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Supracondyloid process of the humerus: a case report

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An acute case of anterior lower arm pain accompanied with hand numbness and decreased sensation in a young male athlete is presented. A number of conditions can cause similar pain and sensory disturbance resulting in patients presenting themselves to a chiropractic office for alleviation of this symptomatology. This article discusses a rare cause of pain and sensory disturbance due to a supracondyloid process of the humerus and Struther's ligament causing median nerve compression.
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KEY WORDS: chiropractic, nerve, paresthesia, supracondyloid process.

Nous présentons le cas d'un jeune athlète souffrant de douleur aiguë à l'avant-bras antérieur accompagnée d'un engourdissement de la main et d'une diminution sensorielle. Un bon nombre de facteurs peuvent provoquer des douleurs et des troubles sensoriels similaires qui conduiront les patients à se présenter chez un chiropracteur pour être soulagé de ces symptômes. Cet article décrit une cause rare de douleur et de trouble sensoriel dus à la compression du nerf médian par le supracondyle de l'humérus et le ligament de Struther.
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MOTS-CLÉS : chiropractie, nerf, paresthésie, supracondyle.

Introduction

The supracondyloid process is a bony spur or an abnormal process of bone that projects towards the elbow joint and originates near the distal aspect of the humerus. It is not truly an exostosis, which Dorland's Illustrated Medical Dictionary describes as "a benign bony growth projecting outward from the surface of a bone, characteristically capped by cartilage".[1] Typically, an exostosis projects away from the joint in the direction of muscle and tendon pull.[2]

The supracondyloid process and the attached fibrous tissue (Struther's ligament) can form a foramen through which the median nerve can pass and thus be a cause of nerve compression. The resulting symptomatology may include cutaneous sensory numbness, burning and tingling in the first three fingers and the radial half of the ring finger.[3] The grip may be weakened causing frequent dropping of objects. Since this process is composed of bone, it is also subject to fracture and associated symptomatology.

Patients with this condition may present to a chiropractic office for treatment, The chiropractor must differentiate between the many causes of median nerve involvement, including thoracic outlet syndrome,[4] myofascial trigger points involving the scalenes,[5] cervical root syndrome of C6 or C7,[6] brachial plexus radiculitis,[7] and carpal tunnel syndrome.

Case report

Mr. RR, an 18-year-old male of French-Canadian background presented himself to the office with pain localized to the anterior lower arm near the crease of his elbow joint. The pain started immediately after receiving a direct blow to the area while playing tackle football.

On examination no brusing was seen. The range of elbow motion was painfully limited in flexion. No soft tissue swelling was seen. However, upon palpation crepitis and a moveable mass of bony consistency was felt near the elbow joint. There were no sensory changes in the arm but he noted subjective numbness and mild sensory deficit in the index finger when comparing both hands. All upper extremity reflexes were normal.

A radiographic study of the elbow joint was carried out. Antero posterior (A-P), lateral and internal oblique views revealed a bony spur measuring 20 mm located 7 cms proximal to the elbow joint. (Figure 1) Its axis was directed medially and distally toward the joint. A radiolucent area within the spur with slight displacement of the distal portion of the spur was observed. (Figure 2)

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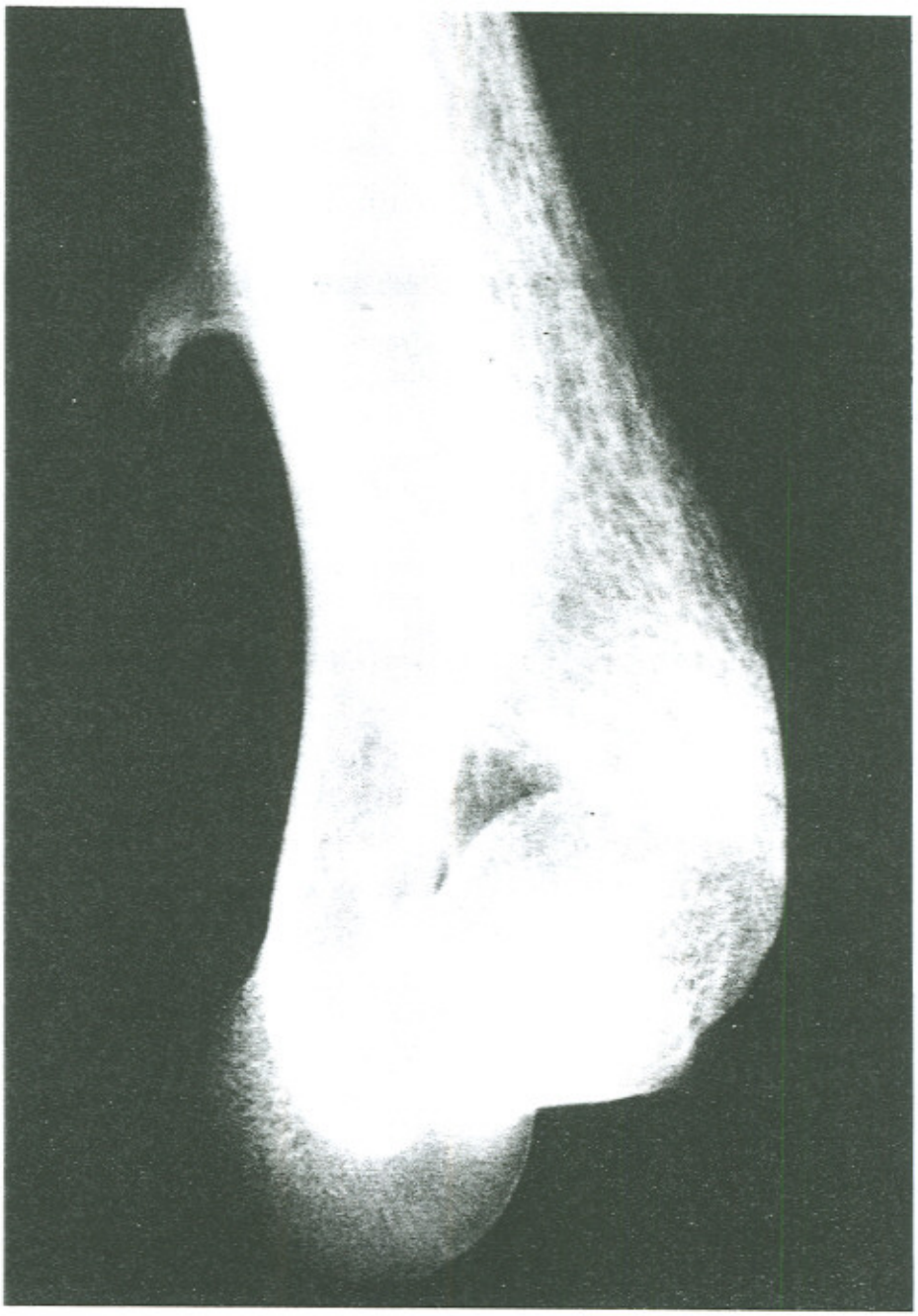

Figure 1 Bony spur proximal to elbow joint (supracondyloid process).

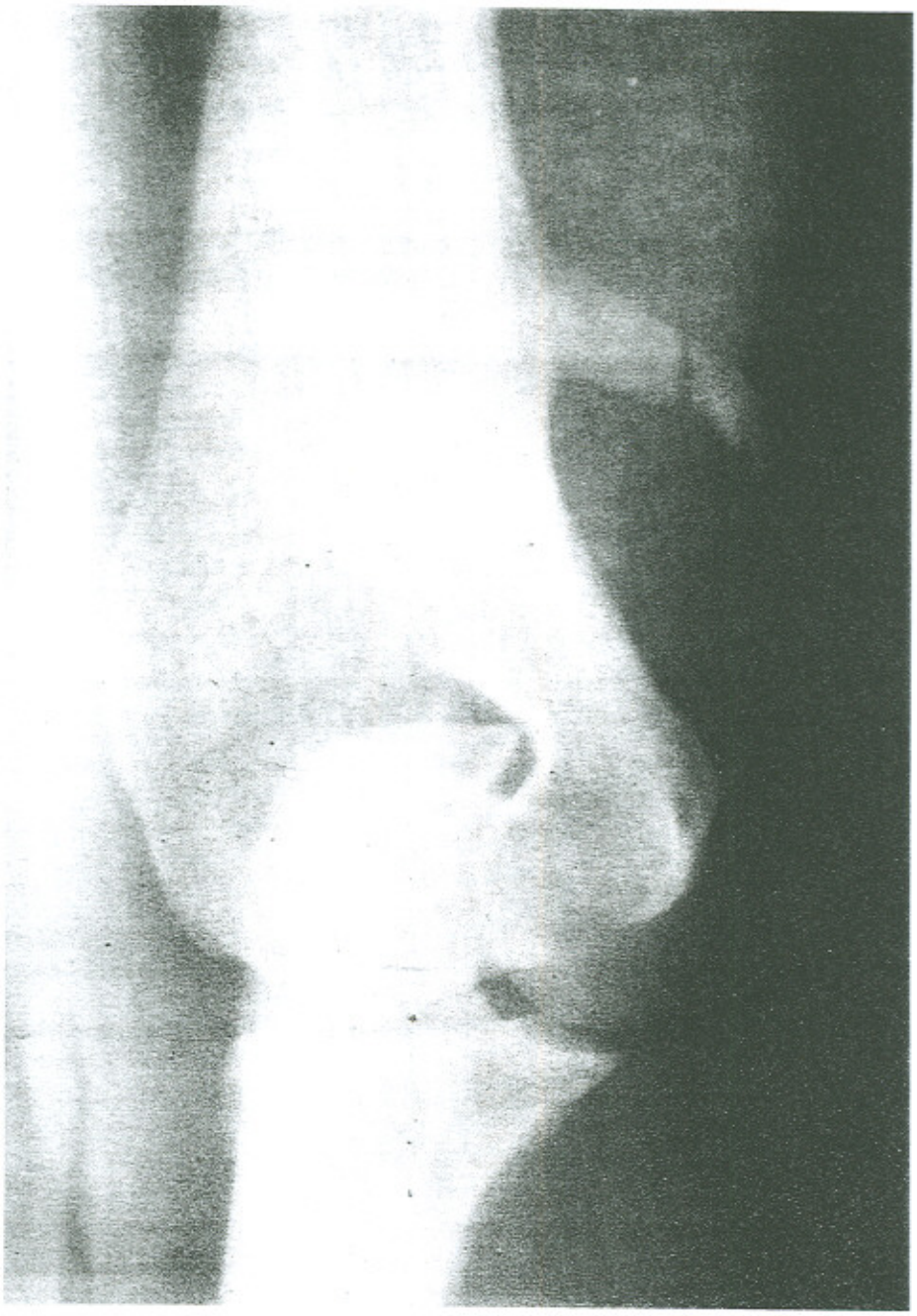

Figure 2 Radiolucent area within the spur with slight displacement (fracture).

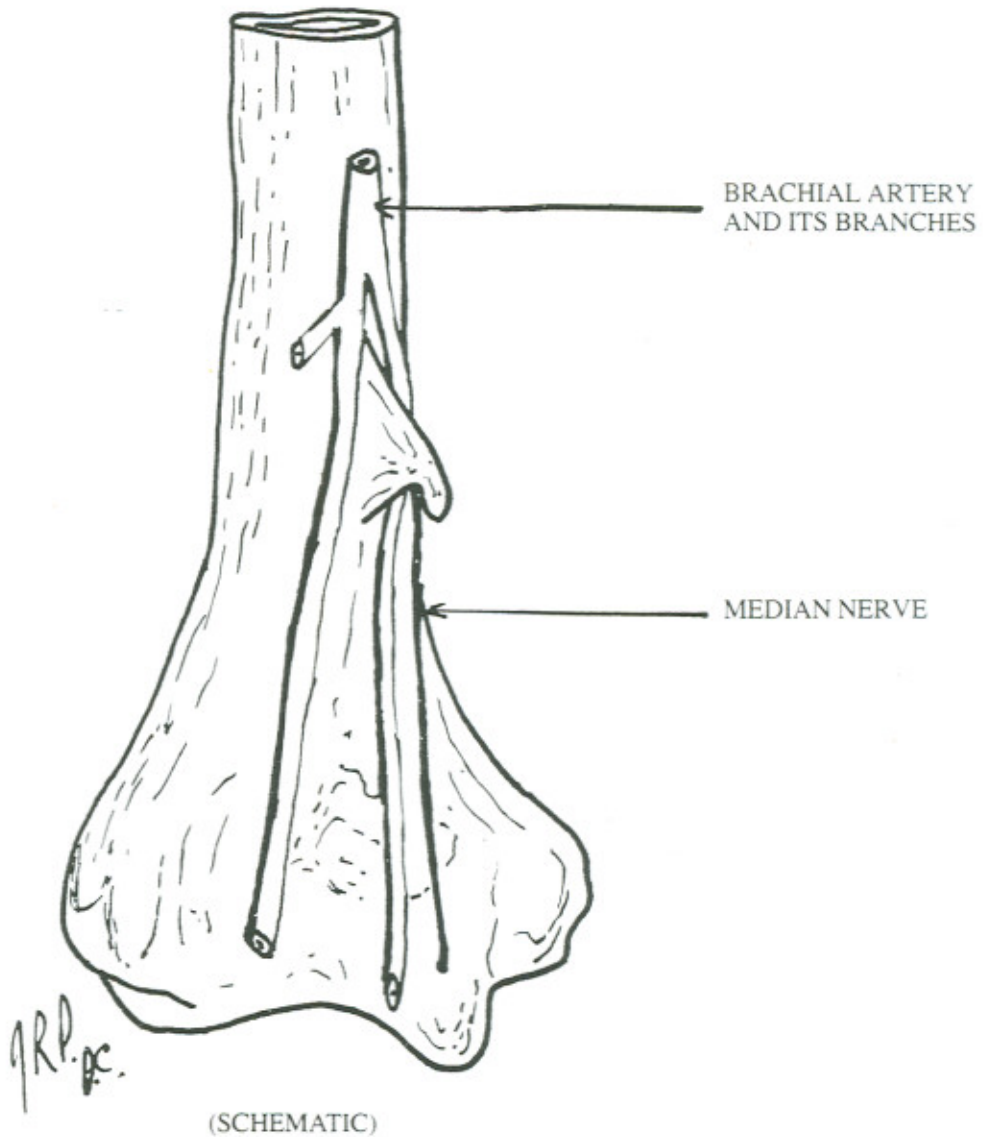

Figure 3 Specimen of distal humerus with supracondyloid process and its relationship to the brachial artery and median nerve.

A diagnosis of a fractured supracondyloid process was made. A contusion neuropathy was also considered because of the traumatic history. The patient was treated via cryotherapy to help reduce any swelling. Arrangements were made for an orthopedic consultation where surgical resection was carried out to remove the fractured segment. Good results were obtained and neurological symptoms regressed one month following surgery.

Discussion

The supracondyloid process (variously named the supracondylar, epicondylic, or supra epitrochlear process, by different authors) occurs as a beaklike process on the medial aspect of the lower third of the humerus. It is found in approximately 1 percent of people of European ancestry and has long been known to anatomists, anthropologists, and zoologists.[8,9] This osseous spur can arise from five to seven centimeters above the medial epicondyle of the humerus and extends obliquely down-

ward and forward in a medial direction. The apex of this process is sometimes joined to the medial epicondyle by a band of fibrous tissue which has been called Struther's ligament. This rare congenital anomaly may cause compression of either the median nerve, the brachial artery, or both.[9–15]

The foramen thus formed by the spur and ligament will have the median nerve pass through it. Frequently it is accompanied by the brachial artery or one of its branches, and by the radial or ulnar artery.[14] (Figure 3) The process may afford insertion to a persistant lower part of the coracobrachialis muscle. Usually the pronator teres has an anomalous origin from the process, when present, as well as from the fibrous band and overlies the median nerve and brachial artery at this point.[14,16,17,18]

The supracondyloid process and its ligamentous band constitute the homologue in a rudimentary form of a bony canal present in many animals. McGregor states: "A supracondyloid foramen is present in many extinct and living reptiles and in many mammals, especially the mammalian orders which are archaic and primitive. Most marsupials have it, and it is present in many carnivores, for example the cat. Among the primates it is found in American monkeys but not Old World monkeys. Among the anthropoid apes it has been found occasionally in the organgutan and gorilla."[8]

Anthropologists for years have looked for and recorded the incidence of the supracondyloid process among primitive peoples and racial groups. In the state of Mississippi, Terry reported finding a surpacondyloid process in 6 of 515 whites but only once in 1,000 negroes. He later concluded that the supracondyloid variation appeared markedly among people of European stock and was probably indicative of fundamental differences in origins of the human races. A familial incidence has been reported in numerous instances[19].

The close anatomical relationship of the median nerve to the supracondyloid process would lead one to expect occasional sensory or motor disturbances in that nerve. Several authors have reported cases who had median nerve symptoms including severe paresthesia and hypaesthesia of the hand and fingers, caused by the presence of the supracondyloid process.[9,10,12,13,15] Surgical removal has resolved the neuralgia in several cases.[11–13] There have been cases in which a bony spur has regenerated from the periosteum.

Summary

The supracondyloid process, when present, is often associated with a ligamentous band called Struther's ligament, which is attached to the medial epicondyle, and with an anomalous origin of the pronator teres muscle. This rare congenital anomaly may form a foramen where the median nerve and brachial artery may pass through and be subject to compression. The supracondyloid process can cause a syndrome characterized by pain and sensory distrubance along the distribution of the median nerve in the hand. It is essential to include the supracondyloid process within a list of differential diagnoses of hand pain with sensory disturbance.

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