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Case Report

Tumoral calcinosis producing peripheral nerve compression of the suprascapular nerve: A case report ☆

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ABSTRACT

Tumoral calcinosis is a rare disorder characterized by the deposition of calcium phosphate crystals in periarticular soft tissues, often presenting as asymptomatic masses. However, these calcific masses can occasionally cause significant morbidity by compressing adjacent neurovascular structures. We report a rare case of tumoral calcinosis leading to peripheral nerve compression of the suprascapular nerve in a 55-year-old female. The patient presented with progressive shoulder pain and weakness, significantly affecting her daily activities. Imaging studies, including X-ray, CT, and MRI, revealed large, calcified masses in the scapular region compressing the suprascapular nerve. This case highlights the importance of considering nerve compression in the differential diagnosis of shoulder pain with muscular weakness in tumoral calcinosis. Surgical decompression of the nerve and excision of the calcified masses resulted in significant pain relief and partial recovery of shoulder function. This report underscores the critical role of imaging in the diagnosis and management of tumoral calcinosis and the potential for favorable outcomes with timely surgical intervention.

Introduction

Tumoral calcinosis is a rare disorder characterized by the abnormal deposition of calcium phosphate crystals in periarticular soft tissues, often leading to significant clinical manifestations. This condition typically affects large joints such as the hips, elbows, and shoulders, where excessive calcification can cause pain, swelling, and functional impairment. Although its presence in these common sites is well-documented, the

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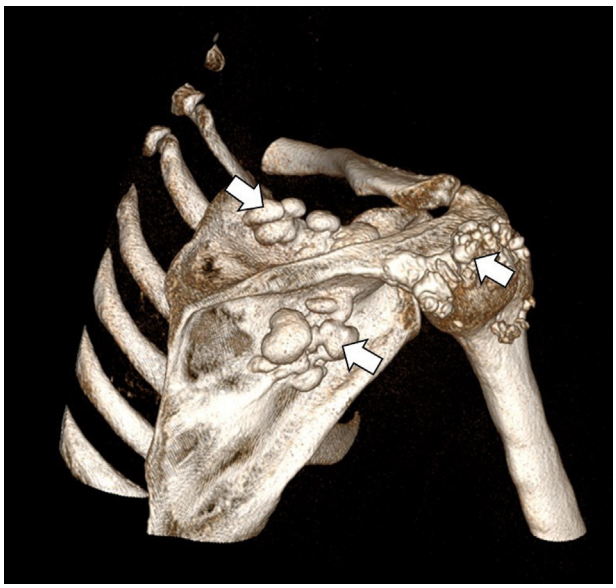

Fig. 1 – CT scan in VRT reformat revealing multiple lobulated calcified masses around the scapular region (white arrows).

involvement of peripheral nerves is exceedingly uncommon and presents unique diagnostic and therapeutic challenges. In this case report, we present a rare instance of tumoral calcinosis causing compression of the suprascapular nerve. The suprascapular nerve, which innervates the supraspinatus and infraspinatus muscles, is crucial for shoulder stability and function. Compression of this nerve can result in significant morbidity, including shoulder pain, muscle atrophy, and functional impairment. This report details the clinical presentation, diagnostic workup, and therapeutic management of a patient with tumoral calcinosis involving the suprascapular nerve.

Case report

The patient, a 55-year-old white female, was admitted with severe shoulder pain and progressive right arm weakness. The onset of symptoms was gradual over 6 months, leading to difficulties with overhead activities and increasing night pain. The patient had a known history of a shoulder mass for the past 10 years which caused only minimal dull pain after strenuous exertion but had never sought medical consultation for it. Otherwise, the patient had been in good health, and she denied any history of trauma or systemic illness.

Physical examination revealed tenderness over the suprascapular region and a palpable, firm mass. There was noticeable atrophy of the supraspinatus and infraspinatus muscles, along with a significant reduction in the range of motion in the right shoulder. Strength testing showed weakness in abduction and external rotation of the right arm. The remainder of her physical examination was unremarkable. Initial laboratory analysis was normal.

CT scan revealed multiple lobulated calcified masses around the scapular region (Fig. 1), mild fat stranding is noted at the deltoid region. A calcified nodule at the supinatus muscle is noted abutting the spinoglenoid notch (Fig. 2).

MRI demonstrated a mass lesion compressing the suprascapular nerve, extending from the supraspinatus fossa to the spinoglenoid notch (Fig. 3). The mass was hypointense on T1 and T2-weighted images, with mild contrast enhancement noted at the interface between the calcified masses and the subcutaneous tissue in the deltoid region, indicative of pseudo-bursitis (Fig. 4). There is moderate DP and STIR hyperintensity of the supraspinatus and infraspinatus muscles, indicating muscle suffering (Fig. 5).

The imaging findings suggested the diagnosis of tumoral calcinosis, which was confirmed by anatomopathological examination. The patient underwent surgical decompression of the suprascapular nerve and excision of the calcified mass. Postoperatively, she experienced significant pain relief and partial recovery of shoulder function. A regimen of follow-up physiotherapy was prescribed to maximize the recovery of strength and mobility in the affected limb.

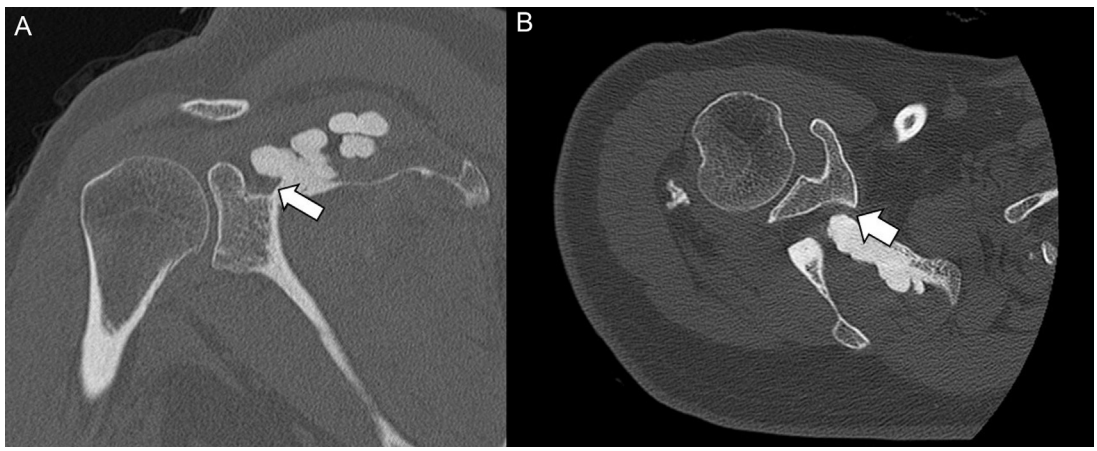

Fig. 2 – CT scan in coronal (a.) and axial (b.) views showing a calcified nodule at the supinatus muscle is noted abutting the spinoglenoid notch (white arrow).

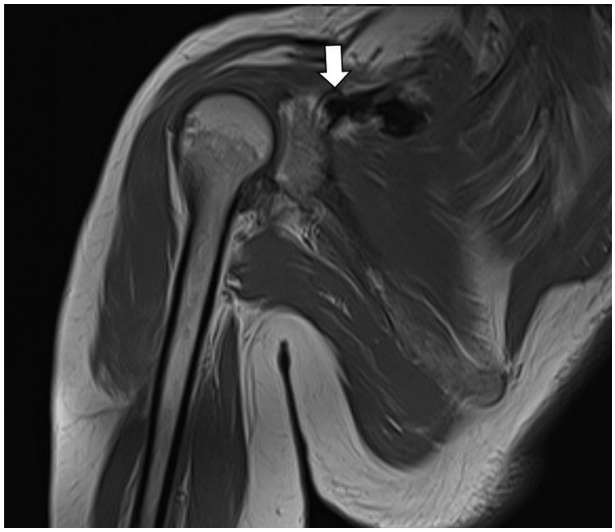

Fig. 3 – MRI in T1 coronal view demonstrating a mass lesion compressing the suprascapular nerve (white arrow), extending from the supraspinatus fossa to the spinoglenoid notch.

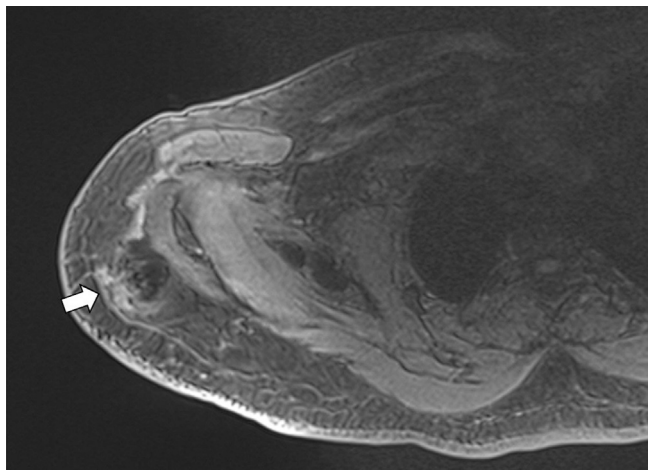

Fig. 4 – MRI in axial T1 FS showing mild contrast enhancement (white arrow), noted at the interface between the calcified masses and the subcutaneous tissue in the deltoid region indicative of pseudo-bursitis.

Discussion

Tumoral calcinosis (TC) is a rare clinical and histopathological condition marked by the deposition of calcium salts in various peri-articular soft tissue areas. It primarily occurs during childhood or adolescence, presenting as painless, firm, tumor-like masses around the joints, which can result in joint function limitations, particularly when the masses are large [1].

Despite various theories, the exact cause of TC remains unknown. Smack and al [2] proposed pathogenesis-based classification as follows, primary Normo-phosphatemic TC with normal calcium and phosphate level, like what our patient presented, Primary Hyper-phosphatemic TC with normal calcium levels, high phosphate levels and secondary TC often associated with chronic renal failure.

The diagnosis of Tumoral Calcinosis (TC) primarily relies on imaging techniques. Plain radiographs typically reveal amorphous, multilobulated, and cystic calcifications situated in a peri-articular location [3]. Computed tomography (CT) is useful in assessing the extent and relationships of individual lesions, as well as aiding in surgical planning. CT scans usually show cystic spaces with fluid-fluid levels, indicative of calcium layering, which is known as "the sedimentation sign" [4]. In some cases, such as ours, the lesions may appear homogeneous, suggesting reduced activity during the quiescent

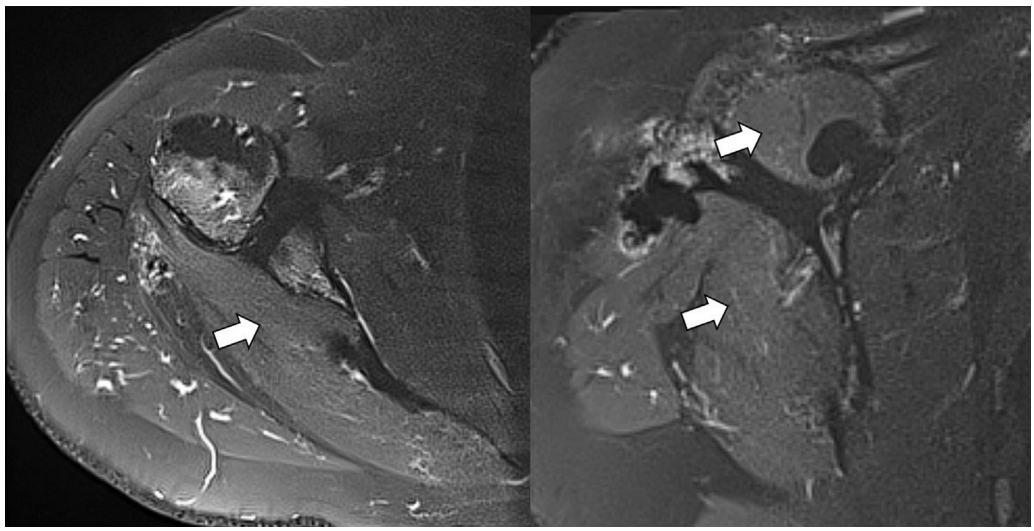

Fig. 5 – MRI in DP axial and sagittal views showing moderate hyperintensity (white arrows) of the supraspinatus and infraspinatus muscles, indicating muscle suffering.

stage [5]. Notably, erosion or bone destruction by adjacent soft-tissue masses is consistently absent [3], which is a key characteristic of this condition. Magnetic resonance imaging (MRI) demonstrates inhomogeneous high signal intensity on T2-weighted sequences, with 2 common patterns: a diffuse lower-signal-intensity pattern or a nodular pattern with alternating areas of high signal intensity and signal void. On T1-weighted sequences, the lesions appear inhomogeneous with low signal intensity [1].

The clinical presentation of this lesion is mostly benign and typically includes pain, restricted movement in major joints, and skin breakdown [6]. In rarer instances, it can impact nearby nerve structures, resulting in neurological deficits. Due to the uncommon nature of this condition, only a handful of cases involving nerve structures have been documented in the literature to date [7].

Treating tumoral calcinosis with nerve involvement is challenging primarily due to the large size of the lesions and their tendency to infiltrate surrounding soft tissues. These lesions often expand significantly, sometimes eroding into bone and potentially displacing or encasing crucial neurovascular structures. Additionally, resection can result in significant soft tissue and skin defects, necessitating a multidisciplinary surgical approach [7].

It has been suggested that the initial size of the lesions in tumoral calcinosis and the presence of residual tumor are positive predictors of tumor recurrence. In both cases presented in the current study, the tumors were large, firm, extensively infiltrated into the soft tissue, and difficult to resect. Additionally, the lesions were either enveloping or compressing major adjacent nerves, necessitating early identification and protection of these structures by the surgeons during the procedures. Although complete resection is desirable, it is often unattainable. Therefore, close follow-up evaluations and ongoing medical treatment are critical in managing patients in these challenging cases [2].

Conclusion

This case underscores the importance of considering tumoral calcinosis in patients with unexplained shoulder pain and weakness. Imaging modalities such as X-ray, CT, and MRI are vital for accurate diagnosis and guiding surgical management. Timely surgical intervention can lead to favorable outcomes in cases of nerve compression due to tumoral calcinosis.

Patient consent

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images. The patient has given her consent for her clinical details to be reported in the medical literature. Efforts have been made to ensure the patient's anonymity, and the patient has been informed that the case details will be published in a way that maintains confidentiality.

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