Idiopathic Neuritis Ossificans of the Radial Nerve

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Abstract

Neuritis ossificans is an extremely rare reactive process affecting peripheral nerves, which can be challenging to diagnose and treat. The usual presentation is mononeuropathy, pain and weakness of variable degree and a palpable mass along the distribution of the nerve. The paucity of literature on this disorder is an indication of its rarity. We present a case of neuritis ossificans of the radial nerve which is the first reported case of its kind.

Case Report(s)

A 35 year old male, carpenter by profession, complaining of pain in the right arm for two years and tingling sensations had been on analgesics and neurotropics without any relief. He was being assessed for cervical brachialgia but his cervical spine X rays were normal and nerve conduction studies did not reveal any abnormality. There was no history of trauma or injections and he had no neurodeficit. Persistence of symptoms was also accompanied by the discovery of a small but firm mass in the mid arm region in the deltoid groove which was tender to touch and gave rise to paresthesias and radicular pain along the distribution of the radial nerve on deep palpation. Plain radiographs (Fig 1) revealed a calcified mass in the region of the radial groove of the humerus. Fine needle aspiration cytology was nonspecific and surgical exploration was advised. At surgery, the radial nerve was explored and it was found to have a bulbous swelling which was firm to palpation (Fig 2). The neural mass was incised along its length and enucleated without sacrificing the nerve (Fig 3). No attempt was made to repair the incision in the nerve. The wound was closed after hemostasis and the mass sent for histopathology. Postoperatively, converse to expectations, the patient did not have any neurodeficit and made an uneventful recovery. Histopathology of the calcific mass was suggestive of neuritis ossificans, its centre made of bony tissue surrounded by infiltrating neutrophils, eosinophils and lymphocytes. Repeat X rays were normal and no other investigations were done. He was relieved of his symptoms and is back to his job as a carpenter.

Discussion

Neural heterotopic ossification ("neuritis ossificans") is among the least encountered reactive lesions in peripheral nerves. The classical pathological picture is of fibrovascular tissue with osteoid and bone deposition arranged in a zonal pattern\(^1\)-\(^2\). It is remarkably similar to myositis ossificans which is also defined pathologically by zonal proliferation of fibroblasts and osteoblasts, with subsequent deposition of bone and cartilage (ossification). Our case emphasizes neuritis ossificans as a rare but potentially under acknowledged cause of painful mononeuropathy delineated in literature\(^2\)-\(^10\). Heterotopic ossification has not been associated with any underlying connective tissue or metabolic disorder. Local trauma, however, is a documented risk factor\(^1\) but evidence of such is often absent as in our patient. Other reported sites of neuropathy and potential predisposing factors include sciatic neuropathy after hip fracture and fixation\(^4\)-\(^11\) or biceps femoris muscle strain from weight lifting\(^12\), ulnar neuropathy after burn injury of the elbow\(^13\) and median neuropathy in the forearm in a tennis player\(^9\). Additional idiopathic cases include cranial nerve neuritis ossificans\(^8\), common peroneal nerve involvement\(^10\), ulnar neuropathy at the elbow\(^7\),\(^14\),\(^15\) and at the wrist\(^15\), brachial plexopathy associated with a tender supraclavicular mass\(^16\), femoral\(^17\), saphenous and sural\(^2\) neuropathies and neuritis ossificans with osteogenic sarcoma in brachial plexus following trauma\(^18\). An imaging study and biopsy are essential to confirm the diagnosis. Imaging by plain x-ray (as in our case), magnetic resonance imaging or computed tomography of the involved region or bone scan\(^1\) may be employed. When a calcified soft tissue mass is identified, then biopsy is usually needed to rule out a sarcoma\(^18\) and confirm the diagnosis of neuritis ossificans. Surgical excision of the ossifying mass may relieve pain, joint contracture, and progression of mononeuropathy\(^12\),\(^13\). Meticulous nerve sparing dissection should be attempted but is not always possible\(^2\). Radiation therapy may be an effective alternative treatment for pain but not contracture or neuropathy\(^17\). Surgeons should try enucleation in such conditions so as to preserve neural function with significant relief of symptoms.
Conclusion

Neuritis ossificans ought to be kept in mind in the differential diagnosis of painful mononeuropathies, more so at sites away from typical compression. Physical examination must include palpation along the course of the nerve to assess for focal tenderness or a mass. Imaging in suspected cases is helpful to identify a calcified mass, which likely would require a biopsy for definitive diagnosis. Surgical resection of the mass may improve pain, contracture, and strength if the nerve can be partially spared. Recurrence at the same or another site is exceedingly uncommon.

References

Illustrations

Illustration 1

Fig 1. Radiograph showing calcified lesion adjacent to the humeral shaft in the region of the radial groove.

Illustration 2

Fig 2: Intra operative photograph showing the lesion in the radial nerve.
Illustration 3

Fig 3: Radial nerve being incised longitudinally to excise the calcific mass.
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