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Case Report

Radiology Section

Osteochondroma Complicated by a Popliteal Vein Aneurysm- A Rare Case Report

SONALI SETHI[1], MEENAKSHI PRAKASH[2], ANIL DHAL[3], SUNIL KUMAR PURI[4]

ABSTRACT

Osteochondroma is the most common benign skeletal tumour. It frequently causes pain and local symptoms, however, vascular complications are rare. The popliteal artery is more commonly affected and there are isolated case reports of popliteal artery pseudoaneurysm in literature. However, venous complications are extremely rare. We hereby report a case of 21-year-old male patient with distal femoral osteochondroma complicated by a popliteal venous aneurysm and deep vein thrombosis. This association has not been described in the past. The patient was put on anticoagulants as he refused surgery and was asymptomatic at six months follow-up. Awareness of this complication is important for timely diagnosis and surgical management as it is a source of life threatening pulmonary thromboembolism.

Keywords: Bone tumor, Deep vein thrombosis, Vascular complication

CASE REPORT

A 21-year-old male patient presented with complaints of gradually increasing swelling in the distal aspect of his left thigh posteriorly, just above the popliteal fossa. The swelling increased over a period of 3 years. He developed acute pain with swelling over the entire leg for the past three days. Lateral and frontal radiograph of the left knee joint was performed which revealed bony outgrowth with cortical and medullary continuity, projecting from posterior surface of the lower metaphysis of left femur; suggesting a classical osteochondroma [Table/Fig-1a&b].

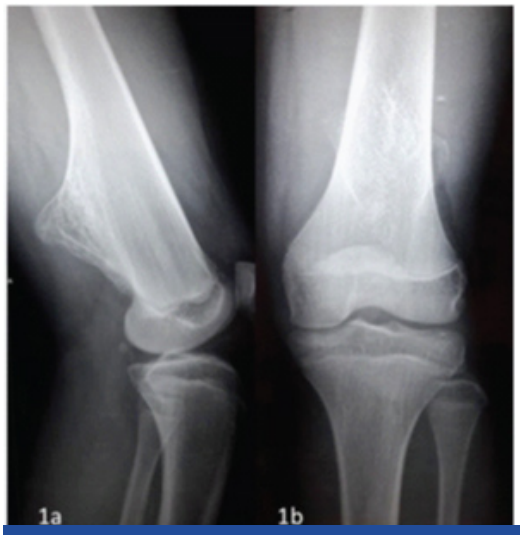
Doppler examination was performed which revealed dilatation of the popliteal vein, with intraluminal thrombus and extension of the thrombus into the femoral vein and the peroneal vein [Table/Fig-2].

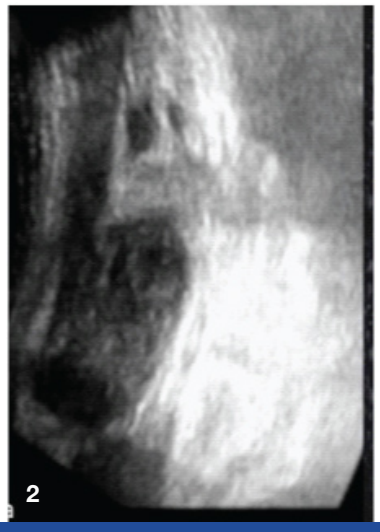
CT angiography was performed which confirmed the osteochondroma at distal metaphysis of left femur, with cortical and medullary continuity with the parent bone. The left popliteal artery was indented by the lesion and showed an area of focal narrowing with external pressure impression. The popliteal vein showed dilatation in an eccentric saccular configuration, with filling in the delayed phase suggesting true venous aneurysm. There was internal thrombosis which extended both proximally and distally [Table/Fig-3a&b,4].

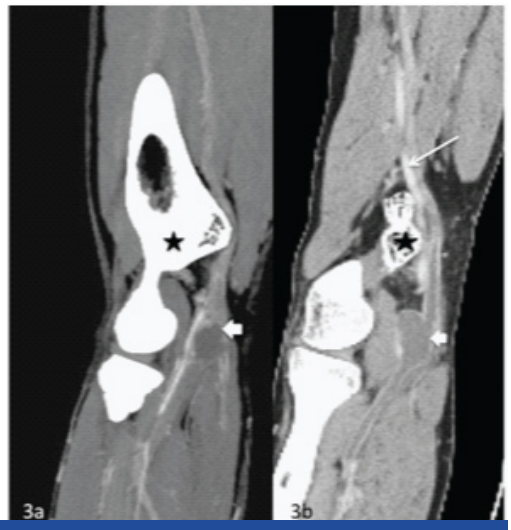
Excision of the osteochondroma was warranted as it was the aetiological factor. The patient was counselled for surgery and put on warfarin. However, the patient was not willing for surgery. The patient was asymptomatic at six months follow up and colour doppler was done at 6 months which showed reduction in size of the aneurysm [Table/Fig-5].

DISCUSSION

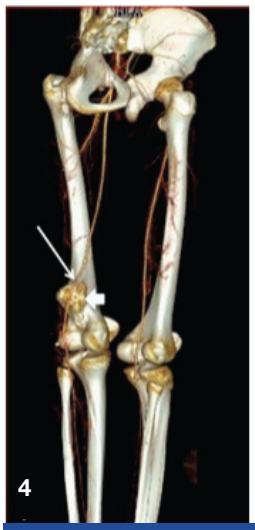
The most common benign tumour of the skeleton is osteochondroma, which occurs in approximately 1% of the population with a greater male preponderance. They are located in the metaphyses, most commonly in the distal femur and develop from the cortical bone dysplasia at the epiphyseal plate [1]. They are protected by a soft cartilageous cap which undergoes ossification following skeletal maturity. These are most commonly solitary, however, multiple lesions may exist as a part of hereditary multiple exostosis [1]. They are mostly asymptomatic, however most common presentations

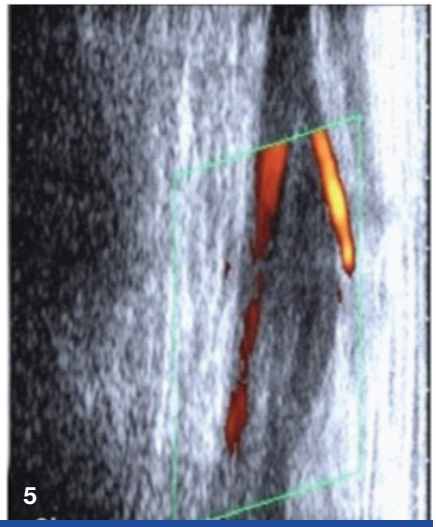






[Table/Fig-1a,b]: Lateral and frontal radiograph of the left knee joint showing a classical osteochondroma involving the distal femoral metaphysis.
[Table/Fig-2]: Gray scale ultrasound image of eccentric saccular aneurysm involving the left popliteal vein, with internal thrombus extending into the superficial femoral vein.
[Table/Fig-3]: (a) CT angiography sagittal reformatted image showing the distal femoral osteochondroma (black star). Popliteal venous aneurysm is seen as a non-opacified saccular outpouching of the popliteal vein (bold white arrow). The non-opacified peroneal vein is also visualised. Popliteal artery is well opacified and is seen deep to the vein in the popliteal fossa. **(b)** CT angiography sagittal oblique reformatted image showing the osteochondroma (black star). The popliteal venous aneurysm is seen as a non-opacified saccular structure in continuity with the thrombosed superficial femoral and peroneal vein(bold white arrow). The well opacified popliteal artery is seen deep to it (thin white arrow).





[Table/Fig-4]: VRT image showing the Osteochondroma (bold white arrow) with the popliteal artery draped over it (thin white arrow).
[Table/Fig-5]: Colour Doppler image at 6 months follow up showing significant reduction in the size of the aneurysm while on warfarin with persistance of thrombus within the aneurysm. The adjacent artery shows internal colour flow.

include symptoms due to neurological compromise, growth abnormalities, bursa formation. Malignant degeneration occurs rarely in less than 4% cases [1].

Vascular complications are rare and were studied in detail by Eschelman et al., who reviewed 56 cases and described the vascular complications of osteochondroma such as psuedoaneuryms, arterial thrombosis, arteriovenous fistula, popliteal artery impingement, luminal stenosis and deep venous thrombosis [2]. Robert et al., described a case of arterial pseudoaneurysm and reviewed 27 similar cases [3]. The mean age of vascular complications has been described by Vasseur et al., as 22.6 years which also corresponds to the age of skeletal maturity and replacement of the protective cartilaginous cap with osseous component [4]. Isolated venous involvement has rarely been documented in literature [4-11]. However venous aneurysm has not been reported so far. The arterial pseudoaneurysms are much more common due to the relatively fixed location of the popliteal artery between the hunters canal superiorly and the soleus muscle inferiorly [3] and the high pressure of blood in the arteries as compared to the veins.

Popliteal venous aneurysms are rare entities. They were first described by May and Nissel in the year 1968. However, these are very important to detect as they are frequently a source of life threatening pulmonary thrombolembolism in 70-80% cases [12]. Many aetiological factors have been proposed such as trauma (mechanical factors), inflammation, congenital factors and degenerative changes (rheological factors) [13]. Venous duplex scan is the investigation of choice for the assessment of these aneurysms. However, ascending phlebography, CT venography or MR venography should be done for the assessment of deep veins before surgical repair is attempted.

Pulmonary embolism is life threatening and is associated with the presence of thrombus, therefore prophylactic anticoagulation is warranted in such patients. However, it may be ineffective in preventing pulmonary embolism, so surgical intervention is mandatory [14]. Tangential aneurysectomy with lateral vein reconstruction is the treatment of choice. Some authors have advocated placement of IVC filter before surgical repair to prevent intraoperative pulmonary embolism. Few other surgical options are resection with interposition graft, resection with end-to-end anastomosis, or ligation of the proximal and distal vein [14].

CONCLUSION

Deep vein thrombosis is very uncommon in young age and a rare complication of femoral osteochondroma. Popliteal venous aneurysm is an extremely rare entity and its association with osteochondroma has not been described earlier. It may be a source of life threatening pulmonary embolism. We have described one such case and emphasized on the role of imaging in the diagnosis so that a timely medical treatment is instituted and surgical intervention is possible to prevent complications.

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PARTICULARS OF CONTRIBUTORS:
1. Senior Resident, Department of Radiology, GIPMER, New Delhi, India.
2. Senior Resident, Department of Radiology, GIPMER, New Delhi, India.
3. Director Professor and Head of the Department, Department of Orthopaedics, Lok Nayak Jai Parakash Hospital, Maulana Azad Medical College, New Delhi, India.
4. Director Professor and Head of the Department, Department of Radiology, GIPMER, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sonali Sethi,
31/29, East Patel Nagar, New Delhi-110008, India.
E-mail: sonali.sethi01@gmail.com

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