

## CLINICAL VIGNETTES – RHEUMATOLOGY IN THE ELDERLY

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Most joint-related problems in elderly patients are simply degenerative in nature; however, many more pathological processes occur within this age group and lead to diagnostic and therapeutic problems. Co-existing diseases may make both diagnosis and management of such cases more difficult. Here four clinical vignettes of rheumatological problems in elderly patients are described: all are common scenarios and represent composites of cases which I have had to deal with over the last few years.

### CASE ONE: AN ACUTE MONOARTHRITIS FOLLOWING DIARRHOEA

An 83-year-old lady was admitted with a seven-day history of diarrhoea, passing up to eight watery stools per day. On admission she was clinically dehydrated. She was afebrile. Initial investigations were as follows: urea 22 mmols/l, creatinine 180 micromol/l, Hb 14.3 g/dl, WBC  $12 \times 10^9/l$ . Stool culture grew *Campylobacter* sp., sigmoidoscopy revealed an erythematous mucosa only. She was treated with ciprofloxacin and IV fluid replacement. She was taking bendrofluazide for hypertension and this was stopped.

Three days later she developed an acutely swollen, painful and red right knee. Further history taken at this stage revealed a long history of osteoarthritis of the knee for which she takes ibuprofen and coproxamol; she had not experienced any previous acute episodes. Temperature rose to 38 °C and pulse rate was 92/minute and regular, BP 148/88. The right knee was hot, with a large effusion. She had mild Heberden's and Bouchard's nodes but no gouty tophi. Her WBC had risen to  $18.0 \times 10^9/l$  ( $16.8 \times 10^9/l$  neutrophils), urate was 0.24 mmols/l, C-reactive protein (CRP) 182 mg/l, ESR 92 mm/h. An X-ray of the knee showed reduction in joint space in both compartments and calcification of the medial meniscus. Synovial fluid microscopy showed many polymorphs, no crystals and no organisms. After 48 hours synovial fluid and blood cultures are sterile.

### Discussion

The major differential diagnoses of this lady's acute monoarthritis are septic arthritis, crystal arthritis or, much less likely in this age group, a reactive arthropathy. Possible predisposing factors to joint sepsis are the presence of pre-existing osteoarthritis in her knees (although pre-existing rheumatoid arthritis (RA) or a prosthetic joint would be stronger predisposing factors) and her recent sigmoidoscopy. Factors predisposing her to calcium pyrophosphate deposition arthropathy (CPPD) are acute medical illness<sup>1</sup> and chondrocalcinosis (as seen on X-ray) and factors predisposing her to a gouty arthritis are again dehydration and diuretic use.

The British Society for Rheumatology and the Royal College of Physicians of London have published guidelines for the initial management of an acute hot joint.<sup>2</sup> In addition

to full history and examination, these guidelines suggest as initial investigations synovial fluid aspiration for microscopy, including polarising microscopy and Gram stain and culture, blood culture, full blood count, measurement of acute phase reactants and joint X-rays. Joint aspiration should be carried out before antibiotics are commenced. Fluid should be sent in a universal container for microscopy and culture but should also be placed in both aerobic and anaerobic 'blood culture bottles' for culture.

The naked eye appearance of the synovial fluid can be helpful. Both sepsis and crystal arthropathies may result in purulent fluid; clear yellow fluid is unlikely to be infected although in early joint sepsis the effusion may be serous<sup>3</sup> because haematogenous spread of infection is initially to synovium and only later spreads to synovial fluid. Normal synovial fluid is very viscous and will form a long string as it drips out of the syringe; as the degree of inflammation in a joint increases, the viscosity of the fluid decreases and the fluid drips out of the syringe in discrete drops.<sup>4</sup> Gram staining will identify organisms in about 50% of patients with septic arthritis, and culture will be positive in around 85% of patients who are not already receiving antibiotics.<sup>5</sup> With polarising microscopy, urate crystals are usually easy to find as they are brightly, negatively birefringent. Calcium pyrophosphate crystals can be more difficult to identify as their positive birefringence is much weaker and they are often more sparse. The presence of crystals in synovial fluid, of course, does not rule out co-existent sepsis and, in fact, the presence of a crystal arthropathy is one of the risk factors for joint sepsis.<sup>5</sup> Neutrophil leucocytosis and raised acute phase reactants are seen in both septic arthritis and the crystal arthropathies, whereas serum uric acid may be normal in as many as 40% of patients with acute gout. Blood cultures will be positive in around 50% of patients with septic arthritis.

With the exception of demonstrating soft tissue swelling and joint effusion, plain radiographs are initially normal in septic arthritis, destructive changes taking at least two weeks to appear. Plain X-rays in this situation identify any underlying joint abnormality which might act as a predisposing factor to sepsis and provide a base line against which subsequent films can be assessed.

If there is a suspicion of joint sepsis, antibiotic treatment should be commenced following joint aspiration and should not be discontinued, at least until negative synovial fluid culture has been obtained. In some instances the suspicion of joint sepsis may be great enough to continue antibiotics even when negative cultures are obtained; in this situation arthroscopic synovial biopsy might be useful to obtain synovial tissue for culture.

Before an organism is identified, the initial choice of antibiotic depends upon the likely infecting organism. In adults *Staphylococcus aureus* is the commonest organism producing a septic arthritis and this, along with the other

gram-positive organisms, *Streptococcus pyogenes* and *Streptococcus pneumoniae*, account for over 80% of native joint infections. Gram-negative bacilli are the cause of most of the remaining infections, although in some populations gonococcal infection is common. Initial antibiotic treatment should be directed against gram-positive cocci and the usual choice is IV flucloxacillin 1000 mg qid plus benzylpenicillin 1.2 g four hourly. If there is clinical reason to suspect a gram-negative or anaerobic infection, such as recent instrumentation of lower intestinal or urinary tract, as in the patient described above, or there is known abdominal sepsis, then appropriate additional cover with ciprofloxacin, gentamicin or a cephalosporin is indicated. Intravenous antibiotics should be continued for one to two weeks depending upon clinical and acute phase response assays, and should be followed by oral antibiotics to give a total of at least six weeks of treatment.

The place of repeated joint aspiration to remove accumulated fluid is controversial, but both this and arthroscopic washouts may be indicated if the joint is slow to settle.

Acute crystal arthropathy should be treated with NSAID or colchicine and rest. If sepsis can be confidently excluded, injection intra-articularly of steroid is useful, especially for calcium pyrophosphate arthropathy or reactive arthritis.

In this particular patient although chondrocalcinosis was apparent radiologically, calcium pyrophosphate crystals were not present on synovial fluid microscopy. Negative synovial fluid and blood cultures do not adequately exclude septic arthritis as she was on ciprofloxacin at the time of arthrocentesis. The sigmoidoscopy, particularly if biopsy was taken, increases the likelihood of a gram-negative or anaerobic infection. Initial antibiotic therapy should therefore include adequate gram-negative as well as gram-positive cover and should be continued for at least six weeks ensuring that the clinical picture and acute phase response settles.

#### CASE TWO: 'OFF THE LEGS' PATIENT WITH RHEUMATOID ARTHRITIS

A 75-year-old man with a 30-year history of RA presents with increasing lower leg pain. He lives alone and has been gradually going 'off the legs', finding it increasingly difficult to cope at home. Systemic enquiry reveals 9 kg weight loss over the past six months.

He has never had a disease modifying drug (DMARD) and, until four months ago, required taking only the occasional paracetamol tablet for wrist pain. Initially his GP thought his pain was due to a flare in his RA. Dihydrocodeine and diclofenac were unhelpful, and even a week's trial of prednisolone, 40 mg daily, produced no discernible improvement in his symptoms. On further history-taking it was apparent that the pain is of a dysaesthetic quality affecting the lower legs. On examination he has mild ulnar deviation of the MCPs and bilateral MTP tenderness. Joints are otherwise normal and, in particular, he has no synovitis. He has pronounced rheumatoid nodules on the extensor surfaces of forearms and fingers, and over his Achilles tendons. He has nail fold infarcts.

He has reduced fine touch and loss of vibration sense to 5 cm below his tibial tuberosities bilaterally. He has absent ankle and reduced knee jerks. He has a right drop foot, and a left ulnar and right median neuropathy. Blood

urea and electrolytes, glucose, LFTs, calcium, alkaline phosphatase, TSH, protein electrophoresis and chest X-ray are all normal, urinalysis and urinary Bence Jones protein are negative. Hb is 8.9 g/dl, MCV: 78 fl, WBC:  $8 \times 10^9/l$ , platelets:  $700 \times 10^9/l$ , ESR: 130 mm/h, CRP: 232 mg/l, Fe: 3 mmol/l, transferrin 1.92 g/l, transferrin % saturation: 7%, ferritin: 256 mg/l. Rheumatoid Factor is 1576 iu/ml (upper limit of normal local range = 14 iu/ml), ANA: negative, ENA: negative, ANCA: negative, anticardiolipin antibodies: negative, C3 98 mg/dl, C4 16 mg/dl (normal range 90–180 and 20–50, respectively). X-rays of hands and feet are reported as showing erosions at the metacarpal-phalangeal, proximal interphalangeal and metatarsophalangeal joints, bilaterally.

#### Discussion

In someone with long-standing RA it is easy to attribute non-specific limb symptoms to a deterioration in local joint disease. However, in addition to the usual wide differential diagnosis for such a presentation in a non-rheumatoid patient, other complications of the condition should be considered in a rheumatoid patient. Classically, the non-specific presentation of 'off the legs' in a rheumatoid patient should make one suspect cervical myelopathy due to atlanto-axial or sub-axial subluxation. Because of joint deformity, elicitation of long tract signs may be difficult in a patient with RA. This patient, however, clearly has lower motor neurone signs. From the clinical picture and available investigations, he appears to have both a mononeuritis multiplex and glovestocking peripheral neuropathy. This is likely to represent rheumatoid vasculitis, and the weight loss, rheumatoid nodulosis, marked acute phase response, low C4 component of complement and normocytic anaemia are all consistent with this. Typically, patients who present with manifestations of systemic rheumatoid vasculitis are elderly with a long history of RA, and at the time of developing the neuropathy often have fairly inactive joints but very high rheumatoid factor and acute phase reactants.<sup>6</sup> The neuropathy is often a combination of mononeuritis multiplex and glovestocking pattern.

Amyloidosis secondary to RA may also cause a peripheral neuropathy. Amyloidosis is nowadays a rare complication and usually reflects long-standing poorly controlled disease, whereas this patient seems to have had fairly inactive disease for several years before his current problems. A paraneoplastic neuropathy in a patient with co-incidental nodular RA should also be considered in this patient.

Once the diagnosis of rheumatoid vasculitis is established, the patient requires immunosuppressive treatment. The commonest combination is prednisolone with either azathioprine or cyclophosphamide. Both combinations appear to be effective, although new nerve lesions may occur during the first few weeks of treatment; this may represent thrombosis of already damaged epineural vessels rather than treatment failure allowing the development of new vasculitic lesions. Initial response to treatment will be manifested by the resolution of his old nail fold infarcts, weight gain, shrinking of his nodules, prevention of further peripheral nerve lesions and normalisation of ESR and CRP. Sensory and motor loss will resolve only slowly (over 18–24 months) if at all, and healing may be accompanied by a transient increase in neuropathic pain which can be treated with a tricyclic agent or an anticonvulsant. Individual

peripheral nerve lesions should be treated with splinting and physiotherapy and care should be taken to prevent neuropathic ulcers.

#### CASE THREE: BREATHLESSNESS, HAEMATURIA AND POSITIVE P-ANCA

An 81-year-old man is admitted with a five-day history of increasing dyspnoea with green spit. He has been previously well. His signs include a pyrexia of 38.5°C, a regular pulse rate of 98/minute and a BP 110/72. He has bilateral coarse crepitations. Urinalysis shows blood ++, protein +, nitrates +ve. White Blood Cell count is 18.0 x 10<sup>9</sup>/l (92% neutrophils), creatinine is 160 micromol/l, CRP 320 mg/dl. A chest X-ray shows patch bibasal consolidation. Dipslide grows *E. coli*. Blood cultures are sterile. Immunology shows p-ANCA +++, MPO +ve, PR3 -ve; the C3 is 180, C4 is 42. Abdominal ultrasound demonstrates a dilated right renal collecting system with a staghorn calculus.

He makes an excellent recovery with IV fluids, co-amoxiclav and erythromycin. He is reviewed three months later in the medical outpatients' clinic. He feels well but is noted to have persistent haematuria on 'stix' testing. He has no complaints of dry eyes or dry mouth, and Schirmer's test shows excellent tear production. CRP remains raised at 142 mg/l and immunology still shows p-ANCA ++, MPO +ve, PR3 -ve, anti-Ro, anti-La and ANA are negative, chest X-ray is negative. Dipslide again grows *E. coli*. At no stage has he had any evidence of skin vasculitis.

#### Discussion

This patient presented with a chest infection and was found to have a coincidental urinary tract infection almost certainly secondary to a staghorn calculus. Hardly surprisingly, he continues to have microscopic haematuria and raised inflammatory parameters which are almost certainly the result of chronic urinary tract sepsis secondary to his staghorn calculus. He was found to have a positive p-ANCA with MPO positivity. Positive ANCA may be found secondary to sepsis, and unless the clinical picture is suggestive of vasculitis it is unlikely to imply an underlying vasculitis. Usually in this situation the ANCA is a p-ANCA but with MPO -ve but other patterns, p-ANCA MPO +ve or c-ANCA (usually with negative PR3) may also be found. The combination of p-ANCA with positive MPO, an acute chest infection and a staghorn calculus may suggest primary Sjögren's syndrome, but in this case there are no other suggestive clinical features and the anti-Ro and anti-La antibodies are negative. It is understandable why ANCA was checked in this patient (inflammatory chest problems plus haematuria) and anti-glomerular basement membrane antibodies Goodpasture's syndrome would also have been checked. It is often logistically easier to send blood for these early, even if there is a only a low level of suspicion of the respective autoimmune disease.

Once the full clinical picture became clear, the clinical suspicion of vasculitis evaporated and this appears to have been a false positive ANCA. ANCA positivity must always be interpreted in the light of the clinical picture.<sup>7</sup> False positive immunology is common, particularly in older patients and can lead to further unnecessary investigations and worry. In this particular patient, having found the positive immunology, it is probably prudent to keep him and his immunological tests under review to

ensure that these settle down or that a vasculitis does not declare itself.

#### CASE FOUR: A FLARE OF POLYMYALGIA RHEUMATICA

A 74-year-old lady is referred to the Rheumatology Outpatients Department. Nine months previously she presented to her GP with a two-week history of stiffness in shoulders and thighs, worse in the mornings. Her ESR was 105 mm/hour and within 48 hours of receiving prednisolone, 15 mg daily, she felt better and was back to normal. After two weeks her ESR was 15 mm/hour. Prednisolone was gradually reduced. Four months after commencing prednisolone, shortly after reducing from 7 mg to 6 mg daily, she developed pain across her shoulders with increased neck stiffness, interscapular discomfort and paraesthesiae in her hands. She had no headache or jaw claudication. At this stage the ESR was 19 mm/hour. Her GP initially increased her prednisolone to 10 mg daily with only minimal improvement in symptoms. A further increase to 20 mg daily improved symptoms a little.

When seen at the rheumatology clinic she has an early moon face; the BP was 180/100 and she continues to complain of shoulder discomfort which is worse in bed at night and first thing in the morning. She has occipital headaches but no temporal headaches and no jaw claudication. She is tender over the upper borders of trapezius muscle, at the base of her skull, over the second costochondral junctions and over her lateral epicondyles. Lateral flexion of cervical spine is reduced. Temporal arteries are pulsatile, non-thickened and non-tender. She has no synovitis. ESR remains normal at 9 mm/hour, CRP is 5 mg/l. Rheumatoid Factor is negative.

#### Discussion

It is unusual nowadays to see a patient with classical polymyalgia rheumatica at the rheumatology clinic as such patients are treated by their GP quite correctly and appropriately. However, it is quite common to see patients who were initially diagnosed and treated by their GP as having polymyalgia rheumatica but in whom the course of the disease becomes atypical as steroids are reduced. A number of common reasons for this pattern should be considered:

- the initial diagnosis was wrong;
- the steroids were reduced too fast;
- the patient has myalgic onset RA which is almost invariably (mis)diagnosed initially as polymyalgia rheumatica;
- the initial diagnosis was correct but as the steroids are reduced the patient develops other symptoms, usually those of cervical or lumbar spondylosis, which are misinterpreted as being due to a flare of the polymyalgia rheumatica;
- the patient is asymptomatic but develops a rising ESR. This may herald a flare of the polymyalgia rheumatica but may also be raised for unrelated reasons which would have to be excluded by other investigations, as appropriate;
- the patient has an atypical form of polymyalgia rheumatica which requires a higher dose of steroids for longer than usual; and
- despite being on steroids, the patient develops giant cell arteritis.

In the case described here the clinical features are now those of cervicobrachial syndrome, likely to be secondary to cervical spine disease rather than a flare in polymyalgia rheumatica. There has been no accompanying rise in ESR and there are no features to suggest the development of RA or giant cell arteritis and, following an initial good response of the original symptoms to steroids, the 'flare' did not respond to steroids. These factors, together with the fact that on closer questioning the symptoms of the 'flare' are different from the initial symptoms, should make one strongly suspect that the patient is not undergoing a relapse of her polymyalgia rheumatica. In this patient, treatment should be continued with steroid reduction (titrated against ESR and re-emergence of classic symptoms of polymyalgia rheumatica); reassurance, analgesics and physiotherapy are also essential.

- <sup>2</sup> Joint Working Group British Society for Rheumatology and Research Unit of the Royal College of Physicians. Guidelines and a proposed audit protocol for initial management of an acute hot joint. *JRCPL*; **26**:83-5.
- <sup>3</sup> Currey HLF. Acute monoarthritis – Differential diagnosis and management. Collected Reports on the Rheumatic Diseases. Arthritis and Rheumatism Council; 1988;11-13.
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## REFERENCES

- <sup>1</sup> Wright GD, Doherty MA. Calcium pyrophosphate crystal associated arthropathy. ARC Reports on Rheumatic Diseases; Topical Reviews Series 3; 1998; no. 14.

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## BETTER CARE FOR CHILDREN AND ADULTS WITH EPILEPSY – A CONSENSUS CONFERENCE

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