

BRACHIORADIALIS SYNDROME: AN ATYPICAL OVERUSE INJURY PRESENTING TO THE EMERGENCY DEPARTMENT

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ABSTRACT

Brachioradialis syndrome is an uncommon overuse injury that can manifest as diffuse forearm pain, particularly in individuals exposed to repetitive upper limb strain. We describe the case of a 28-year-old Information Technology (IT) male professional who presented to the Emergency Department (ED) of a tertiary care hospital in Mumbai, with sudden-onset bilateral forearm pain and muscle weakness following prolonged use of a laptop device. A thorough clinical assessment, along with imaging and neurophysiological investigations, helped exclude more frequent causes such as cervical radiculopathy, peripheral neuropathy, and primary muscle disorders. The patient improved with conservative treatment, including oral analgesics and ergonomic modifications.

Our case underscores the need to consider occupational and postural factors in patients with atypical musculoskeletal complaints.

Keywords: Brachioradialis syndrome, Overuse Myopathy, Emergency Department, Emergency Medicine

INTRODUCTION

Work-related musculoskeletal disorders (WRMSDs) are increasingly observed in modern sedentary and technology-intensive work environments. Among these, repetitive strain injuries involving the upper limbs are particularly frequent in individuals engaged in prolonged computer use (1). Brachioradialis syndrome, though relatively rare, is a type of forearm overuse injury often linked to repetitive forearm rotation, or sustained elbow flexion (1, 2).

This condition is frequently misdiagnosed as lateral epicondylitis or radial tunnel syndrome, due to overlapping symptoms; however, its unique clinical characteristics and underlying mechanisms necessitate independent consideration. Here, we present a rare case of bilateral brachioradialis syndrome in a young IT professional, an uncommon and underreported presentation in acute care settings.

CASE DESCRIPTION

A 28-year-old right-handed male employed in the Information Technology (IT) sector presented to the Emergency Department (ED) of a tertiary care centre in Mumbai, India with complaints of bilateral forearm pain persisting since a day. The patient described a gradual onset of diffuse pain affecting both forearms, extending proximally toward the elbows, and accompanied by mild muscle weakness. The discomfort was constant, dull in nature, and worsened by movements involving pronation and supination of the forearm. He denied any history of trauma, fever, numbness, tingling sensations, or neck pain, and reported no constitutional symptoms.

Further history revealed extensive use of a laptop device over the preceding three days, with daily work sessions exceeding 14 hours. He habitually rested his elbows on a hard desk surface and maintained a semi-flexed position of the upper limbs to operate a standard flat keyboard lacking wrist support. Breaks during work were infrequent or absent. He had no notable past medical or surgical history. He was not on regular medications, did not smoke, consumed alcohol occasionally, and had no known drug allergies.

CLINICAL EXAMINATION

The patient was alert, oriented, and appeared comfortable at rest. He was afebrile, and his vital parameters were; blood pressure 130/80 mm Hg, heart rate 90 beats per minute, respiratory rate 16 breaths per minute, and oxygen saturation 99% on room air. A detailed musculoskeletal assessment revealed the following:

A unique attitude was noted, the arms being in fixed flexion at the elbow with forearms in mid-prone position (Fig. 1). Diffuse tenderness was noted over the bulk of the brachioradialis muscle bilaterally. Pain was elicited during resisted elbow flexion maintaining forearms in the neutral position, and in forced pronation. There was no localized tenderness over bony landmarks, including the lateral epicondyle (Fig. 2). No swelling, redness, or increased warmth; range of motion in all upper limb joints was preserved, and pain-free. His neurological examination for cranial nerve function was intact. Tone was normal, and motor function grading was 5/5 across all major muscle groups in the arm and forearm. Deep tendon reflexes were normal and symmetrical. Sensory examination was intact to

light touch, pain, and vibration. There were no signs of muscle wasting or fasciculation.

INVESTIGATIONS

To evaluate potential structural and systemic causes, a series of diagnostic tests were conducted. Complete blood count, basic metabolic panel including total creatine phosphokinase levels, and blood gas analysis were all within normal limits. Radiography of both the forearms extending up to the elbows were conducted, excluding fracture, dislocation or subluxation. An electromyography with nerve conduction study was also performed, effectively ruling out neuropathy and/or myopathy.

The collective findings were unremarkable, helping to exclude differential diagnoses such as radial nerve compression, lateral epicondylitis, rhabdomyolysis, compartment syndrome, and early-stage myopathic processes.

MANAGEMENT & OUTCOME

The patient was discharged on the same day with instructions to follow up in the outpatient musculoskeletal clinic. He was prescribed a five-day course of non-steroidal anti-inflammatory medication for symptom control, and advised cold compresses, rest, and avoid activities involving repetitive or strenuous movements of the elbows and wrists.

He was educated on the importance of ergonomic modifications at the workstation, including adjusting desk and chair height to maintain proper posture, incorporating regular breaks during extended periods of computer use, and was referred to both physiatrist and occupational therapist in order to tailor corrective treatment and rehabilitation as per his needs.

DISCUSSION

The brachioradialis muscle is susceptible to the development of myofascial pain syndrome. This pain is most often the result of repetitive micro trauma to the muscle from such activities as turning a screwdriver, prolonged ironing, repeated flexing of the forearm at the elbow (e.g., when using exercise equipment), handshaking, or digging with a trowel. The trigger point is the pathologic lesion of brachioradialis syndrome, and it is characterized by a local point of exquisite tenderness in the

brachioradialis muscle. This trigger point can best be demonstrated by having the patient simultaneously flex and pronate the forearm against active resistance, as was noted in our patient. Occasionally, point tenderness over the lateral supracondylar ridge of the humerus may also be elicited (3).

In our patient, we were able to mechanically stimulate the trigger point by palpation and stretching, both of which produced intense local pain as well as referred pain. This sign, also known as the “jump sign”, is characteristic of brachioradialis syndrome (3), as is pain over the brachioradialis muscle that radiates from the lateral epicondyle and superior portion of the muscle into the forearm.

Brachioradialis syndrome, with or without compression of the sensory branch of the radial nerve (SBRN), is an uncommon condition. It is distinctively different from the often encountered radial tunnel syndrome. In a 2024 retrospective study (4), Hagert et al included twenty patients of brachioradialis syndrome within a seven-year period. The three most common presenting symptoms with isolated brachioradialis syndrome were radiovolar forearm pain (100%), disturbed sensation in the SBRN territory (85%), and hand/thumb fatigue (75%). Our patient did not demonstrate any involvement of the SBRN, as confirmed clinically and validated by the nerve conduction study, but however had the cardinal symptoms of forearm pain and fatigue.

CONCLUSION

Patients presenting with unexplained upper extremity pain and fatigue, especially in the absence of structural or neurological abnormalities, should prompt the Emergency Clinician to consider occupational overuse syndromes, such as brachioradialis syndrome. Early diagnosis, combined with ergonomic interventions and appropriate conservative treatment can lead to favourable outcomes, including preventing progression to SBRN compression, and thereby mitigate the risk of long-term disability.

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FIGURE LEGENDS

Fig. 1 Attitude of both forearms, semi-flexed at the elbows, maintained in mid-prone position. Trigger point marked ‘x’ over the superior portion of brachioradialis.

Fig. 2 Lateral view of the right forearm and elbow, with ‘x’ marked over the lateral epicondyle of humerus, and the belly of brachioradialis muscle. There were no clinical signs of lateral epicondylitis.



Fig. 1



Fig. 2

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