30years presenting symptoms ranges from pain, discomfort, reduction in degree of movement of the relating joint and cosmetic reasons.

The average tumor size ranges between 6 cm by 4 cm to 16 cm by 10 cm.

All tumours were completely excised and sent for histology with histological features characteristic of Osteochondroma (cartilage capped bone covered by fibrous capsule) with no evidence of malignancy.

All cases were followed in the outpatient unit for 24 months. No recurrence of symptoms or swellings. The Patients did well and were satisfied with the management/treatment.

Discussion

Osteochondroma is a common benign tumor of the bone which could be solitary or multiple. Its aetiology is still largely unknown, but In the case of multiple Osteochondroma its association has been described with mutations of the EXT1 and EXT 2 genes (Exostosin 1 and 2, a tumor suppressor gene) which intervene in the heparin sulphate proteoglycans biosynthesis, involved in the epiphyseal growth plate, and with radiation, which could produce dedifferentiation of the cartilaginous tissue growth, among others [9].

The radiological pathognomonic characteristic of this tumor is the cortical and marrow continuity of the lesions with the adjacent bone [9].

Common presenting symptoms include; pains, numbness and tingling sensation, painless swelling(s) and in some rare cases, malignant transformation [10] with features of malignancy.

Solitary osteochondroma is a common benign tumor of the bone accounting for 35%-50% of all benign bone tumours and 8% to 15% of all primary bone tumour [11]. There are two types; sessile (broad-based, almost indistinguishable from the host bone) and pedunculated (connected to the host bone via a stalk, clearly distinguishable from the host bone) varying in size and shape [11]. It can also be solitary or multiple (in cases of hereditary osteochondromatosis) [8].

Two of our patients had solitary Osteochondroma (on the pelvis and the distal radius) while the 3rd patient had multiple osteochondromatosis involving the scapula bilaterally, the ribs and the distal radius).

Osteochondroma have been noted to present with male preponderance of about 3:1 [13-15]. However, our male: female ratio is 1:2 (out of the 3cases, 2 were females).

Common site of location of Osteochondroma are; Femur 34%, Humerus 18%, Tibia 15%, pelvis 8%, Scapula 5% and ribs 3% [4-6]. Uncommon sites of development of Osteochondroma include; Metatarsals, talus, base of skull and spine. One of our case had Osteochondroma on the pelvis, another on the distal radius and a multiple osteochondromatosis involvement both scapula, ribs and the Humerus.

Malignant transformation in cases of Osteochondroma is very rare, estimated to be less than 1% in patients with solitary lesions and 0.5-3% in patients with Multiple Osteochondromas [1,8]. In 94% of the cases with malignant progression, a secondary peripheral chondrosarcoma has developed within the cartilage cap of an Osteochondroma [16].

All our case have histological feature suggestive of Osteochondroma with no feature suggestive of any malignant transformation, all cases were followed after excision with no any recurrence of symptoms or swelling(s).

Conclusion

Excision of symptomatic cases of solitary or multiple exostoses is the mainstay of management of this benign bone tumour.

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