A thigh Swelling, Neoplasm or Surprise?

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Abstract

In the absence of sufficient history, a chronic swelling in the limb may be mistaken as a soft tissue neoplasm, bony tumor or infection. Our patient, who had a chronic and recurrent swelling in the thigh was investigated thoroughly using MRI and CT scans. A specific diagnosis wasn't reached despite these investigations and soft tissue neoplasm was feared in a rather young patient. Ultrasound was used to guide aspiration and biopsy of the swelling and it incidentally led us to a diagnosis. MRI is an accurate tool in diagnosis of soft tissue conditions, but ultrasound is simple, cost effective, easily available and sometimes more sensitive in diagnosing various conditions in soft tissues of the limbs.

Introduction

A simpler and less expensive investigation like ultrasound may sometimes be more sensitive in diagnosing a condition, than the more accurate, expensive and complex MRI. Differential diagnosis after clinically seeing a patient, leads a clinician to request investigations. Investigations and imaging, which are fairly advanced in technology today, aid in nearly clinching the diagnosis prior to beginning treatment or counselling surgery. Often, routinely used and trustworthy investigations may not show the exact cause and lead a clinician towards thinking of worse diagnosis, especially when the history is not clear. A team approach, involving inputs from various specialists and using correct investigations to diagnose and treat a condition that does not fit the regular frame is most essential.

Case

History

A 28-year-old male presented to us with a complaint of swelling in the left thigh, near the knee since few weeks (Fig 1). He complained of pain, discomfort and inability to perform a full range of motion of the left knee. He found it difficult to walk, sit and climb up and down stairs due to the swelling.

He gave a history of having the same swelling in the same region a year ago. He was treated symptomatically at another hospital. The fluid from the swelling was aspirated and sent for culture and cytology at that time. Both had revealed nothing. He had been symptom free for a few months but the swelling slowly recurred and increased over the recent few weeks.

Fig 1: Clinical photograph showing the swelling on the posterior aspect of the patients left thigh.

There was no history of trauma, cough, fever or weight loss in

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the past one year or even prior to that [1]. He did not have medical co-morbidity either.

On examination, he had an antalgic and short limbed gait on the left lower limb. There was no redness or increased local temperature to suggest inflammatory response[2, 3]. There were no scars or sinuses on the thigh. The swelling was tense, cystic, fluctuant and not attached to the skin or underlying tissue and muscle. It extended from above the popliteal fossa till the junction of middle one third and distal one third of the femur on the posterior aspect of thigh. It extended all the way from medial to lateral aspect of the thigh. The popliteal pulsations were felt well. There was no tenderness over the swelling.

Fig 3: Xray of the left thigh showing the swelling

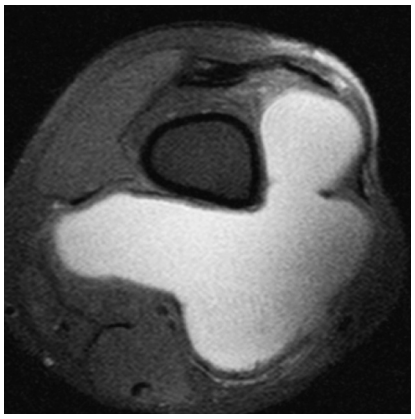

Fig 4: Axial section of the MRI scan showing the extent of the swelling and the involvement of various structures

Anteriorly, there was no swelling in the thigh. He had about 10 degrees of flexion deformity and could further flex the knee to 110 degrees. Clinically, the knee was normal, there being no effusion and ligaments and menisci being normal. Ipsilateral ankle, hip and contralateral knee were normal.

A recent CT scan done (Fig 2), prior to consulting with us, showed a fluid filled, cystic swelling in the posterior aspect of the thigh extending from outside the periosteum till the subcutaneous region. A small spec of calcification could be seen on the posterior aspect of the swelling. The radiograph showed a similar finding. (Fig 3)

Fig 2: Sagittal section of the CT scan showing extent of the swelling and the presence of a calcific spec at the posterior aspect of the swelling.

An MRI was advised by us[4]. It confirmed the extent of the swelling. The bony periosteum was intact. The swelling was enclosed in a capsule and did not invade any of the adjoining structures. The neurovascular structures and muscles were pushed aside by the swelling and it increased to the subcutaneous region. The contents of the swelling were fluid and could not be commented on further. (Fig 4)

The patient was advised aspiration for lab tests since the previous ones were done a year ago[5]. About 100 ml of fluid was aspirated under ultrasound guidance and sent for examination (Fig 5). The ultrasound incidentally, revealed the presence of a foreign body in the sack of the swelling, which was not quite evident in the MRI. The fluid tested negative for organisms or neoplasm.

Compression dressing was applied but the swelling recurred over 6 weeks to full size. This time we counselled exploration and surgery to remove the probable foreign body and the capsule to prevent recurrence of the swelling.

Management

All pre-operative investigations being normal, the patient underwent exploration of the swelling under spinal anaesthesia. We used a posterolateral approach keeping in mind that we may need to extend the approach or use the same for a second definitive procedure. The thick capsule was just deep to the deep fascia and adherent to the sur-

Fig 5: Aspirated fluid from the swelling

Fig 6: Thick capsule of the swelling visible just under the deep fascia from a posterolateral approach

rounding tissues probably due to chronic inflammation (Fig 6). Dissection was difficult and tedious. On exploration, we extracted a 28 mm long and 2 mm wide foreign body from the most dependent part of the swelling (Fig 7). It was loose and floating inside the swelling. It looked like wooden shrapnel. The capsule was dissected and excised. Some of it on the medial side was only debrided to steer clear of vessels and nerves. The wound was closed over a drain which was retained for a week. Compression dressing was done and gentle mobilisation begun from 3rd day. The patient was allowed to bear weight with a brace immediately as his bone and joints were normal. Histopathology showed chronic inflammation.

The patient was allowed to resume work after suture removal. Compression with crepe bandage was continued for a month after surgery. At 6 months, the patient was comfortable and the swelling hadn't recurred. There was no pain, stiffness or discomfort.

Discussion

Our patient came with a tense, recurrent, gradually increasing swelling on the posterior aspect of the thigh with no history of trauma or penetrating injury even in childhood. There were no scars either to suspect such an event. Probing the patient and relatives retrospectively also did not reveal any memory of penetrating injury.

Fig 7. The 30 mm by 2 mm wooden foreign body extracted from the swelling

Various history based differential diagnoses like tumour, infection and popliteal cyst were considered. He did not have typical symptoms like fever, cough, weight loss or change in colour or size of a mole[1, 2]. Neoplastic conditions that move towards malignancy, show systemic symptoms and signs like cough, blood in sputum, weight loss, dermatological changes etc. Infective conditions would generally have fever, anorexia, changes in blood counts and local inflammatory changes[3]. Our patient had none of these. A Morrant Bakers cyst or a popliteal cyst is a capsulated outgrowth of the knee synovium that leads to a swelling in the posterior aspect of the knee. This communicates with the knee joint[6]. Further an MRI would give us much more information towards a specific diagnosis[4].

CT scan, which had already been done, was not helpful in establishing a diagnosis. The presence of a calcific spec was not specific towards the possible etiology.

An MRI scan showed that it was a well encapsulated swelling which had a clear demarcation[4]. It did not invade the periosteum, muscle, vessels, nerve sheaths or fascia. Based on these findings, it was less likely to be malignant. It could still be a soft tissue neoplasm[7]. It did not show destruction of tissues which is common in infections and tuberculosis. The swelling did not communicate with the knee and therefore the possibility of it being a Morrant Baker's cyst was eliminated[6]. The tissue of origin could not be established even with MRI.

Aspiration cytology and microbiology did not reveal any significant pathology[5]. Cytology led us in the direction of chronic inflammation. The aspiration cytology was performed under ultrasound guidance to be sure of the region of the swelling that was being invaded as this is very important if a differential diagnosis of tumour was being considered. It is important that the biopsy track should be along the possible line of incision used for tumour excision, so it does not seed another track and can be excised during surgery.

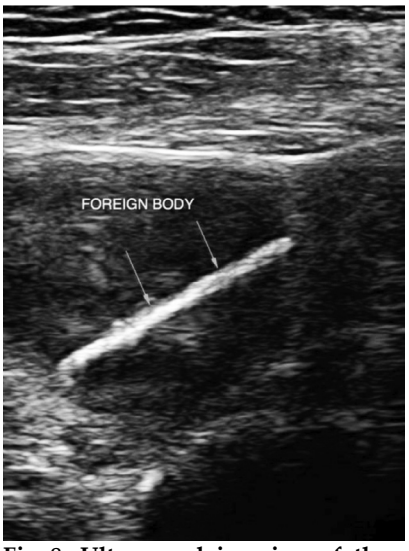

Fig 8. Ultrasound imaging of the foreign body

The Ultrasound incidentally revealed the presence of a 30 mm long floating foreign body in the swell-

ing that may well be the etiology of the swelling (Fig 8). This foreign body was until now missed on CT and MRI scan both, which are fairly sensitive imaging modalities. This also gave us a working diagnosis and evidence to explore the swelling instead of repeated aspirations.

Ando, Hatori et al, have found that compared with MRI and CT, ultrasound sonography is less expensive, readily available, and superior in the detection of foreign bodies [8]. They found that many organic foreign bodies and even multiple pieces may be easily picked up on ultrasound in comparison to CT and MRI.

The surgical removal of the foreign body showed the presence of a wooden piece which was causing a chronic inflammatory response in the surrounding tissue. Removal of the foreign body and the thick capsule stopped the recurrence of the swelling. It is in this patient's interest that the swelling and fluid collection had not been infected in the course of the disease.

Early range of movement, weight bearing and use of 3 to 4 weeks of compression to prevent recollection of fluid, brought the patient back to full work potential.

Conclusion

Foreign body granuloma can mimic soft tissue neoplasm in the absence of history of penetrating trauma. Ultrasound is a good investigation over radiographs, CT scans and MRI scan in detecting organic foreign bodies. Removal of causative foreign body can lead to complete resolution of symptoms.

References

1. "Cancer – Signs and symptoms". NHS Choices. Archived from the original on 8 June 2014. Retrieved 10 June 2014.
2. Longo DL, Fauci AS, *et al*. : Harrison's Principles of internal medicine. New York: McGraw-Hill Companies. 18th ed; 2011.
3. Lew DP, Waldvogel FA. Osteomyelitis. *Lancet. 2004*; 364 (9431):369–79.
4. Manaster BJ, Roberts CC, Andrews CL, *et al*. Diagnostic and surgical imaging anatomy: musculoskeletal. Salt Lake City (UT): Amirsys; 2006.
5. Mousa A. Al-abbadi : *Avicenna J Med. 2011* Jul-Sep; 1(1): 18-28.
6. Todd J, Frank R, *et al*. Baker's cyst Diagnostic and surgical considerations : *Sports Health. 2015* Jul; 7(4): 359-365.
7. Bongartz G, Vestring T, Peters PE. Magnetic resonance tomography of soft tissue tumors. *Radiologe 1992*;32:584-90.
8. Ando, Hatori; UPS J Med Sci. 2009 Mar; 114(1): 46–51.