

Tubercular compound palmar ganglion – A review

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Abstract

Tuberculous tenosynovitis is a chronic and rare infection of flexor tendon sheath of forearm, mainly around the wrist. Patients presents with swelling and pain, and sometime also with neurological symptoms when median nerve get involved. Patient evaluated clinically for the diagnosis, but the MRI is the gold standard tool for the diagnosis. Histopathological evaluation is also needed to confirm the diagnosis. Management is mainly surgical followed by full course of anti tubercular therapy. A delay in the management may leads to complications due to asymptomatic swelling.

Keywords: Wrist swelling, Compound palmar ganglion, Tubercular tenosynovitis, Melon seeds, Median nerve.

Introduction

Tuberculous tenosynovitis of the flexor tendons of forearm distends the sheath proximal and distal to the flexor retinaculum, and it is known as Compound Palmar Ganglion.¹ Isolated tubercular disease of the bursa or synovial sheath occurs rarely; however, any synovial sheath or bursa can be involved.

Probably compound palmar ganglion is still a feature of tuberculous tenosynovitis of ulnar bursa in India, but in western countries it is mostly associated with rheumatoid arthritis.²

Tuberculous tenosynovitis is a rare condition but it is the main cause of chronic tendon sheath infection. The route of infection is either hematogenous dissemination or direct inoculation.^{3,4} The diagnosis of tubercular tenosynovitis is delayed due to multiple identical conditions. Differential diagnosis with poor clinical awareness leads to complications.

Applied Anatomy

Compound palmar ganglion affects both the radial and ulnar bursae of wrist and hand. The radial bursa is the synovial sheath around the tendon of the flexor pollicis longus in its course through the carpal tunnel. It begins about 2.5 cm proximal to the flexor retinaculum and continues to form the digital sheath of the thumb. The ulnar bursa is the synovial sheath around the little finger tendon, which begins at the terminal phalanx and extends proximally halfway up to the palm, where it envelops the superficial and deep tendons of the third, fourth and fifth digits. The ulnar bursa communicates with the radial bursa in 80% of cases, which accounts for hourglass shaped swelling that simultaneously affects both the bursae.⁵

Pathology

The disease is thought to reach the synovial membrane or bursa sheath by hematogenous spread, or from the underlying bone / joint disease or by a gravitational spread from a contiguous diseased area.

Histopathological examination of the excised tissue reveals the granulomatous nature of the lesion. In the early stage the tendon is replaced by granulation tissue. Later on, the sheath is obliterated by fibrous tissue. Yellow serous fluid is contained within the sheath, and melon seeds/ rice bodies may appear as a result of caseation. If healing by fibrosis fails then extensive caseation and granulation can occur.⁶

Clinical Presentation

Most of the patients present with chief complaints of pain and swelling around volar aspect of the wrist and discomfort during wrist movement. Sometime neurological symptoms may present as tingling sensation over fingers when the swelling is huge and tense, compressing the median nerve at carpal tunnel. The swelling is gradual in onset and progressive in nature.⁸

The condition is mostly associated with pain which is worse at night with disturbed sleep. Constitutional symptoms such as loss of appetite and loss of weight with evening rise of temperature may also present.⁷

Diagnosis

Diagnosis is made mainly by clinical evaluations and presentation, which depends on severity of involvement. History of constitutional symptom supports the diagnosis. For confirmation of diagnosis imaging is necessary. Sometimes the diagnosis is confirmed after histopathological evaluation.

Imaging

Radiological modalities play an important role in the diagnosis of compound palmar ganglion. Plain X-ray may demonstrate soft-tissue opacity and bone destruction.

Computed tomography (CT) can show solid-cystic nature of the lesion and bone destruction.

B-mode ultrasonography is a very useful diagnostic method to visualize, in real time, the proximal and distal extent of the lesion, and its contents and relation to the

flexor tendon sheath. Usually a heterogeneous solid-cystic lesion noted in and around the flexor pollicis longus, flexor digitorum superficialis and flexor digitorum profundus tendons, both proximal and distal to the flexor retinaculum.

Magnetic resonance imaging (MRI) is the excellent imaging modality to diagnose compound palmar ganglion. Pre- and post-contrast T1, T2 and 3DFGRE sequences are commonly used for both the coronal and axial planes. The lesion is hypointense on T1W1 and hyperintense on T2WI, and the thickened synovium/tenosynovium appears hypointense. Usually on post contrast studies, there is rim enhancement of the lesion.⁹

Laboratory investigations are usually normal except for a raised ESR and strongly positive Montoux test. The chest radiograph is usually unremarkable.

Nerve conduction studies (NCS) and electromyography (EMG) may reveal features of median nerve compression.⁹

Management

As the nature of lesion is infective a combined surgical and medical treatment, which may include excision of the infected tissue, tenosynovectomy, decompression of the median nerve followed by ATT for 6 to 9 months, gives good result and prevent recurrence of disease.¹⁰

Case Reports

Case 1

A 40-year old female came to outpatient department with complaints of swelling over the volar aspect of right wrist. She had also given history of dull aching pain which increases during night. Overall duration of her complaints was six months. She had also noticed tingling and numbness in her index finger. Along with above complaints she had also given history of evening rise of temperature and loss of weight.

On examination, hourglass shaped swelling present on the volar aspect of wrist. Swelling had showed cross-fluctuation above and below the flexor retinaculum. Blood parameters were within normal limits except for a high erythrocyte sedimentation rate (ESR) of 70 mm/hr in the first hour.

Radiography of the hand and wrist revealed diffuse soft-tissue swelling without any bony involvement. MRI scan has confirmed the mixed solid-cystic nature of the swelling.

On chest radiography, no obvious abnormality was noted. Neurological evaluation was suggestive of compression of median nerve.

A provisional diagnosis of compound palmar ganglion was made, based on the clinical and radiological findings.

The patient subsequently underwent surgery; the lesion was completely excised along with the involved tendon sheaths. Melon seed bodies were also present. The histopathology of the excised tissue revealed granulomatous inflammation with central caseous necrosis, surrounded by epithelioid cells and multiple giant cells. The patient had received 9 months of anti-tubercular chemotherapy, and quite well till date.

Case 2

A 26 years old female came to our OPD with chief complaints of pain and swelling over volar aspect of right wrist since 8 months. She had also complaints of discomfort during wrist movement and tingling sensation over radial two and half fingers. The swelling was gradual in onset and progressive in nature. The patient had been treated by another doctor where aspiration of fluid and FNAC was done which revealed chronic inflammation. She had also received oral steroid and NSAID, but could not relieve. There was no previous history of any trauma, pulmonary tubercular or any other inflammatory diseases.

On local examination there was swelling 6cmx2cm in size over volar aspect of right wrist which was tender and extending longitudinally both sides proximal and distal to the flexor retinaculum of the wrist. Swelling had showed cross-fluctuation above and below the flexor retinaculum.

Lab investigation showed raised ESR [40mm/hr] and CRP. Montoux test / tubercular reaction was strongly positive. There was no other significant finding in radiographs of right wrist and chest.

On surgery, there was thickening of flexor tendon sheath surrounded by yellow colour serous fluid. Tenosynovectomy was done and specimen sent for histopathological examination. Histopathology report had showed caseous necrosis, epithelial granulomatous lesion with Langerhans type giant cell. Patient had become symptomless after five months with full range of painless movement. She had received ATT for 9 months.

Case 3

The patient, a 32 year old housewife presented to our OPD with complaints of swellings over her left wrist joint from six months. She had noticed a progressive swelling at her volar aspect of wrist. There was no history of any trauma or any other similar swelling elsewhere in the body.

On examination the swelling was non-tender, firm in consistency with restricted mobility. Swelling had showed cross-fluctuation above and below the flexor retinaculum. Routine blood investigations were normal except for an elevated ESR (Erythrocyte Sedimentation Rate). X-rays of the wrist joint and chest was normal.

An ultrasound of the wrist joint was done and reported as a compound palmar ganglion.

Surgical excision was planned and executed. A lazy S-shape incision was made and deepened through the facial layers to reveal multiple well circumscribed lobulated lesions which seemed to be firmly adherent underlying tendon sheath. The melon seeds were also present in the lesion. The specimen was carefully dissected and excised. Complete haemostasis and proper distal digit function was ensured before closing the wound in layers. The cut specimen appeared to have central caseation. Histopathological examination reported the specimen as a tuberculous compound palmar ganglion. She had been put on ATT for 9 months.

Case 4

A 22 year old lady presented to our outpatient department with swelling over left distal forearm extending up to the wrist. According to her the swelling had increased progressively in size over past 2.5 months. She had also pain on pressure over swelling.

On examination a diffuse hourglass shaped swelling of about 5cm x 2cm over the volar aspect of left distal forearm extending up to the wrist. Swelling had showed cross-fluctuation above and below the flexor retinaculum. A severe tingling sensation along the course of median nerve was present. There was some interfering with the movement of the fingers. There was no any other similar swelling present in the body. Our provisional diagnosis was compound palmar ganglion or chronic tenosynovitis. Routine blood investigations were within normal limit; ESR was 70 mm, chest X-ray was normal. Rheumatoid factor and Montoux tests were negative. An ultrasound was done and the result was suggestive of a chronic tenosynovitis.

We operated through a lazy S-shape incision over left distal forearm and wrist. The affected synovial sheath resected from the tendon and on exploration median nerve was thickened. Biopsy sent for histopathological examination which had showed granulation tissue.

ATT had been given for 9 month and on follow up she was doing well.



Fig. 1: Pre-operative image

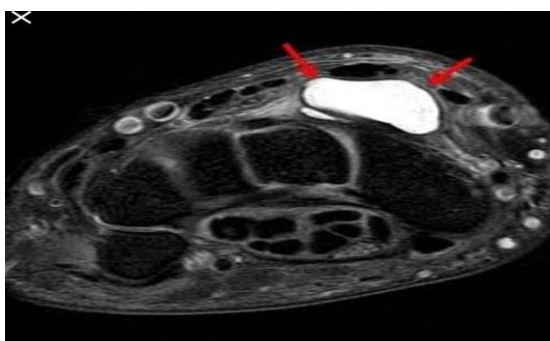


Fig. 2: MRI evaluation T2 weited image showing ganglion



Fig. 3: Intra-operative images

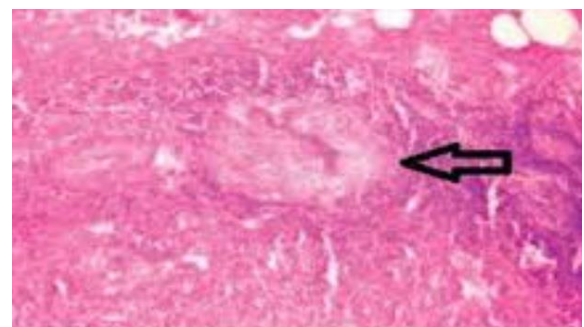


Fig. 4: Histopathological evaluation showing granuloma

Discussion

Tuberculosis is widespread in India, affecting various organ systems. The most commonly affected extra pulmonary sites are the lymph nodes, genitourinary system, central nervous system, bone marrow, and musculoskeletal system (bone, joint, bursa, tendon and tenosynovium).

Tubercular Infection of the wrist and hand is very rare. Diagnosis and treatment of this clinical entity is usually delayed due to asymptomatic swelling. Early diagnosis and treatment is most important as the lesion is destructive.

Pathogenesis of the condition is either direct inoculation or hematogenous spread from a distant focus in the genito urinary tract, lymph nodes, lung, or bones. There may be some interfering with the movements of the fingers. Paraesthesia due to median nerve compression may occur. The swelling shows cross-fluctuation above and below the flexor retinaculum.¹¹

Radiological modalities play an important role in the diagnosis of compound palmar ganglion. Plain radiography may demonstrate soft-tissue opacity and evidence of bone destruction. Computed tomography (CT) can show solid-cystic nature of the lesion and bone destruction. B-mode USG is a very useful tool to visualize extent of the lesion, and its contents and relation to the flexor tendon sheath. MRI is the best imaging modality in this context.⁹

Histopathological examination of the specimen reveals the granulomatous nature of the lesion.⁶

The treatment of compound palmar ganglion consists of excision of the lesion with antituberculous drugs.



Fig. 5: Post-operative image showing full range of movement

Summery

Compound palmar ganglion is a rare presentation of extra pulmonary tuberculosis. Slow progression and asymptomatic presentation other than swelling in early stages are main factor for the late diagnosis. MRI is the gold standard investigation but the role of USG cannot be underestimated. Both surgery and ATT is the mainstay of the treatment of compound palmar ganglion. Early diagnosis and proper management is very important to avoid complications.

Conflict of Interest: None.

References

1. Bush, D C, Schneider, L H Tuberculosis of the hand and wrist. *J Hand Surg* 1984;9A:391-98.
2. S. Das, A manual on clinical surgery 11th edition, page -319
3. Seiichi Higuchi, Shinichi Ishihara, Hiroyuki Kobayashi and Taidoh Arai: A mass lesion of the wrist: A rare manifestation of tuberculosis. [DOI: 10.2169/internalmedicine.47.0495]
4. Hitesh Lall, Suman K Nag, Vijay K Jain, Rahul Khare and Deepak Mittal: Tuberculous extensor tenosynovitis of the wrist with extensor pollicis longus ruptures: a case report. *J Med Case Rep* 2009;3:142.
5. Pimm LH, Waugh W. Tuberculous tenosynovitis. *J Bone Joint Surg Br* 1957;39-B(1):91-101.
6. Lall H, Nag SK, Jain VK, Khare R, Mittal D. Tuberculous extensor tenosynovitis of the wrist with extensor pollicis longus rupture: A case report. *J Med Case Rep* 2009;3:142.
7. Compound palmar ganglion: A tubercular manifestation of flexor tenosynovitis of the wrist K Arun Kumar, B Kanthimathi, CSK rishnamurthy, *Sujai IJCRI* 2012;3(2):28-31.
8. Mamoon Rashid, Saad Ur Rehman Sarwar, Ehtesham Ehtesham, Muhammad Zia Ul Islam, Kokab Shah: tubercular tenosynovitis: a cause of carpal tunnel syndrome. *JPM* 2006;56:116.
9. Hsu CY, Lu HC, Shih TT. Tuberculous infection of the wrist: MRI features. *Am J Roentgenol* 2004;183(3):623-8.
10. Daya Krishna, R.S Bisht, Vikas Sikarwar, Shubash Chand. Compound Palmar Ganglion: A Case Report. *IOSR J Pharm* 2012;2(6):20-2.
11. Kumar KA, Kanthimathi B, Krishnamurthy CS, Sujai S. Compound palmar ganglion: A tubercular manifestation of flexor tenosynovitis of the wrist. *Int J Case Rep Images* 2012;3(2):28-31.

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