Post-yersinial arthritis in Cleveland, England

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SUMMARY Four cases of post-yersinial reactive arthritis are described. All patients presented with an acute lower limb arthropathy with features of an associated enthesopathy. Two patients had restriction of axial skeletal movements. Systemic features were prominent in three, including weight loss and malaise. Mean age of onset was 34 years. Three patients had raised titres to Y enterocolitica type 0:3 (ranging from 1 in 320 to 1 in 2560) and one had raised titres to Y pseudotuberculosis type 2 at 1 in 640. Two of the three patients with Y enterocolitica reactive arthritis ran a chronic course with low grade arthropathy of lower limbs and back stiffness. One patient developed radiological sacroilites at two years, and two patients had an increased sacroiliac index, though x rays of the sacroiliac joints were normal. The patient with Y pseudotuberculosis reactive arthritis had a self limiting disease with spontaneous resolution over six months.

Key words: ankylosing spondylitis, HLA-B27, sacroilites, enthesopathy.

Post-yersinial reactive arthritis is common in Scandinavian countries.\(^1\) In some series this may account for up to 50% of all reactive arthritides.\(^2\) The condition is rarely reported in the United Kingdom.\(^3\)\(^4\) Most cases are due to Y enterocolitica type 3 and rarely serotype 9. Reactive arthritis in association with Y pseudotuberculosis has also been described.\(^5\)\(^6\) We describe four cases of post-yersinial reactive arthritis, three of which occurred after Y enterocolitica infection and one after Y pseudotuberculosis serotype 2 infection. These cases occurred within a period of 27 months of each other. The first three patients were followed up for a mean period of 21 months. The fourth patient was diagnosed recently and has been followed up for three months.

Case histories

Table 1 gives clinical details of patients.

**PATIENT NO 1**
The patient, a 35 year old tanker driver, presented with a history of one week’s pain and swelling of the left knee and ankle. Over the previous two days he had had severe pain and swelling of the right first metatarsophalangeal joint. He was unable to walk. He had had arthralgia affecting the small joints of his hands and tenderness of the tendon Achillis insertions and low back pain and stiffness. He had had three separate bouts of colicky abdominal pain with diarrhoea and nausea over the previous three months. His last attack was one month before presentation and lasted for five days. Other members of his family had had an attack of diarrhoea three months previously. There was general malaise and weight loss.

On examination he had a large warm effusion of the left knee. The left ankle was swollen, warm and restricted, and highly irritable. The right first metatarsophalangeal joint was similarly affected. He had tenderness to percussion and stressing of both sacroiliac joints. Cervical and lumbar spine movements were restricted and painful on side bending.

On admission to hospital he had a plasma viscosity of 1:87 cp (upper limit 1:72), white blood cell count 11:2×10\(^6\)/l; electrolytes and liver function tests were normal. Latex and Rose-Waaler tests were negative. He was treated with Indomethacin Retard 75 mg twice a day, and the left knee joint was aspirated. Synovial fluid aspirate showed a highly cellular fluid. Microscopy showed numerous white blood cells, most being polymorphonuclear neutrophils.
Table 1  Post-yersinial reactive arthritis: patient details

<table>
<thead>
<tr>
<th>Patient No</th>
<th>Sex</th>
<th>Age</th>
<th>Presentation</th>
<th>Serology</th>
<th>HLA</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>35</td>
<td>Acute lower limb asymmetrical arthropathy, back pain, enthesopathy</td>
<td>Y enterocolitica 0.3 1/1280</td>
<td>A2, Aw19, B7, B27</td>
<td>Chronic low grade arthropathy. Increased sacroiliac index</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>48</td>
<td>Acute lower limb arthropathy, dorsolumbar stiffness</td>
<td>Y enterocolitica 0.3 1/2560</td>
<td>A9, Aw19, B27, B40</td>
<td>Radiological sacroilitis at 2 years, continuing low grade lower limb arthropathy</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>31</td>
<td>Acute lower limb arthropathy, enthesopathy</td>
<td>Y pseudotuberculosis H2 1/640</td>
<td>A2, A10, B27, B40</td>
<td>Complete resolution at 6 months, normal sacroiliac scan</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>22</td>
<td>Acute lower limb arthropathy, enthesopathy</td>
<td>Y enterocolitica 0.3 1/320</td>
<td>A1, A11, B8, B35</td>
<td>Low grade synovitis of knee joints at 3 months. Increased sacroiliac index. Non-steroidal dependent.</td>
</tr>
</tbody>
</table>

Antibody titre to *Y enterocolitica* 0.3 was positive at 1 in 1280 and remained positive at 1 in 1280 one month later. Serological testing of his wife and two children failed to show evidence of recent yersinia infection. HLA typing showed A2, Aw19, B7, and B27. After three weeks inpatient treatment he was discharged and followed up over a period of 14 months.

During this time he continued to show signs of an active low grade synovitis affecting his knees, both ankles, and right forefoot. The patient had persistent morning stiffness and treatment was continued with 75 mg of Indomethacin Retard twice a day. X-ray examination of the sacroiliac joints at the time of writing are normal, though sacroiliac bone scan showed evidence of bilateral sacroilitis with a sacroiliac index of 2.14 (normal <1.6). Antibody titre of *Y enterocolitica* was 1/160 at nine months after onset of arthritis.

**Patient No 2**
The patient, a 48 year old housewife, was admitted with a two week history of severe pain and swelling in the right first metatarsophalangeal joint, right ankle, and left forefoot. She had also felt pain and stiffness in the dorsolumbar spine. There was malaise and weight loss. A month previously she had had a five day episode of diarrhoea and myalgia while on holiday in Spain.

On examination she was unable to weight bear and was in severe pain. There was soft tissue swelling and redness of the right first metatarsophalangeal joint, right ankle, and left forefoot. Her lumbar spinal movements were restricted and painful on side bending. Sacroiliac joints were tender to percussion and stress testing.

On admission she had a plasma viscosity of 2.14 cP, haemoglobin 122 g/l, white blood cell count 13.9×10⁹/l, Rose-Waaler and latex tests were negative. Antibody titre to *Y enterocolitica* serotype 0.3 was 1 in 1280 on admission, and 1 in 2560 after two weeks. Her HLA typing showed A9, Aw19, B27, and B40.

She responded slowly to non-steroidal treatment, fenbufen 300 mg every morning, 600 mg at night, and bed rest. Over subsequent months, however, she continued to suffer prolonged morning stiffness and swelling affecting her right forefoot and low back. X-rays of the sacroiliac joints were normal at seven months after presentation, at which time her sacroiliac index was raised bilaterally. At four months after presentation the titre to *Y enterocolitica* 0.3 was 1 in 320, and at one year antibodies were not detected. Two years after presentation she had radiological evidence of bilateral sacroilitis. At her most recent review she continued to complain of persistent low back pain and stiffness, lasting for up to an hour each morning. The patient continues to receive fenbufen.

**Patient No 3**
A 31 year old female telephonist, was admitted with a seven day history of pain and swelling of both her ankle joints and heel pain. She had had difficulty in walking over the previous week and morning stiffness lasting over two hours. She also had arthralgia affecting the wrists and neck. Two weeks before presentation she had had diarrhoea lasting five days.

On examination there was evidence of low grade synovitis affecting her wrists, ankles, and knee joints. She was tender over the tendon Achilles insertions and had signs of plantar fasciitis. Spinal movements were all restricted and painful, but there was no clinical evidence of sacroilitis.

On admission she was found to have a plasma viscosity of 2.22 cP. Haemoglobin was 88 g/l, mean cell volume 77.3 fl. Faecal occult bloods were...
negative and gastroscopy was normal. Serum IgA was 4.83 g/l. Latex test was negative. HLA typing showed A2, A10, B27, and B40. Antibody titres to Y. pseudotuberculosis type 2 were raised at 1 in 640. Serological testing of her husband and daughter was negative. She was treated with bed rest and naproxen 500 mg twice a day and made a good response. It was thought that her anaemia on presentation was probably due to gastric erosion. Six months after presentation she had no articular complaints and was receiving no regular drugs. Her sacroiliac scan was normal and titre to Y. pseudotuberculosis type 2 was 1/160.

**PATIENT NO 4**

This patient, a 22 year old butcher, was admitted with a two week history of back pain and arthralgia affecting the knees, heels, and wrists. The onset was fairly acute and there was no history of diarrhoea. On examination he had painful, restricted, but non-swollen wrist joints. His knee and ankle joints showed signs of active synovitis. Spinal movements were unrestricted. There were signs of plantar fasciitis. Ninety millilitres of synovial fluid was aspirated from the left knee, and subsequently the right knee was aspirated. Both aspirates were highly cellular with polymorphonuclear neutrophils predominant.

Plasma viscosity on admission was 2.47 cP, haemoglobin 131 g/l, white blood cell count 9.6 x 10^9/l. Rheumatoid factor and autoantibody screen were negative. Antibodies to Y. enterocolitica serotype 0:3 were raised at 1/320. HLA typing showed A1, A11, B8, and B35. X ray examinations showed normal sacroiliac joints, but bone scan showed an increased sacroiliac index in the middle and inferior portions of both sacroiliac joints.

He was treated with indomethacin 50 mg twice a day and gradually improved and was discharged. One week after discharge he was readmitted with a further deterioration in his arthropathy with a further large effusion of the right knee, which was aspirated. After this he made a gradual recovery. At follow up at three months he still had some evidence of low grade synovitis of his knee joints and remained dependent on indomethacin.

**Discussion**

Post-yersinial reactive arthritis is rarely reported in the UK. Characteristically this occurs within one to 21 days after enteric infection. The arthropathy is usually short lived and transient but may become persistent with radiological sacroilitis. This complication is particularly strongly associated with HLA-B27. Our cases occurred over a period of 27 months in a health district of 305,000. Scandinavian studies suggest that reactive arthritis occurs in approximately 10% of patients infected. The patients described in this paper had severe lower limb arthropathy, and it is likely that milder cases of what is usually a self limiting disease may not come to light.

Radiological or isotopic sacroilitis was a feature in the three patients with post- *Yersinia enterocolitica* serotype 0:3 reactive arthritis, and all of them continue to be treated with non-steroidal drugs. The patient with post-*Y. pseudotuberculosis* reactive arthritis was asymptomatic at six months, however.

Finnish studies have suggested that reactive arthritis following *Y. pseudotuberculosis* is relatively uncommon and may run a milder course. Stool cultures were performed on one of the four cases; these were negative. None of our patients gave a history suggestive of sexually transmitted infection. Salmonella antibodies were negative in all cases. Serological studies on the first degree relatives of the affected patients were negative. These tests were done on average two months after the likely infection. These results are in keeping with the findings of Granfors and coworkers, who found that IgM class antibodies persisted only in those patients with reactive arthritis. The relation between preceding yersinial infection and reactive arthritis remains to be elucidated, but previous work suggests a possible link. At present neither patient with sacroilitis has developed any other stigma of ankylosing spondylitis. We believe that the rarity of reporting a post-yersinial reactive arthritis may partly reflect the lower incidence of B27 in the UK compared with Finland but may also reflect the vigour with which the diagnosis is pursued. In this light it is of note that patient 4 gave no history of antecedent diarrhoea, which suggests that subclinical infection may have occurred.

We thank Dr I Haslock for allowing us to report patient No 4.

**References**


