Ulnar nerve tuberculoma: A case report and literature review

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ABSTRACT

Ulnar nerve tuberculoma is a rare case of tuberculous involvement of the peripheral nerve, which has attracted the attention of physicians. Here, we report the case of a patient with ulnar nerve tuberculoma. A 25-year-old patient presented progressive numbness on his left hand and forearm, and typical symptoms were not evident. The patient had no history of trauma or contact with any individuals with active tuberculosis. Exploratory surgery was performed and a granuloma-like lesion was found on the left ulnar nerve of the patient. The lesion was completely removed. We prepared hand-painted renderings for this rare disease for the first time, to the best of our knowledge. Histopathological examination of the specimen confirmed the presence of tuberculoma. After 1 year of adequate antitubercular treatment, the patient recovered fully. Doctors need the most detailed radiographic information and histological results to confirm the diagnosis of this rare disease. At present, surgery is an effective way to resolve symptoms of ulnar nerve tuberculoma.

1. Introduction

Central nervous system (CNS) tuberculosis, including brain and spinal cord tuberculosis, is no longer a rare disease. However, tuberculosis involving the peripheral nerve remains difficult to detect. Patients with CNS tuberculosis usually present with meningitis and tuberculomas [1,2]. Tuberculomas are also a common manifestation of peripheral nervous system (PNS) tuberculosis [3–5]. With the increasing number of patient reports, ulnar nerve tuberculoma has raised a concern among physicians. To the best of our knowledge, a total of five patients with ulnar nerve tuberculoma have been reported in the literature to date [4–8]. Here, we report the case of one more patient with ulnar nerve tuberculoma. By using the clinical characteristics of ulnar nerve tuberculoma and the study literature, we comprehensively analyzed the case of this patient to lay a foundation for future clinical work.

2. Case report

A 25-year-old man was admitted to our hospital on September 22, 2013, with the chief complaint of a 1-month history of progressive numbness in his left hand and forearm without any injures and trauma. Ten days earlier, he experienced radiating pain in his affected forearm. The patient revealed only an anamnesis of 15 years after a femur operation.

Local physical examination revealed firm, mobile, nontender subcutaneous nodules with well-defined margins over the proximal ulnar aspect on the patient's left arm and elbow joint. There was hypesthesia without skin changes, lymphadenopathy, and limitation of movement at the elbow joint along the ulnar nerve distribution.

Neurological examination indicated a decrease in pain, temperature, touch, and vibration sensations along the distribution of the left ulnar nerve. Mild atrophy without typical ulnar claw hand deformity was observed in the patient's left hypothenar muscles and interosseous membrane. The muscular force in the last two fingers of his left hand was lost. Two-point discrimination on his left hand subsided compared to the healthy hand. Tinel test on the lesion, Froment's test, clip paper test, and palm-to-palm test were negative. The remaining neurological and general examinations revealed no apparent changes.

Monocyte count had increased to 0.76×10^9/L, and the percentage of lymphocytes had slightly decreased. Other routine laboratory results were within the normal range. Rheumatoid factor, C-reactive protein, and erythrocyte sedimentation rate values had increased to 40 IU/mL, 34.4 mg/L, and 24 mm/h, respectively. The Mantoux test was negative.

Chest radiographs (Fig. 1) revealed a cord lesion in the middle part of the left lung, while radiographs (Fig. 1) of the left elbow joint did not reveal any abnormality. MRI of the left elbow was conducted (Fig. 1) with sequences in the coronal, axial, and sagittal planes, and the following finding was obtained: multiple rounded abnormal signals with irregular margins on the left distal humerus and the proximal ulnar. Hyperintense lesions were noted on T2-weighted MR and proton–density-weighted images, while low-intensity lesions were noted on T1-weighted MR images. Additionally, annular enhancement of lesions was found in proton–density-weighted images.

While the patient was under general anesthesia, the lesion was explored through a medial incision that extended from the junction of the middle and lower third of the upper arm, just below the epicondyle. The ulnar nerve was enlarged and hardened along the whole route, especially 5 cm distant from the cubital tunnel, whereas the nerve above and below the pathological field was normal. At locations where the ulnar nerve showed the most obvious pathological changes, a pale yellow granuloma-like lesion was observed and excised. Then, an epineurium incision was performed by a longitudinal incision over the thickened part of the nerve. The lesion that oppressed and invaded one-third of the medial bundle branches of the ulnar nerve originated mainly from the epineurium. Epineurium resection and endoneurolysis were performed to release the nerve bundle branches. The intraoperative situation is elaborately shown by photos and hand-painted renderings (Fig. 2). For ulnar nerve compression, the elbow tunnel was opened to further reveal the ulnar nerve. The specimen was then sent for pathological examination.

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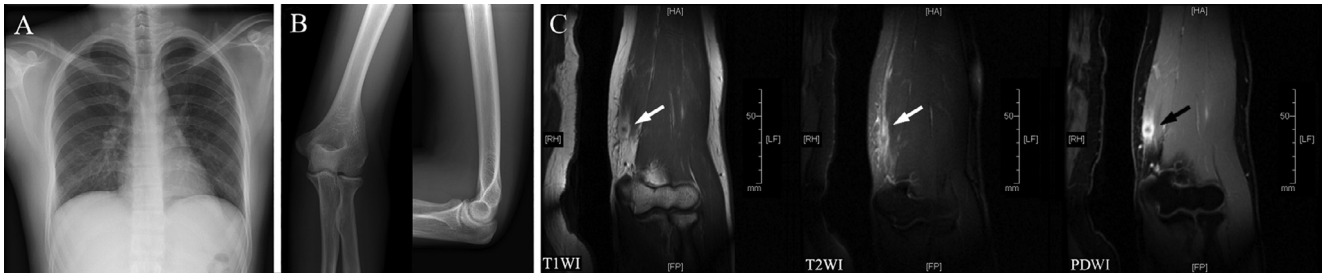

Fig. 1. Chest X-ray revealed a cord lesion in the middle part of the left lung. (B) X-ray shows normal left elbow joint. (C) MRI of the left elbow. MRI sequences in the coronal plane revealed multiple rounded abnormal signals with irregular margins on the left distal humerus and the proximal ulnar. Lesions on images were evident (highlighted by an arrow). Proton–density-weighted images showed hyperintense lesions with annular enhancement. Proton–density-weighted images = PDWI, T1-weighted MRI = T1WI, T2-weighted MRI = T2WI.

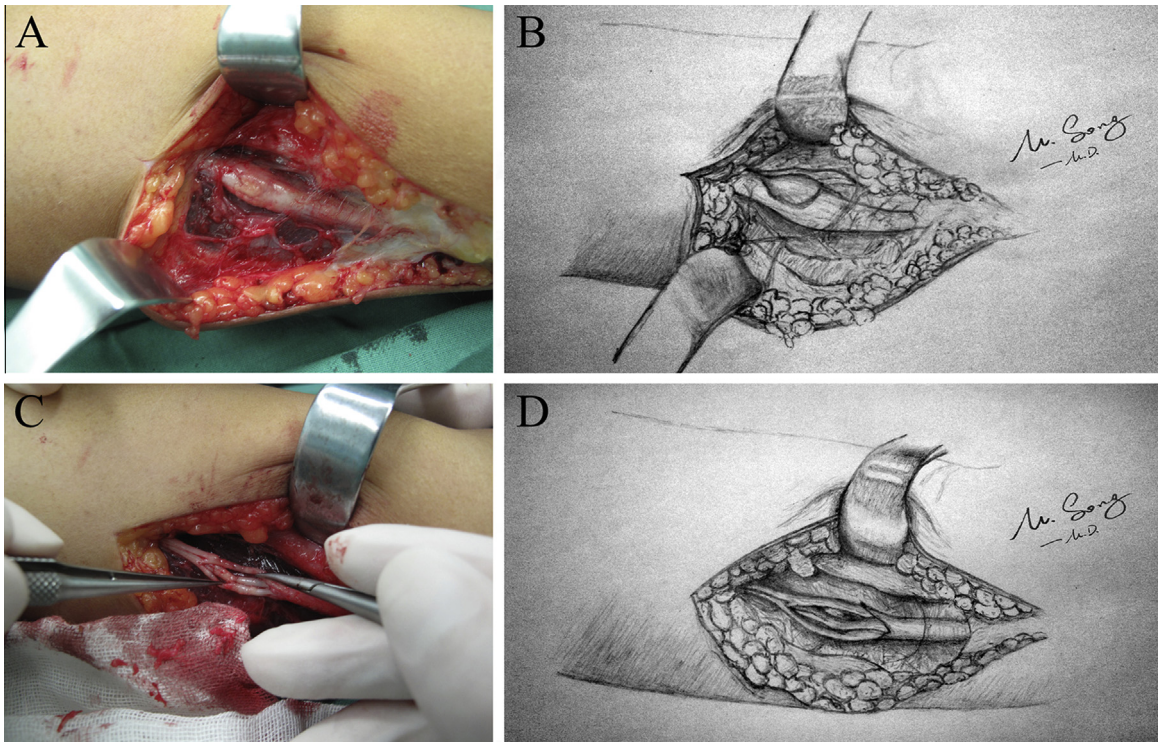

Fig. 2. (A, B) Part of the ulnar nerve was enlarged and hardened. At locations where the ulnar nerve showed the most obvious pathological changes, a pale-yellow granuloma-like lesion was observed to adhere to the nerve. (C, D) Following lesion excision, epineurium resection, and endoneurolysis, the nerve bundle branches dramatically loosened. Nerve tissues were adequately protected by the surgeons.

Macroscopically, the resected materials were grey medium tissues. Microscopically, the lesion consisted of proliferous fibrous tissue, cell nests, and caseous necrosis with no neural structure. Epithelioid cells, lymphocytes, plasmocytes, and Langhans giant cells are shown in Figure 3. On the basis of these findings, the patient was diagnosed to have ulnar nerve tuberculoma.

The patient received adequate antitubercular treatment including isoniazid and streptomycin. After 1-year follow-up, his motor and sensory disturbances on the left hand and forearm became asymptomatic.

3. Discussion

Tuberculosis is one of the most lethal infectious diseases worldwide. Every year, approximately 9 million people are infected with tuberculosis and 1.5 million people die due to this infection. Tuberculosis infects one-third of the world's population and 10% of the infected individuals develop active diseases [9]. To the best of our knowledge, among respiratory tract diseases, CNS tuberculosis accounts for 5–15% of extrapulmonary diseases [10]. Although PNS tuberculosis is rarer than CNS tuberculosis, physicians have begun to consider the involvement of the peripheral nerve because of the previous reports of 5 patients with this disease [4–8]. Meningitis and tuberculomas are two main pathological conditions of CNS tuberculosis, and tuberculomas are the main representation of peripheral nerve tuberculosis. Therefore, tuberculomas, which mimic other PNS lesions such as nerve sheath tumors, can be difficult to diagnose [8]. Previous and current patients with tuberculomas are listed in Table 1.

Previous reports have focused on the pathogenic analysis of this uncommon disease, and their conclusion remains unknown. However, it has been generally believed that a tuberculoma involving a