

Poncet's Disease – A Commonly Missed Diagnosis

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INTRODUCTION

Tuberculosis (TB) is the leading cause of mortality among infectious diseases with estimated 1.5 million deaths from TB in 2018 -19 and presented as a public health concern. In 1897, the Frenchman Antonin Poncet first described Poncet's disease (PD) as a rare syndrome, where polyarthritis in an acute stage of TB, resolved without joint damage. Similar reports on patients of tuberculosis and joint pain led authors to improve the definition, and in 1978, PD was described as a para infective arthritis by Bloxham and Addy.

Regardless of its doubtful existence, cases have been continued to be reported over the years. Poncet's disease is a form of reactive arthritis which is characterized by articular affection in patients diagnosed with TB where there is immune reaction to the tuberculous protein but there is no direct invasion by the micro-organism.^{1,2} PD is to be differentiated from tuberculous arthritis where there is monoarticular and direct tubercular involvement of the joint. Before more obvious features develop, the sole manifestation of the disease is joint involvement. Crippling pain is experienced during polyarthritis which limits the mobility and activities of patients. Polyarthritis can also occur in common causes such as rheumatological diseases as a symptom and thus can be easily misdiagnosed.

Polyarthropathy, that is multiple large and small joints involvement in the body, is the one of the rarest presentations in both active pulmonary and extrapulmonary tuberculosis. This polyarticular impairment observed in patients with active TB, a form of reactive arthritis is known as Poncet's disease. Since there is no direct bacillary invasion of the joints, it is an aseptic form of arthritis. It is not to be confused with tuberculous arthritis, which is usually monoarticular and where there is direct tuberculin infection. Poncet's disease remains a diagnosis of exclusion. Since case reports are very rare even in countries where tuberculosis is common thus no accepted diagnostic criteria is set for Poncet's disease. This diagnostic possibility becomes increasingly important as the use of corticosteroids, immune suppressants or biologicals can risk further dissemination of the disease. We describe the case of a 50-year-old woman, who presented with active tuberculosis where polyarthralgia was the first and only symptom for four months. Polyarthritis patients were being treated with both non-steroidal anti-inflammatory drugs and antitubercular therapy and to the surprise patients with antitubercular treatment had complete resolution of symptoms after 6-week therapy whereas non-steroidal anti-inflammatory drugs (NSAIDS) offer no benefit. The total duration of therapy was 6 months.

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DOI: 10.18410/jebmh/2021/472

How to Cite This Article:

Gupta P, Raina R. Poncet's disease – a commonly missed diagnosis. J Evid Based Med Healthc 2021;8(28):2558-2561. DOI: 10.18410/jebmh/2021/472

Submission 27-03-2021,

Peer Review 06-03-2021,

Acceptance 26-05-2021,

Published 12-07-2021.

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PRESENTATION OF CASE

A 50-years-old female patient reported to the department with painful knees, wrists, and shoulder joints since the past 6 months. She also reported gradual deterioration over preceding months, resulting in slight difficulty in walking. The joint symptoms were present throughout the day with no diurnal variation. The intensity of pain in the larger joints including her upper lower limbs, elbow and knee joints has increased over period of time and got aggravated by joint movement and relieved by taking rest and NSAIDs. Patient also gave a history of morning stiffness which usually lasted for half an hour. She also reported about the low-grade evening rise of temperature, loss of appetite and weight and productive cough with sputum during the same period. There was no history of photosensitivity, oral ulceration, back pain, rash over the body, diarrhea, or burning micturition. There was no history of trauma, conjunctivitis, bowel or bladder symptoms, or similar episodes in the past. On examination, pallor was present and there was involvement of both wrist joints, interphalangeal joints and ankle joints in form of pain, tenderness and mild local swelling and there was no lymphadenopathy or erythema nodosum.

Investigations revealed TLC-7700 cells/cumm (N-71, L-24, E-01, M-04), Hemoglobin of 9 gm % and microcytic hypochromic picture on peripheral smear. Aerobic throat swab culture was negative.

An erythrocyte sedimentation rate (ESR) of 120 mmHg per 1st hour and Mantoux test was strongly positive (20 x 12 mm). Rheumatoid factor, anti-CCP (citrullinated peptide antibodies antibodies), c-ANCA and p-ANCA, anti-nuclear antibody (ANA) and anti-streptolysin O (ASLO) titre were negative. Ultrasonography (USG) of whole abdomen was normal except for cholelithiasis. Other investigations included serum C-reactive protein (CRP) (3 mg/L), lactate dehydrogenase (LDH) (204.71 U/L), uric acid (4.6 mg%) and angiotensin converting enzyme (ACE) (33.9 U/L), liver function test (LFT) (total bilirubin - 0.3 mg%, direct bilirubin - 0.2 mg%, serum glutamic oxaloacetic transaminase (SGOT) - 20 U/L, serum glutamic pyruvin transaminase (SGPT) - 9 U/L, alkaline phosphatase - 82 U/L), fasting blood sugar (FBS) - 149 mg%. post-prandial blood sugar (PPBS) - 86 mg%, serum sodium - 138 mmol/L, serum potassium - 4.3 mmol/L, serum urea - 14 mg/dl, creatinine - 0.5 mg/dl, all levels were within normal limits. Urine routine examination was normal. Chest X-ray revealed haziness in left mid and lower zones.

X-rays of the involved joints showed periarticular soft tissue swelling, and there were no changes of active tuberculosis.



Figure 1. Note the Involvement of Both Wrist and Interphalangeal Joints in Poncet's Disease. There is Mild Soft Tissue Swelling and Tenderness in the Affected Joints



Figure 2. Note the Involvement of Ankle Joints in Poncet's Disease. There is Mild Local Swelling and No Signs of Any Lymphadenopathy or Erythema Nodosum



Figure 3. Chest X Ray PA View Suggestive of Haziness in Left Mid and Lower Zones



Figure 4. X Ray of Involved Joints Showing Periarticular Soft Tissue Swelling

Patient's symptoms were not relieved by non-steroidal anti-inflammatory drugs, but had complete resolution of symptoms after 6 weeks of anti-tubercular therapy. The total duration of therapy was 6 months.

DISCUSSION

India has the largest number of TB cases in the world which accounts for over a quarter of the global TB and multidrug-resistant TB (MDR-TB) burden and presents as a major public health concern in India. Reports showed 2.79 million people became ill from TB, and 435,000 died from it in 2016. New cases of MDR-TB (including rifampicin resistance), with an estimated 147,000 cases in 2016 were reported in India. More than 850,000 TB cases in India were either undetected and untreated or diagnosed and treated with substandard drugs by healthcare providers where proper treatment regime was not followed. Approximately 1 % to 3 % of all cases of tuberculosis reported to affect bones and joints out of 10 to 11 % of extra-pulmonary tuberculosis patients. Triggering reactive conditions even subclinical should be kept in mind and tuberculosis should be ruled out. Patients on corticosteroids, immune suppressants or biologicals should be cautioned for the reactivation or dissemination of the disease. Due to direct isolation of *M. tuberculosis* from the joint, tubercular septic monoarthritis can be diagnosed easily but active TB which may be complicated by a sterile reactive arthritis is less known and therefore often underdiagnosed. Poncet's disease is used to indicate an aseptic polyarthritis, presumably a reactive arthritis, developing in the presence of active TB elsewhere.³ Although Poncet's disease is considered a reactive arthritis, the clinical presentation of Poncet's disease differs from the classical pattern of reactive arthritis.^{3,4,5}

The usual tuberculous arthritis which is monoarticular, infectious and destructive whereas in Poncet's disease there is neither evidence of bacteriological involvement of joint themselves nor any other known cause of polyarthritis detected. Poncet's disease is also known as tuberculous rheumatism due to its occurrence in patients with active visceral or disseminated tuberculosis.^{5,6} Although Poncet's disease is considered as a reactive arthritis, the clinical presentation of Poncet's disease differs from the classical pattern of reactive arthritis. In contrast to reactive arthritis, the onset of symptoms in Poncet's disease occur before the start of arthritis and is much longer than just a few weeks, whereas resolution of arthritis upon starting of adequate anti-tuberculous therapy is mostly within a few weeks.⁷ Chronic arthritis has never been reported in Poncet's disease. Furthermore, Poncet's disease is generally, not associated with sacroiliitis.

There are various hypothesis put forward to explain the pathogenesis of tubercular rheumatism. Genetic theory has been put forward describing a human leukocyte antigen (HLA) linked hyper responsiveness to *Mycobacterium* antigen.⁸ Immunological explanation has been given on the basis of finding a hypersensitive immune response to tuberculoprotein.⁹ Cross reactive immune response has also been thought of, on the basis of finding antigenic similarity

between human cartilage and fraction of *Mycobacterium tuberculosis*.¹⁰ The tubercular bacilli have been found to be arthritogenic. This fact is based on observing chronic synovitis in animals injected with heat killed desiccated TB bacilli.¹¹ Main mechanism after infection in arthritis which is caused by the migration of sensitized CD4+ cells together with bacterial antigens to the joints and thus result in systemic immunization. Experiments were done on animal model where injection of heat-killed desiccated *M. Tuberculosis* (complete Freund's adjuvant) were given and it results in arthritis.

To confirm the proposed hypothesis in humans, intravesical instillation of attenuated *M. bacillus Calmette-Guerin* was done in patients with bladder cancer receiving immunotherapy. In 0.5 % of these patients, a reactive polyarthritis was observed.¹² It is concluded that pain is due to rapid accumulation of periarticular fluid possibly due to exaggerated hypersensitivity reaction.¹³ The joint symptoms may precede other manifestations of tuberculosis or there could be simultaneously involvement of joints with pulmonary tuberculosis. In a case study, twenty-nine cases out of 50 patients (68 %) were male. Out of these, only 15 cases (30 %) presented with septic tuberculous arthritis that was ruled out by culture or histology. Septic tuberculous arthritis of one joint was demonstrated in five patients (10 %) with presumed non-septic arthritis of other joints. To rule out septic tuberculous arthritis further investigations like histology, culture or X-rays were done. In two of these patients, septic polyarticular tuberculous arthritis were culture positive. In the other three patients, no additional joint cultures were performed. Three patients had positive X-ray findings suggesting tuberculous destruction of bone and joints and no irreversible joint damage was observed in the 50 case reports.

Fifteen patients (30 %) presented with an oligoarthritis of less than four joints. In eight patients (16 %), polyarthritis was not localized. Knees and ankles were the most commonly involved joints accounting for 62 % and 57 % respectively, followed by the wrists (48 %) in 42 cases, and small joints of hand or feet were involved in 12 patients (29 %). The clinical diagnosis of TB was made in 10 (20 %) patients. 48 % patients had extra-pulmonary TB. X ray findings were reported in 50 % patients. Patients with erythema nodosum are about 14.6 %. Anti-TB drugs were given for 1 week to 4 months leading to complete resolution.¹⁴

CONCLUSIONS

Based on our observations, we propose that patients presenting to outdoor with unusual presentation of joint pains should be investigated to rule out tuberculosis in endemic regions. It is a diagnosis of exclusion but must be included in differential diagnosis especially in countries/regions where prevalence of *M. tuberculosis* infection is high.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

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