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Intraneural Ganglion Cyst of the Radial Nerve Mimicking Compressive Radial Neuropathy

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Intraneural ganglion cysts (INGCs) involving peripheral nerves of the upper extremity are extremely rare and remain poorly understood. In particular, INGCs originating from the elbow joint and involving the radial nerve are exceptionally uncommon; to our knowledge, only five cases have been reported in the literature.

Case presentation

A 77-year-old man presented to the neurology clinic with right finger weakness that he noticed upon awakening after alcohol consumption six weeks earlier. Compressive radial neuropathy was suspected, and steroid treatment was administered; however, no clinical improvement was observed, and he was referred for rehabilitation.

On physical examination, the muscle bulk of the brachioradialis was not palpable during resisted elbow flexion. Manual muscle testing revealed Medical Research Council (MRC) grade 0 strength in the common extensor muscles and in all finger extensors, including the thumb. Sensory examination demonstrated decreased light touch and pinprick sensation in the distribution of the right superficial radial nerve.

Plain radiography revealed degenerative osteoarthritis (Fig. 1A). Ultrasonography identified a cystic lesion within the radial nerve (Fig. 1B). Magnetic resonance neurography demonstrated a multilobulated, elongated cystic lesion within the radial nerve communicating with the radiocapitellar joint, suggesting an intraneural ganglion cyst originating from the elbow joint (Fig. 2).

Motor nerve conduction studies showed a compound muscle action potential amplitude of 12.1 mV on the left and 0.1 mV on the right. Electromyography findings supported severe radial neuropathy, and the patient was referred to a peripheral nerve surgeon for operative management.

Intraoperatively, a ganglion cyst was identified at the bifurcation of the deep and superficial branches of the radial nerve. The lesion was firmly adherent to surrounding tissues, and the nerve appeared nonviable; therefore, decompression was discontinued. Tendon transfer procedures were performed instead: pronator teres to extensor carpi radialis, palmaris longus to extensor pollicis longus, and flexor carpi radialis to extensor digitorum.

At the 6-month postoperative follow-up, wrist and finger extensor strength improved to MRC grade 2. However, the patient continued to experience difficulty with fine motor tasks, such as using chopsticks and a spoon.

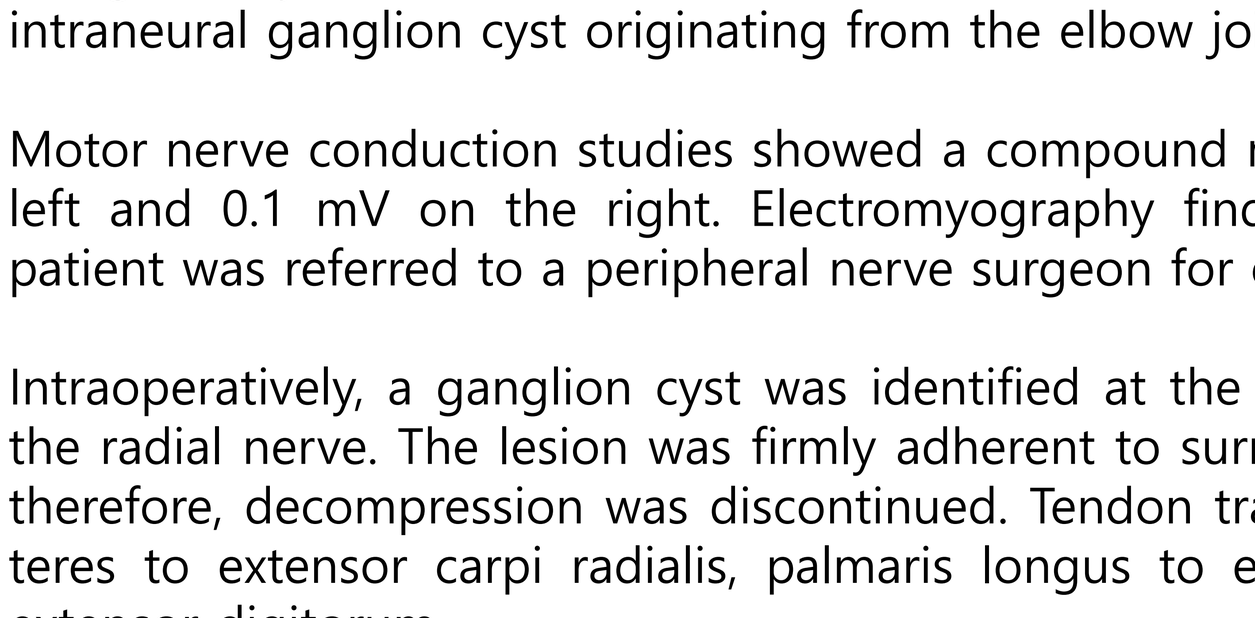

Fig 1A. Lateral Plain radiograph showing degenerative osteoarthritis.

Fig 1B. Ultrasonography demonstrating a cystic lesion within the radial nerve.

Fig 2. Magnetic resonance neurography demonstrating a multilobulated intraneural ganglion cyst of the radial nerve communicating with the radiocapitellar joint.

Conclusions

Idiopathic or compressive radial neuropathy is a relatively common focal neuropathy. However, intraneural ganglion cyst of the radial nerve originating from the elbow joint is exceedingly rare. When suspected idiopathic radial neuropathy follows an unusual clinical course or fails to improve as expected, early and detailed imaging studies should be considered to exclude structural causes such as INGC.