Case Report

Hereditary Multiple Exostosis Complicated by Popliteal Artery Pseudo-Aneurysm and Common Peroneal Nerve Palsy

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ABSTRACT

We describe a rare case of a twenty-five-year old male patient with a history of hereditary multiple exostoses who presented with a right popliteal fossa swelling and right foot drop following a mild trauma. The swelling proved to be a popliteal artery pseudo-aneurysm complicating a femoral osteochondroma. The management and surgical treatment are discussed.

KEY WORDS: hereditary multiple exostoses, popliteal artery, pseudo-aneurysm

INTRODUCTION

Hereditary multiple exostoses is an autosomal dominant skeletal disorder characterized by multiple bony prominences and skeletal deformities. It occurs most commonly around the knee joint, proximal humerus and distal radius. It is the most common skeletal dysplasia, with a frequency of about 1:18,000. It develops in early childhood and becomes obvious with skeletal development[1]. Popliteal pseudo-aneurysm is one of the well recognized though uncommon complication of femoral osteochondroma which can occur spontaneously or due to mild trauma but does not necessarily lead to limb ischemia[2,3].

CASE REPORT

A twenty-five-year old male patient was admitted to our hospital with a large swelling of his right popliteal fossa. The swelling developed after a jerky acute flexion of the right knee joint five weeks ago. The swelling was small and the patient could do his daily activities. However the swelling had increased in size over the last few days and the patient was unable to fully extend his knee and dorsiflex his right ankle. On physical examination there was large, painful deep cystic swelling in the right popliteal fossa with flexion deformity of the knee joint of about 50 degrees (Fig.1). There was also right foot drop but the peripheral pulses were felt normally. Plain X-ray films showed a giant osteochondroma arising from the posterior aspect of the lower end femur (Fig. 2).

Colored duplex of the popliteal fossa revealed a popliteal artery pseudo-aneurysm arising from the anterior aspect of the artery surrounding a lower femoral giant osteochondroma. CT- angiogram was done which clearly showed the pseudo-aneurysm (Fig.3). 3D-CT showed the rough posterior surface of the osteochondroma (Fig. 4).

Based on history, physical examination, imaging and arteriogram a diagnosis of popliteal artery pseudo-aneurysm was confidently made.

The patient underwent surgery. At operation and after proximal control of the common femoral artery the false aneurysm was excised and the rent in the popliteal artery was repaired directly (Fig. 5, 6). The posterior aspect of the osteochondroma was rough and there was no cartilaginous cap over it. The osteochondroma was excised completely (Fig. 7). We did not explore the common peroneal nerve as we felt that it is a neuropraxia due to compression by the rapidly enlarging pseudo-aneurysm. Postoperative recovery was uneventful and patient was discharged from the hospital after two weeks. During follow-up the patient regained full range of knee movement within four weeks and recovery of the nerve was complete by the sixth month after surgery.

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Fig. 1: BTS guidelines for the management of community acquired pneumonia in adults-2004[6]

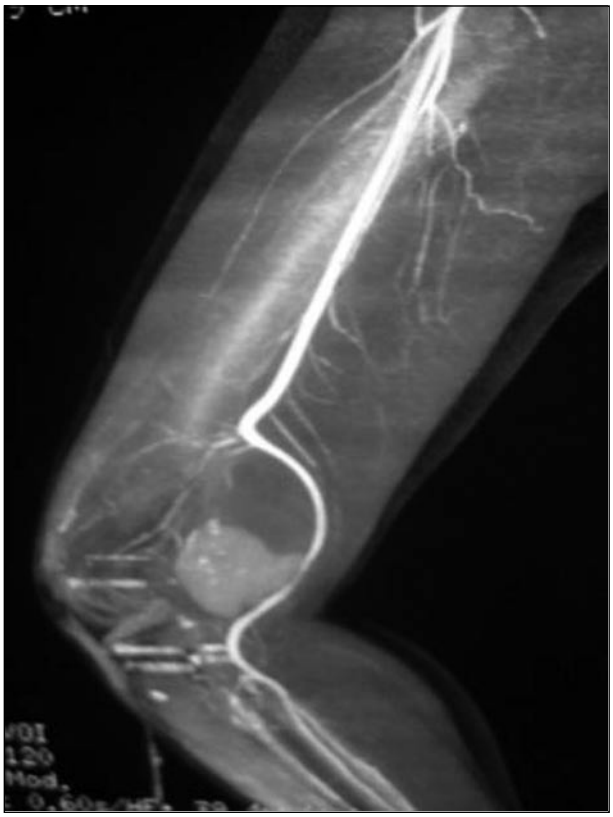

Fig. 3: CT-angiogram showing the pseudoaneurysm pushing the popliteal artery posteriorly

Fig. 5: Intra-operative photograph showing the rent in the artery

Fig. 2: AP and lateral views showing the osteochondromas in the distal femur

Fig. 4: 3D-CT showing the rough posterior surface of the osteochondroma

DISCUSSION

Hereditary multiple exostoses is an autosomal dominant disorder characterized by multiple bony tumors or hamartomas arising near joints. They are cartilage capped and behave in a benign way and are associated with skeletal deformities. Osteochondromas have been reported in all bones but are seen most commonly adjacent to the fastest-growing physes, which are at the distal femur

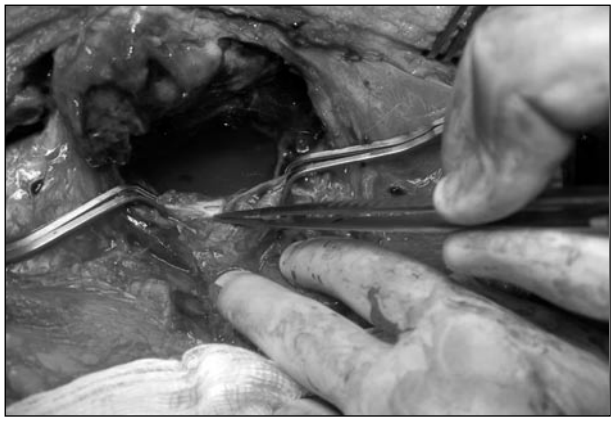

Fig. 6: The blood spurting from the rent in the artery

and proximal tibia. They can lead to mechanical symptoms if the nearby joints, vessels or nerves are involved. Rarely sarcomatous changes can ensue[1,4].

Osteochondromas can lead to a series of complications including fractures through the tumor pedicle, mechanical block of nearby joints, nerve compression and malignant change. Vascular complications are well known but rare and include false aneurysms, arterio-venous fistulae, luminal stenosis and acute ischemia. Venous complications are very rare and include deep venous thrombosis and compression[5-8].

The formation of false aneurysm is due to repeated trauma to the arterial wall by a rough spike of a nearby osteochondroma leading to adventitial tear and the formation of pseudo-aneurysm[9]. In our case the posterior aspect of the osteochondroma was found to be rough and there was no cartilagenous cap over it. Thus the vessels were unprotected and became injured by the rough osteochondroma. The common peroneal nerve injury may be due to compression of the nerve by the enlarging tense swelling.

The treatment of popliteal pseudo-aneurysm is exploration of the popliteal fossa and surgical excision of the osteochondroma and the false aneurysm and restoration of the continuity of the artery either by direct repair of the rent in the artery or by-pass surgery. Some authors suggest prophylactic removal of the exostoses, if it lies along the axis of an artery[5].

CONCLUSION

We believe that preventive intervention must be kept for any suspicion of malignant changes or serious mechanical or vascular compromise. Colored Doppler ultrasound and tridimensional CT may help in proper decision making. If the osteochondroma is in close relation to a major vessel and the surface of the osteochondroma facing that vessel is rough as shown by the 3D-CT, it is wise to resect this lesion to avoid serious vascular complications.

Fig. 7: Post operative X-ray, after excision of the osteochondroma

REFERENCES

1. Beals RK, Horton W. Skeletal dysplasias: An approach to diagnosis. J Am Acad Orthop Surg 1995; 3:174-181.
2. Eschelman DJ, Gardiner GA Jr, Deely DM. Osteochondroma: an unusual cause of vascular disease in young adults. J Vasc Interv Radiol 1995; 6:605-613.
3. Wiater JM, Farley FA. Popliteal pseudoaneurysm caused by an adjacent osteochondroma: a case report and review of the literature. Am J Orthop 1999; 28:412-416.
4. Wicklund CL, Pauli RM, Johnston D, Hecht JT. Natural history study of hereditary multiple exostoses. Am J Med Genet 1995; 55:43-46.
5. Vasseur MA, Fabre O. Vascular complications of osteochondromas. J Vasc Surg 2000; 31: 532-538.
6. Chamlou R, Stefanidis C, Lambert T, Munck D. Popliteal artery pseudo-aneurysm and hereditary multiple exostoses. Acta Chir Belg 2002; 102:467-469.
7. Darilek S, Wicklund C, Novy D, *et al*. Hereditary multiple exostosis and pain. J Pediatr Orthop 2005; 25:369-376.
8. Glock Y, Nehme I, Delisle MB, Roux D, Fournial G. Acute ischemia of a limb as a complication of multiple hereditary exostoses. Case report and literature review. J Cardiovasc Surg (Torino) 2000; 41:105-108.
9. Shah PJ. Aneurysm of the popliteal artery secondary to trauma from an osteochondroma of the femur : a case report and review of the literature. Br J Surg 1978; 65:786-788.