15. A CASE OF CHRONIC POLYARTICULAR CALCIUM PYROPHOSPHATE CRYSTAL INFLAMMATORY ARTHRITIS TREATED WITH SUBCUTANEOUS METHOTREXATE

Dr Jessica Weightman, Sunderland Royal Hospital, Sunderland
Dr Catherine Morley, Sunderland Royal Hospital, Sunderland

Introduction: A 70-year-old lady presented with a 3-day history of bilateral knee and ankle pain and a 1-day history of right knee swelling. Plain X-ray showed chondrocalcinosis and calcium pyrophosphate crystals were seen on polarised light microscopy of the joint aspirate. Despite intra-articular and oral steroids she went on to develop polyarticular joint inflammation involving the right shoulder, right sternoclavicular joint, knee, ankle and left first MTP. Active inflammation was confirmed on imaging despite treatment with steroids and she was commenced on methotrexate 10mg once weekly.

Case description: A 70-year-old lady presented with a 3-day history of polyanthralgia affecting the right shoulder, both knees and ankles, with a 1-day history of an acutely swollen right knee. There had been a history of vomiting and diarrhoea 1 week previously. There was a past medical history of hypothyroidism, hypertension, fibromyalgia and previous Helicobacter pylori infection. She was afebrile. Blood tests showed normal full blood count with raised inflammatory markers (C-reactive protein 192, erythrocyte sediment rate 63). Uric acid was 257. Blood cultures were negative. Plain X-ray of the right knee showed chondrocalcinosis. A joint aspiration of the right knee was performed and calcium pyrophosphate crystals were seen under polarised light microscopy. She was managed with intra-articular joint injection at the right knee and a reducing regime of oral prednisolone, starting at 15mg and reducing over 28 days. Inflammatory markers were improving and she was discharged with a diagnosis of acute calcium pyrophosphate crystal arthritis. On review in rheumatology several weeks later she had developed polyarticular joint inflammation at the right shoulder, right sternoclavicular joint, knee, left ankle and great toe, requiring her to recommence on low dose oral prednisolone 5mg daily. Blood tests showed normal full blood count, renal and liver function. CRP was 46.8 and ESR was 32. Uric acid and CK were normal. Calcium, magnesium, phosphate, alkaline phosphatase, ferritin, iron, transferrin, glucose and parathyroid hormone were all within normal limits. Autoantibody screening showed positive rheumatoid factor (23), negative anti-cyclic-citrunillated peptide antibodies and negative anti-nuclear antibody. Plain X-ray of the right shoulder showed calcific tendinitis of the distal supraspinatus tendon in keeping with calcium pyrophosphate arthropathy. Magnetic resonance imaging of the right sternoclavicular joint showed active inflammation, despite ongoing treatment with low dose oral steroids. She was commenced on oral methotrexate 10mg once weekly with folic acid, with a diagnosis of chronic calcium pyrophosphate crystal inflammatory arthritis. It is currently too early to assess her response; she experienced significant nausea from oral methotrexate and therefore the dose cannot be escalated until her switch to subcutaneous methotrexate.

Discussion: There is a spectrum of disease in calcium pyrophosphate crystal deposition ranging from asymptomatic patients with incidental plain X-ray findings, up to joint destruction and even spinal involvement. Most common is an acute and often short-lived arthritis, commonly affecting the knee, wrist or shoulder. In only approximately 5% of cases does it result in chronic calcium pyrophosphate crystal inflammatory arthritis. In this case there were no associated metabolic or endocrine conditions. In cases of chronic calcium pyrophosphate crystal inflammatory arthritis, knees and the joints of the upper arm such as wrists, elbows and shoulders are commonly involved. Involvement of the sternoclavicular joint, however, is rare. In the absence of any aspirate from the sternoclavicular joint, or specific radiological findings, the inflammation within this particular joint cannot be confirmed as being a result of calcium pyrophosphate deposition, therefore experiences from other clinicians regarding further investigation and management would be useful. If symptoms are not controlled with non-steroidal anti-inflammatory drugs (NSAIDs) or colchicine then low dose oral steroids may be of benefit. In cases such as this where these medications fail to control joint inflammation there may be a role for disease-modifying anti-rheumatic drugs (DMARDs). Current European League Against Rheumatism (EULAR) recommendations in the management of calcium pyrophosphate deposition suggest there may be a benefit from hydroxychloroquine or methotrexate. This is based upon several smaller trials, and larger studies are ongoing. The patient is in the early stage of treatment with methotrexate, and this is the first case of a patient in this trust being treated with a DMARD for chronic calcium pyrophosphate crystal inflammatory arthritis. Understanding the experiences of others who have managed similar patients on methotrexate could help to guide how future patients with this condition are managed within the trust.

Key learning points: Chronic calcium pyrophosphate crystal inflammatory arthritis should be considered as a differential in any polyarticular inflammatory arthritis. Joint aspiration can provide confirmation if calcium pyrophosphate crystals are detected however an aspirate which is negative for crystals does not exclude this as a diagnosis. A careful history should be taken to elicit any potential triggers, in this case the preceding illness with diarrhoea is likely to be relevant. Associated endocrine and metabolic conditions including haemochromatosis, parathyroid disease and electrolyte abnormalities should be excluded. Other features to suggest calcium pyrophosphate crystal deposition as a cause include radiological findings such as chondrocalcinosis or calcification of tendons or ligaments. Calcium pyrophosphate deposition more commonly affects older patients. Often there are contraindications to the use of NSAIDs and steroids. There is a developing role of DMARDs such as hydroxychloroquine and methotrexate to control inflammation and reduce joint damage in such cases.