CASE REPORT

A pain in the joints

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SUMMARY

Arthralgia is a rare but recognised complication of meningococcal septicaemia. We report a case of a 29-year-old man presenting with a 24 h history of fever, joint swelling and subsequent development of a non-blanching, petechial rash. He was treated for probable meningococcal septicaemia and the causative pathogen was later identified as *Neisseria meningitidis*. He was treated with ceftriaxone and after 10 days the pain and swelling in his joints improved.

BACKGROUND

Diagnosis and treatment of meningococcal infection has been well documented.^{1–3} However, arthritis is a rare complication of *Neisseria meningitidis* septicaemia with the potential for long-term sequelae in terms of joint functionality. This is something we must consider, particularly in patients presenting at a young age where reduction in mobility would have a profound impact.

CASE PRESENTATION

A 29-year-old Caucasian landscape gardener with no previous known medical problems or recent foreign travel presented with a 1-day history of fever, chills, rigors and a sore throat. He reported swelling and pain in both ankle and wrist joints. On the day of admission, he developed a non-blanching, petechial rash that began in his feet and hands and progressed to involve his legs, thighs and upper limbs. Several episodes of non-bloody loose stools were also reported. He had a mild headache, with no photophobia neck pain or stiffness.

On arrival in the accident and emergency, his blood pressure was 90/40 mm Hg, pulse 110 bpm, temperature 38.8°C and Glasgow Coma Scale (GCS) of 15. His ankle and wrist joints were swollen, warm and tender.

INVESTIGATIONS

Blood tests showed a raised white cell count of $17.2 \times 10^9/L$, neutrophils $15.6 \times 10^9/L$ and platelets of $150 \times 10^9/L$. His international normalised ratio (INR) was 1.6 and C reactive protein 263. A chest X-ray, autoimmune profile, fibrinogen level, urine microscopy, renal and liver blood biochemistry were normal.

The following day, his blood cultures grew Gram-negative diplococci, later confirmed to be *N. meningitidis* sensitive to all antibiotics tested.

DIFFERENTIAL DIAGNOSIS

Vasculitis was considered as an alternative diagnosis and tests for antibodies were requested.

TREATMENT

He was treated with intravenous normal saline, ceftriaxone 2 g twice a day for 10 days, paracetamol 1 g six hourly and ibuprofen 400 mg eight hourly for 2 weeks as an anti-inflammatory. The INR was not therapeutically reversed.

OUTCOME AND FOLLOW-UP

The temperature, rash and joint swelling gradually improved; analgesics were still required at the time of discharge despite the patient regaining full functionality of the joints. His inflammatory markers and INR normalised. Following public health notification, his close contacts traced and treated. We have not followed up on this patient since, and thus we are not aware of any long-term sequelae in the affected joints.

DISCUSSION

This was a case of arthralgia presenting in the context of meningococcal septicaemia. The literature we describe discuss 'arthritis', the symptoms of which include arthralgia.

While meningococcal disease usually manifests with signs of meningism, arthritis can be a rare presenting feature of the disease.⁴ There is little clarification of the frequency with which the two conditions simultaneously coexist, particularly in adult patients.⁵ Goedvolk *et al*⁶ postulate that arthritis in relation to meningococcal infection may manifest at disease presentation as a direct consequence of bacteraemia, or later in the illness as an immunoallergic arthritis secondary to immune complex deposition.

Cabellos *et al*⁷ studied 522 episodes of 'Invasive Meningococcal Disease', 7.5% of whom presented with arthritis. Similarly, a prospective cohort study of 696 patients presenting with bacterial meningitis found coexistent arthritis in 7%.¹

Knees and ankles are commonly affected and in general short courses of antibiotic treatment are sufficient.⁷ In 33% of those studied by Cabellos *et al*,⁷ steroids were required for persistent joint

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Patient's perspective

Monday the 30th June was when I started to get ill, I was at work cutting grass for the council when I started to get a headache which progressed into a sore throat, cold sweats and an achey ankle on my right leg. I left work and went home thinking it was a really bad cold and bed rest and lemsips would help. That night I carried on having cold sweats throughout the night and vomited three times. The following morning I was still bad and tried to book an appointment to see my Gp, but he was fully booked so I carried on with bed rest and lemsips until I noticed a rash forming on my feet that was a violet purple colour.

We called the doctor and he instructed me to go to A&E as soon as possible. The rash had started to spread up my legs at this point and my ankles began to swell. I didn't have to wait long before being seen, and right after that I was moved into a side room where antibiotics, fluids and Paracetamol were pumped into me. They told me they were the antibiotics to treat the meningitis bug and that I was on them as a precaution until they could determine what exactly it was I had. It was pretty much on the way to the hospital that my ankles started to swell and my wrists ached and swelled as well.

After lots of blood tests and hourly observations, they confirmed that I had meningococcal septicaemia and kept me on lock-down in my room, with a 10 day estimate for antibiotics and release. After a couple of days, my right wrist and left foot became normal sized and the rash started to fade. At this point, my right foot and left wrist were still swollen and painful to move. Also, the headache (which I can only describe as a vibration similar to that when you rotate yin yang balls in your hand) started to go.

A few days later, my wrist returned to normal size though almost stiff and little painful to move. The headache had completely gone. The rash was fading rapidly though I had a couple of clusters. My right foot has started to go down but slowly.

8 days in, my foot had gone down with the exception of around my ankle bone. The rash has gone mostly—very hard to see in places. I can walk properly. Still a little bit of pain on movement with wrist on the left and right foot but not painful pain, more like an ongoing pain. Other than that, I am back to normal.

I guess I didn't take this whole thing seriously at first, trying to fight it at home and then the first few days of treatment. It wasn't until one of the doctors said to me I could have died before I realised just how serious this was. It still feels unreal to me.

The staff here have been absolutely wonderful, bringing me through this from the cleaners up to the doctors. You are all angels.

symptoms. Twenty-three per cent in the prospective cohort had residual joint symptoms prompting consideration of 'additional therapeutic measures'.¹

In the case we describe, swelling and pain improved with antibiotics and anti-inflammatories. X-rays, treatment with steroids and referral to specialist care were subsequently not undertaken.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Learning points

- ▶ In patients presenting with fever and arthralgia, consider serious underlying aetiology including meningococcal disease.
- ▶ Blood cultures were taken prior and immediately after antibiotic administration. Those taken before grew *Neisseria meningitidis*, those taken after were negative. This highlights the importance of taking cultures prior to antibiotic treatment particularly when diagnosis is questionable.
- ▶ Consider use of steroids in patients in whom joint symptoms persist.
- ▶ Consider involvement of a rheumatologist on discharge, given that patients presenting with joint involvement in relation to sepsis may be at risk of long-term joint sequelae.

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