Poncet Disease, TB Reactive Arthritis, a Case Report in Upper Egypt and Review of the Literature

Abstract
Reactive arthritis in tuberculosis (TB) is known as Poncet’s disease (PD), a rare aseptic form of arthritis characterized by polyarticular impairment observed in patients with active TB, with no evidence of direct bacillary invasion of the joints. The literature related to that syndrome is scarce and restricted to case reports, which contributes to its under diagnosis. This study aimed at reporting a case of Poncet’s arthritis diagnosed at our hospital, and at reviewing the diagnostic and therapeutic aspects involved, so, we describe a case of Poncet’s disease in a 13-year-old girl whose reactive arthritis overshadowed other clinical symptoms of TB resulting in delayed diagnosis and treatment. Anti TB treatment was initiated. Clinical remission occurred after two weeks and the diagnosis of Poncet’s arthritis was established concluding that taking a thorough medical history as well as performing relevant examinations and investigations for possible TB especially in endemic areas will help expedite the diagnostic process even in absence of TB symptoms.

Keywords: Reactive arthritis; Tuberculosis; Poncet’s disease; Tuberculosis

Introduction

The incidence of tuberculosis (TB) has increased exponentially, according to the World Health Organization, in 2007, the incidence of new tuberculosis cases was 9.27 million [1] thus TB remains a major source of morbidity and mortality worldwide [2].

Approximately 10-19% of extra pulmonary TB involves joints and bones [3]. Almost half of these cases are spinal TB, followed by TB arthritis, TB osteomyelitis and reactive arthritis the latter reactive arthritis is known as Poncet’s disease (PD) [4].

PD is a rare syndrome first introduced in 1897 by the Frenchman Antonin Poncet when he described a polyarthritis in a patient with TB, which resolved without joint damage. Continuous reports [5] on patients with similar characteristics led authors to improve the definition and, in 1978, Bloxham and Addy defined PD as a parainfective arthritis [1], but its existence has been questioned; however, more cases have been reported over the years.

PD is characterized by articular impairment in patients diagnosed with tuberculosis, not related to direct invasion by the micro-organism, but to an immune reaction to the tuberculoprotein, constituting a reactive arthritis. This case is reported because of its rarity and in a tuberculosis endemic area of a country like Upper Egypt; one should keep this possibility in mind in patients with polyarthritis, as early recognition of this complication is of major importance to avoid delayed initiation of appropriate treatment [6,7].

Case Report

A case of PD was identified together with the Rheumatology, Chest and Neurology departments at the Aswan University Hospital, Egypt. A 13 year female, Ms. Arwa presented to Aswan University Hospital Rheumatology & Physical medicine Department, Referred by Chest Physician complaining of pain and swelling of joints of lower limbs for the last 15 days without relevant medical history except for admission with a 10-day history of chills, fever, and widespread myalgia 3 months before presenting, she denied any respiratory symptoms.

On elaborating; pain and swelling involved both knees & left ankle, (started with pain, followed by swelling 2 days later), the involvement of joints was simultaneous, there was difficulty in using the above joints, and other joints were not involved.

Physical examination revealed tachycardia, low grade fever of (Pulse 92/m, B.P 120/80, Temp. 38°C) and she had a BCG scar <4mm, her height and weight were appropriate for her age. Initial laboratory testing showed increased C-reactive protein (40 mg/dL), increased erythrocyte sedimentation rate (80 mm/h), and leucocytes of 13.5/mm3 and anti-streptolysin O (619 IU/mL) levels, complement 4, antinuclear antibody, anti-double stranded DNA, cytoplasmic anti-neutrophil cytoplasmic antibodies, and perinuclear anti-neutrophil cytoplasmic antibodies were negative.

The patient was hospitalized, and additional laboratory testing was performed, which resulted negative for mononucleosis, toxoplasmosis, cytomegalovirus, salmonellosis, brucellosis and HIV, acute rheumatic fever was excluded because of non-completion of modified Jones criteria.

Patient was started on Brufen Tablets 400mg BID & a week later, the patient was still complaining of pain and swelling of left knee and ankle with painful symmetrical skin rash on medial side of both knees, that mother applied a topical cream without physician advice that was seen by dermatologist and diagnosed as Erythema Nodosum. A synovial fluid analysis was made of the Left knee revealing no crystals. Standard cultures and cultures for TB of synovial fluid, blood, and sputum were negative. X-rays of the knee, ankles showed no abnormalities apart of soft
tissues swelling. Autoimmune laboratory tests including anti-cyclic citrullinated peptide and antinuclear antibodies were negative. Routinely ordered chest X-ray showed bilateral hilar lymphadenomegaly. A chest CT scan was performed showing multiple mediastinal and hilar lymph nodes with no focal lesion on lung parenchyma, these findings on CT were interpreted as a possible TB infection. The tuberculin skin test was measured as 30 mm. A PCR for TB was carried out that was found to be positive and a diagnosis of pulmonary TB and PD was made and isoniazid, rifampicin, pyrazinamide, and ethambutol were started, patient became afebrile and her joint pains improved within the following 15 days with complete resolution of all symptoms after 6 weeks of treatment including joint pain and swelling.

**Discussion & Review of the Article**

Tuberculosis is a very prevalent disease in developing countries including Egypt. Approximately 10% to 19% of the extrapulmonary tuberculosis cases affect bones and joints, corresponding to 1% to 3% of all cases of tuberculosis [3]. That possibility becomes increasingly important as the careless use of corticosteroids, immune suppressants or biologics as treatment of miss-diagnosed arthritis can trigger the reactivation or dissemination of the disease [1].

It is widely known that tubercular septic monoarthritis, in which Mycobacterium tuberculosis may be isolated from the joint, may complicate TB infection; but active TB may be complicated by a sterile reactive arthritis that is less known and therefore often missed [8]. Poncet’s disease is used to indicate an aseptic polyarthritis, presumably a reactive arthritis, developing in the presence of active TB elsewhere. Although Poncet’s disease is considered a reactive arthritis, the clinical presentation of Poncet’s disease differs from the classical pattern of reactive arthritis [9]. In contrast to reactive arthritis, the onset of symptoms in Poncet’s disease before the start of arthritis 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 & chronic arthritis has never been reported in Poncet’s disease [8]. In Poncet’s disease, the oligo or polyarticular impairment is more frequent than the monoarticular impairment, similarly to other reactive arthritis, involving mainly the large joints, such as knee, ankles, and hips, often accompanied by articular effusion. There is no microbiological evidence of the mycobacterium invasion in the affected joint [10]. In our patient, the serological tests for autoimmunity are negative, and the tuberculin test, as well as acute phase proteins, is altered.

The differential diagnosis of the case was either [11].

**Viral arthritis**

- Rubella involves mainly small joints
- Parvo virus B19 causing adult’s arthralgia
- Hepatitis B where symptoms resolve with jaundice & there are abnormal LFTs

**Arthropod borne**

- Fever with itchy rash
- Symmetric arthritis

- Small joints of hands & feet most commonly involved
- Large joints may be involved
- Resolves in 7—10 days

**Bacterial arthritis**

**Gonococcal arthritis:**
- Colonization of throat, cervix, urethra
- Gonococcal bacteremia
- Fever, chills, papules, pustules
- Migratory arthritis

**Non-gonococcal Arthritis:**
- S.aureus, S.pyogenes, H.influenzæ
- Monoarthritis usually
- Polyarticular in Rheumatoid Arthritis patients

**Reactive polyarthritis:**
- Occurs 1—4 weeks after non-gonococcal urethritis/enteric infections & caused byy, shigella, campylobacter or salmonella
- asymmetricoligo arthritis associated with uveitis, nconjunctivitis, rashes

**Gout**
- Occurs in elderly men/post menopausal women
- Premenopausal gout rare
- Initially mono articular polyarticular
- Metatarsophalangeal of 1st toe involved
- Attacks subside in 3—10 days

**Acute rheumatic fever: Criteria not fulfilled**

- Arthritis associated with Bacterial endocarditis: Criteria not fulfilled

**Chronic Arthritis initial presentation**

- SLE & RA: Criteria not fulfilled

**Conclusion**

The differential diagnosis of patients at risk for TB presenting with arthritis should definitely include Poncet’s disease. The diagnosis of Poncet’s disease remains clinical, and is established on excluding other potential causes of arthritis in a patient with active tuberculosis. The complete resolution of arthritis of Poncet’s disease on anti-tuberculous therapy also provides further proof of the diagnosis.

**References**

1. Schweitzer LC, Lipharski F, Prezzi SH (2011) Poncet’s arthritis: case report. Rev Bras Reumatol 51(4): 388-390.
2. Nachega JB, Chaisson RE (2003) Tuberculosis drug resistance: a global threat. Clin Infect Dis. 36(1): 24-30.
3. Thabah MM, Chaturvedi V (2014) An approach to monoarthritis. Symposium-Rheumatology 19(1): 12-18.
4. De Backer AI, Vanhoenacker FM, Sanghvi DA (2009) Imaging features of extraaxial musculoskeletal tuberculosis. Indian J Radiol Imaging 19(3): 176-186.

5. Ariza PM, Pando SA, García MC, Casan P (2016) Poncet’s disease mimicking rheumatoid arthritis in a patient with suspected Crohn’s disease. Clin Case Rep 4(1): 72-75.

6. Mohanty L, Debananda S, Sudhansu SP, Suman SR (2015) A case of Poncet’s disease. Int J Adv Med 2(3): 285-287.

7. Jamison DT, Breman JG, Measham AR, George A, Mariam C, et al. (2006) Disease Control Priorities in Developing Countries. (2nd edn), Washington, USA.

8. Kroot EJ, Hazes JM, Colin EM, Dolhain RJ (2007) Poncet’s disease: reactive arthritis accompanying tuberculosis. Two case reports and a review of the literature. Rheumatology 46 (3): 484-489.

9. Haldar S, Ghosh P, Ghosh A (2011) Tuberculous arthritis - The challenges and opportunities: Observations from a tertiary center. Indian Journal of Rheumatology Articles 6(1): 62-68.

10. Al-Sayyad MJ, Abumunaser LA (2011) Tuberculous arthritis revisited as a forgotten cause of monoarticular arthritis. Ann Saudi Med 31(4): 398-401.

11. Ariza MP, Pando SA, Garcia CM, Casan P (2016) Poncet’s disease mimicking rheumatoid arthritis in a patient with suspected Crohn’s disease. Clinical Case Reports 4(1): 72-75.