her dry cough persisted and inflammatory markers remained elevated, but these subsequently resolved. A lung biopsy was considered but was felt to be inappropriate in view of clinical and radiological (HRCT) response to anti-TB therapy. Anti-TB therapy was continued for 6 months and at a year’s follow-up, symptoms, radiological changes and elevated inflammatory markers have not recurred.

Miliary TB is an uncommon, potentially lethal presentation of mycobacterial infection. It is more likely to occur in the presence of impaired host cell-mediated immunity [1], such as during anti-TNF therapy. It can present in a non-specific manner and cases have been reported in patients on anti-TNF therapy despite negative screening for previous exposure to mycobacteria on skin purified protein derivative and chest X-ray [2]. Our case illustrates the fact that it is not particularly unusual to be unable to confirm a diagnosis of TB and indeed only 60% of notified TB infections are confirmed and only 40% of pulmonary TB cases are smear positive [3].

The negative γ-IFN assay results in this case are an interesting finding and may represent false-negative results. Antigen-specific γ-IFN release assays such as T-SPOT-TB, QuantiFERON-TB Gold In-Tube and QuantiFERON-TB Gold have been evaluated in various populations and are reported to perform better than tuberculin skin testing in the diagnosis of TB infection. These tests have high specificity (93–99%). However, their sensitivity, and hence the chance of a false-negative result, has been found to be sub-optimal (70–90%) with pooled sensitivities for T-SPOT-TB of 90% (86–93%), QuantiFERON-TB gold 78% (73–82%) and QuantiFERON-TB Gold In-Tube 70% (63–78%) [4] (although only seven studies in this meta-analysis use head-to-head comparison). Within each test, variation in reported sensitivities may be due to variability in disease severity and associated factors, such as immunocompromise. In the context of our case, the likelihood of a false-negative result may have been increased further by anti-TNF therapy. Furthermore, a false-negative γ-IFN assay result would theoretically be more likely to occur in an individual whose cell-mediated immune response has already been sufficiently impaired to allow the development-disseminated TB infection. In the literature, there are also reports of cases of false-negative γ-IFN assay results in immunocompromised patients with culture-proven TB (one with HIV, one with malnutrition and two kidney transplant recipients) [5], as well as increased false-negative results in a study of patients with HIV [6].

This report highlights the need for clinicians to maintain a high index of suspicion for TB in patients on anti-TNF therapy who do not improve, and it highlights that caution is required when interpreting γ-IFN release assay results in patients taking biologic therapy.

**Rheumatology key message**

- Caution is required when interpreting γ-IFN release assays in patients taking biologic therapy.

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**Hook sign and arthritis in refractory anaemia with ringed sideroblasts (myelodysplastic syndrome)**

Sir, The arthropathy of iron overload is associated with characteristic radiological findings: squared-off bone ends and hook-like osteophytes in the MCP joints (MCPJ), particularly of the second and third MCP joints [1, 2].

A 76-year-old Caucasian male presented with a few months’ history of non-tender bony swelling and restricted flexion in his right index MCPJ. There were no clinical signs of synovitis.

He had been diagnosed 7 yrs previously with myelodysplastic syndrome (MDS): refractory anaemia with ringed sideroblasts on bone marrow analysis. He had no history of receiving blood transfusions.

His serum ferritin was >1000 ng/ml. The haemochromatosis gene (HFE) with 282Y mutation was not detected. Liver biopsy showed severe iron overload without cirrhosis. A venesection programme had normalized his ferritin.

Plain hand radiographs showed arthritic changes in the MCPJ of the index finger with a hook-like osteophyte on the radial aspect of the metacarpal head (Fig. 1).

A diagnosis of chronic arthropathy secondary to iron overload was made. Iron overload arthropathy typically occurs with hereditary haemochromatosis, but may also occur in patients with transfusion haemosiderosis, haemophilic arthritis and in patients with sideroblastic anaemia. Our patient has MDS, refractory anaemia with ringed sideroblasts. Though more...
commonly a seronegative arthritis is the commonest type of arthritis associated with MDS an iron overload arthropathy has also been described [3, 4]. The seronegative arthritis can precede the development of the bone marrow disorder.

Unlike other manifestations of hereditary haemochromatosis, symptoms of arthropathy do not generally respond to iron removal. In one series, only 20% of 129 patients noted improvement in joint symptoms after phlebotomy [5].

Though the arthritis of hereditary haemochromatosis and iron overload show the full spectrum of calcium pyrophosphate dihydrate (CPPD) crystal deposition disease (i.e. pseudogout, chondrocinalnosis and chronic arthropathy) [6, 7], there are radiological differences between iron overload and CPPD arthropathy. Radiographic features of hand and wrist involvement in 26 patients with haemochromatosis and in 26 patients with idiopathic CPPD crystal deposition disease were compared [1] by two radiologists independently examining the radiographs without the knowledge of the specific group to which the patient belonged. The results of this study clearly establish that structural joint diseases in the two disorders are not identical. Characteristic findings allow the radiologist to favour one diagnosis over the other. These radiographic differences indicate that the arthropathy of haemochromatosis is related to factors additional to the presence of CPPD crystals, specifically, the more prevalent narrowing of the MCPJ spaces, including those in the fourth and fifth digits, peculiar hook-like osteophytes on the radial aspect of the metacarpal heads, and less prevalent separation of the scaphoid and the lunate.

Rheumatology key message

- The hook sign is a characteristic feature of iron overload arthritis and can occur in patients with MDS.

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Comment on: Micro magnetic resonance angiography of the finger in systemic sclerosis

Sir, The micromagnetic resonance angiography pictures published by Wang et al. [1] have impressive resolution and the scope to provide a quantitative vascular score. The study limitations are considered mainly in terms of the number of study participants and we would like to highlight the importance of measuring environmental control when investigating vasospastic disorders. SSc patients may have a varying degree of vasoconstriction on any one day influenced by environmental factors (e.g. temperature and humidity), or by pharmacologically active compounds e.g. caffeine, cigarettes, anti-hypertensive and vasodilator therapy. Day-to-day repeatability data on image acquisition are not presented; however, the interpretation of the images acquired has excellent inter-reader agreements.

The digital artery lumen area may vary significantly with vasospasm, e.g. during the vasoconstriction phase of a Raynaud’s attack. Indeed RP is almost universally present in SSc and is a key feature of the current classification criteria [2]. In early and evolving pre-SSc [3], vasospasm may predominate over fixed arterial occlusion/stenosis and the correlation between disease duration and digital artery lumen area may not apply to pre-SSc or early-phase SSc disease.

We are currently researching the utility of novel and low-cost multi-site photoplethysmography pulse technology [4] in primary and secondary RP patients, including those pre- and early-phase SSc patients. Here, a key part of our protocol for obtaining repeatable and, therefore, reliable pulse measurements is to undertake the assessment in a dedicated temperature-controlled microvascular measurement facility and with appropriate acclimatization time. May we therefore ask Wang et al. to consider vasospastic factors in any subsequent studies especially when applying the MR technology as they suggest to other vascular disease assessments, e.g. primary RP disease.

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Comment on: Micro magnetic resonance angiography of the finger in systemic sclerosis: reply

Sir, We would like to thank Dr McKay and his colleagues [1] for their comments and suggestions. We agree with them that the reproducibility of a new imaging technique is important. Actually, a reproducibility study designed to validate the micro-MRA technique is being conducted in our centre. In this study, the same subject will be scanned twice using identical imaging protocols with a time gap of no more than 14 days. All imaging parameters

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