Poncet disease, tuberculosis-arthritis: a case report in upper Egypt and a review of the literature

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Reactive arthritis in tuberculosis (TB) is known as Poncet's disease, 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 this syndrome is scarce and restricted to case reports, which contributes to its underdiagnosis. This study aimed at reporting a case of Poncet's arthritis diagnosed at our hospital, and at reviewing the diagnostic and therapeutic aspects involved; hence, 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 2 weeks and the diagnosis of Poncet's arthritis was established, concluding that taking a thorough medical history and performing relevant examinations and investigations for possible TB, especially in endemic areas, will help expedite the diagnostic process even in the absence of TB symptoms.

Keywords:
Poncet's disease, reactive arthritis, tuberculosis

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Introduction

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

Approximately 10–19% of extrapulmonary 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 an acute stage of 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 affection in patients diagnosed with TB, not related to direct invasion by the micro-organism, but to an immune reaction to the tuberculous protein, constituting a reactive arthritis. This case is reported because of its rarity, and in a TB-endemic area of a country such as 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].

Case report

A case of PD was identified together with the Rheumatology, Chest, and Neurology Departments at Aswan University Hospital, Egypt. A 13-year-old female student presented to Aswan University Hospital, Rheumatology & Physical Medicine Department, referred by a chest physician, complaining of pain and swelling of both knee joints for the last 15 days without a 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. Patient consent was obtained from her guardian (father).

On elaborating, pain and swelling involved both knees and the 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.

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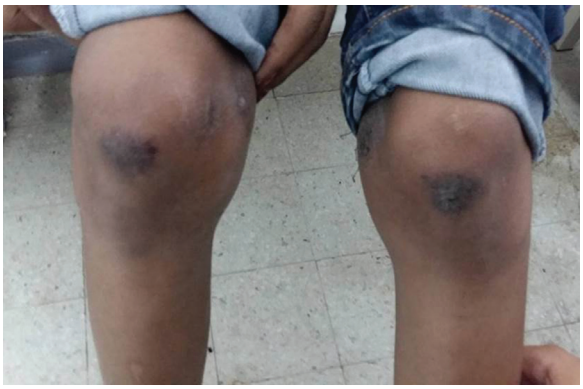
Physical examination revealed tachycardia, low-grade fever (pulse 92/m, blood pressure 120/80, temperature 38°C), a BCG scar less than 4 mm, and height and weight that were appropriate for her age. Initial laboratory testing showed increased C-reactive protein (40 mg/dl), normal liver enzymes, an increased erythrocyte sedimentation rate (80 mm/h for the first hour), hemoglobin 10 g/dl, total leukocytes 13.5/mm^3 with 62% segmented polymorphonuclear leukocytes, 44% lymphocytes, and 2% monocytes, and platelet count 200×10^3/μl; antistreptolysin O (619 IU/ml) levels, complement 4, antinuclear antibody, antidouble-stranded DNA, cytoplasmic antineutrophil cytoplasmic antibodies, and perinuclear antineutrophil cytoplasmic antibodies were of normal values.

The patient was hospitalized, and additional laboratory testing was performed, which was negative for mononucleosis, toxoplasmosis, cytomegalovirus, salmonellosis, brucellosis, and HIV; acute rheumatic fever was excluded because of noncompletion of the modified Jones criteria. She was referred for ophthalmic consultation, which was negative for signs of iridocylitis.

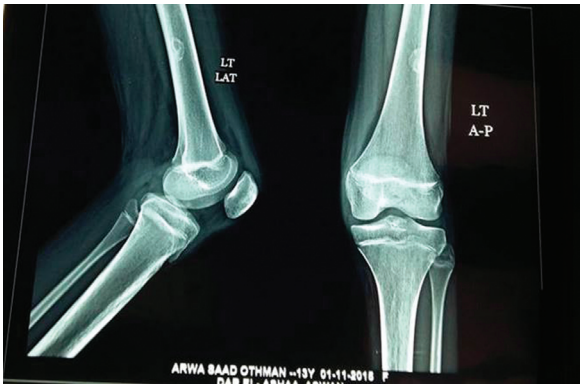
The patient was started on Brufen tablets 400 mg twice daily, and a week later, the patient was still complaining of pain and swelling of the left knee and ankle, with painful symmetrical skin rashes on the medial side of both knees; she reported that her mother applied a topical cream without physician advice, which was seen by a 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 the synovial fluid, the blood, and the sputum were negative. Radiography of the knee and ankles showed no abnormalities apart from soft-tissue swelling. Autoimmune laboratory tests including rheumatoid factor, anticyclic citrullinated peptide, and antinuclear antibodies were negative. A routinely ordered chest radiography showed bilateral hilar lymphadenomegaly. A chest computed tomographic scan was performed, showing multiple mediastinal and hilar lymph nodes with no focal lesion on the lung parenchyma; these findings on computed tomography were interpreted as a possible TB infection. The tuberculin skin test was measured as 30 mm. A PCR for TB was carried out on the patient's sputum, which was found to be positive; a diagnosis of pulmonary TB and PD was made, and isoniazid, rifampicin, pyrazinamide, and ethambutol were started; the patient became afebrile and her joint pain improved within the following 15 days, with complete resolution of all symptoms after 6 weeks of treatment, including joint pain and swelling (Figs 1–4).

Figure 1



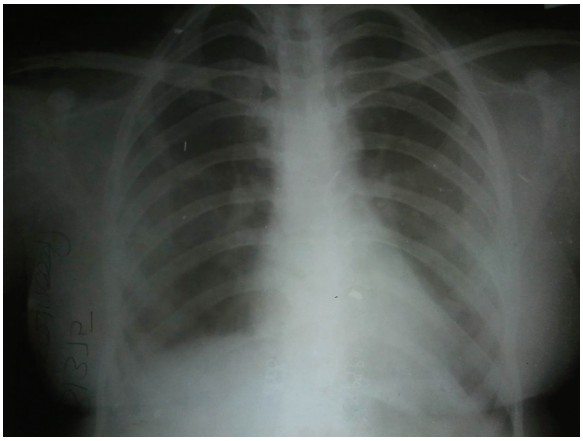
At presentation, bilateral knee arthritis, with symmetric painful rashes over the front and the medial sides of both knees.

Figure 2



At presentation, normal radiography in both knees.

Figure 3

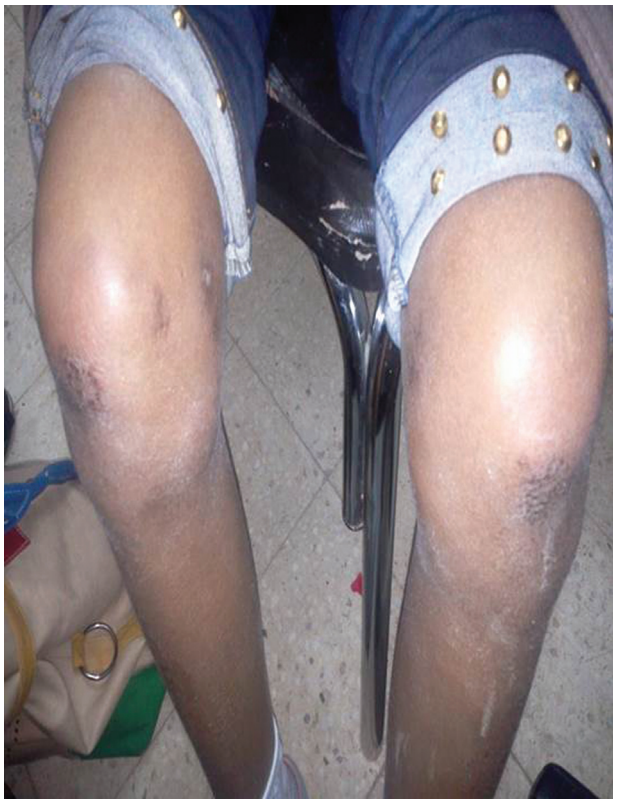


At presentation, a chest radiography showed only increased bronchopulmonary markings with no focal lesions.

Discussion and review

TB is a very prevalent disease in developing countries including Egypt. Approximately 10–19% of the extrapulmonary TB cases affect bones and joints,

Figure 4



Two weeks of antitubercular therapy, no arthritis, and improved rashes.

corresponding to 1–3% of all cases of TB [3]. This possibility becomes increasingly important as the careless use of corticosteroids, immune suppressants, or biologicals as the treatment for misdiagnosed arthritis can trigger the reactivation or the 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; however, active TB may be complicated by a sterile reactive arthritis that is less known and therefore often missed [7]. PD is used to indicate an aseptic polyarthritis, presumably a reactive arthritis, developing in the presence of active TB elsewhere. Although PD is considered as a reactive arthritis, the clinical presentation of PD differs from the classical pattern of reactive arthritis [8]. In contrast to reactive arthritis, the onset of symptoms in PD before the start of arthritis is much longer than just a few weeks, whereas the resolution of arthritis upon starting of adequate antituberculous therapy is mostly within a few weeks, and chronic arthritis has never been reported in PD [7]. In PD, oligoarticular or polyarticular impairment is more frequent than monoarticular impairment, similar to other reactive arthritis, involving mainly the large joints, such as knees, ankles, and hips, often accompanied by articular effusion. There is no microbiological evidence of the *Mycobacterium* spp. invasion in the affected join [9]. In our patient, serological tests for autoimmunity were negative, and the tuberculin test and acute-phase proteins, were altered.

The differential diagnosis of the case was one of the following: [10,11]

(1) Viral arthritis:
Rubella involves mainly small joints.
Parvo virus B19 causing adult arthralgia.
Hepatitis B where symptoms resolve with jaundice and there are abnormal liver function tests.
(2) Arthropod-borne arthritis:
Fever with itchy rash.
Symmetric arthritis.
Small joints of hands and feet most commonly involved.
Large joints may be involved.
Resolves in 7–10 days.
(3) Bacterial arthritis:
(a) Gonococcal arthritis:
Colonization of throat, cervix, urethra.
Gonococcal bacteremia.
Fever, chills, papules, pustules.
Migratory arthritis.
(b) Nongonococcal arthritis:
Staphylococcus aureus, *Streptococcus pyogenes*, *Hemophilus influenzae*.
Monoarthritis are usually polyarticular in rheumatoid arthritis patients.
(4) Reactive polyarthritis:
Occurs 1–4 weeks after nongonococcal urethritis/enteric infections and is caused by Yersinia spp., Shigella spp., Campylobacter spp., or Salmonella spp.
Asymmetric oligoarthritis associated with uveitis, conjunctivitis, rashes.
(5) Gout:
Occurs in elderly men/postmenopausal women, premenopausal gout rare, initially monoarticular, attacks subside in 3–10 days.
Acute rheumatic fever, juvenile idiopathic arthritis, and seronegative oligoarthritis: criteria not fulfilled.
Arthritis associated with bacterial endocarditis: criteria not fulfilled.
Erythema nodosum may also present under conditions that include certain medications (sulfa-related drugs, birth control pills, estrogens), Cat-scratch disease, fungal diseases, infectious mononucleosis, sarcoidosis, Behcet's disease, inflammatory bowel diseases (Crohn's

disease and ulcerative colitis), and normal pregnancy.

(6) Chronic arthritis:
Initial presentation: systemic lupus erythrematosis and rheumatoid arthritis: criteria not fulfilled.

Conclusion

The differential diagnosis of patients at risk for TB presenting with arthritis should definitely include PD. The diagnosis of PD remains clinical, and is established on excluding other potential causes of arthritis in a patient with active TB. The complete resolution of arthritis of PD on antitubercular therapy also provides further proof of the diagnosis.

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Conflicts of interest
There are no conflicts of interest.

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