On-line Case Report

Early syphilis: a cause of mono-arthritis of the knee

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The number of syphilis cases has increased in the UK in recent years, but many clinicians have limited experience in the diagnosis and treatment of this disease. If early diagnosis is not made and treated promptly with antibiotics, the disease may remain latent until the more serious manifestations of tertiary syphilis develop. We present the case of a 27-year-old man who presented with an acute mono-arthritis secondary to syphilis. The condition responded to antibiotic therapy. Orthopaedic surgeons should be aware of the diagnosis and consider it in patients with an acute arthropathy.

Keywords: Knee – Syphilis – Mono-arthritis

Syphilis is an infectious disease caused by the bacterium *Treponema pallidum* that is most often transmitted between individuals by sexual contact. In the UK, the incidence of syphilis declined in the 1980s, most likely as a result of changing behaviour in response to HIV.¹ Due to its rarity, many clinicians have limited or no experience in the diagnosis of this condition and many have the perception that syphilis has virtually disappeared. This is not the case. During the late 1990s, the number of syphilis cases in the UK increased, particularly amongst homosexual men.² Data from the UK Health Protection Agency have shown an increase in new diagnoses of syphilis made in genito-urinary clinics from 137 in 1996 to 2814 in 2007. Other high-risk groups include commercial sex workers and those in adult correctional facilities.³

The symptoms of primary and secondary syphilis including the primary chancre and rash are relatively innocuous and the diagnosis may not be made by clinicians with limited experience of this condition. If the diagnosis is not made, the disease may remain latent until the more serious manifestations of tertiary syphilis develop. It is, therefore, important that syphilis is recognised at an early stage. In this report, we describe

and discuss a case of secondary syphilis presenting with orthopaedic symptoms.

Case report

A 27-year-old man presented to the orthopaedic team with a 6-week history of gradual swelling and pain in the right knee with no preceding trauma. There was a large effusion of the right knee associated with limited range of motion. Thick, turbid, yellow fluid was aspirated from the knee, microscopy of which showed large numbers of white cells but no crystals or organisms. Serum investigations revealed mildly elevated liver function tests. The white cell count was $11.4 \times 10^9/l$ and C-reactive protein (CRP) was elevated at 287. Serology for rheumatoid factor, antinuclear antibody and anti-treponemal IgM enzyme immunoassay (EIA) was negative on the day following admission. Culture of the knee aspirate, obtained prior to the commencement of antibiotics, revealed no growth of bacteria. The antibiotic cefuroxime was administered intravenously on the day of admission. The following day, an arthroscopic wash-out of the knee was performed. On the third day of

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Figure 1 Pustular rash of secondary syphilis affecting palmar surface of hand.

admission, he developed a pustular rash on the plantar and dorsal surfaces of both hands and feet with an appearance similar to that of psoriatic skin lesions (Fig. 1).

Over the ensuing 5 days, the knee pain and swelling reduced in severity and active knee motion improved. During this period, he was assessed by dermatology and genito-urinary medicine specialists. On day 5, CRP and white cell count had decreased to 160 and $8.7 \times 10^9/l$, respectively, and erythrocyte sedimentation rate (ESR) was 78. Antitreponemal IgM EIA, which had initially been negative, was repeated on the seventh day of admission and on this occasion the antitreponemal IgM index was raised, consistent with early syphilis infection. The EIA results considered in conjunction with the clinical features confirmed secondary syphilis. On day 8, he was discharged and referred to the genito-urinary medicine team for further review as an out-patient. Further antibiotics were administered in the form of two doses

intramuscular benzathine penicillin 2.4 MIU, 1 week apart. Three months following presentation, his knee remained swollen, but functional.

Discussion

Syphilis has an early infectious phase and a late non-infective phase. Stages of disease have been described as primary, secondary and tertiary, but the natural history of the disease is highly variable. In primary syphilis, a small genital or peri-anal ulcer, known as a chancre, usually develops 2–3 weeks following contact but can take up to 3 months to appear. Secondary syphilis most commonly presents with a prodromal illness with malaise and mild pyrexia in addition to a rash, which invariably involves the hands and feet but can affect other areas. Mucous membrane lesions and lymphadenopathy may also be present. Wart-like skin lesions known as condylomata lata may develop around the genital or moist body regions. Less commonly, multiple systems are involved including liver, lungs, kidneys gastrointestinal tract, brain and eyes.

Polyarthritis with synovitis associated with early syphilis has been described and usually occurs 3–12 weeks into the secondary stage.⁴ The case we report is unusual because mono-arthritis rather than polyarthritis was the presenting feature. Synovial biopsy was not performed, but symptoms resolved after commencement of intravenous antibiotics and no other cause for the arthropathy was identified.

If untreated, symptoms can last several weeks and may follow a relapsing and remitting course for up to 2 years. Latent syphilis signifies a quiescent phase, which may last several years; if it remains untreated, tertiary syphilis can develop, manifestations of which comprise neurosyphilis, cardiovascular syphilis and gummatous syphilis.

The World Health Organization recommends the use of a combination of a non-treponemal test (Venereal Diseases Research Laboratory [VDRL] and rapid plasma regain [RPR] tests) and a treponemal test for screening and diagnostic purposes,⁵ but many laboratories use EIA as a single screening test. More recently, polymerase chain reaction (PCR) has been found to be both sensitive and specific for the detection of *T. pallidum* in syphilitic ulcers in both primary and secondary stage disease. The serological response to syphilis takes 1–4 weeks and serological screening tests may fail to detect up to 30% of primary syphilis. A course of penicillin is the treatment of choice, but when compliance is a problem, single-dose Azithromycin can be used as an alternative.

Conclusions

Although syphilis has a low prevalence in the UK, it is becoming more common so it is likely cases of acute

syphilitic arthropathy will increase. This case highlights the fact that secondary syphilis can affect multiple systems including the musculoskeletal system and affected patients may first present to an orthopaedic surgeon. Orthopaedic surgeons should be aware of the condition as a possible differential diagnosis, particularly in high-risk groups.

References

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