

## Letter to the Editor (Case report)

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**Axial presentation of reactive arthritis secondary to COVID-19 infection****Rheumatology key message**

- Clinicians should be vigilant for axial presentations of reactive arthritis secondary to COVID-19.

DEAR EDITOR, the novel coronavirus SARS-CoV-2, known as COVID-19, is continually being observed to cause new and varied multisystem sequelae. There have been several reports of peripheral oligoarthritis attributed to COVID-19 [1, 2], but this case potentially represents the first axial presentation of COVID-19 reactive arthritis (ReA).

This 53-year-old gentleman presented in April 2020 with new onset debilitating inflammatory back pain in the lumbar, thoracic and cervical regions, associated with anterior chest wall pain. This was preceded by a short period of self-resolving constitutional symptoms: fever, night sweats, malaise, 2 kg weight loss and also a loss of sense of smell. Although no nasopharyngeal swab was obtained at the time, these symptoms were felt to be highly suggestive for COVID-19, and a subsequent SARS-CoV-2 antibody test was positive. Relevant past medical history included lumbar disc herniation secondary to a sporting injury in his mid-20s, associated with radiculopathy and foot drop, which was successfully managed with discectomy. More recently, he has been treated for hypercholesterolaemia with a statin.

Laboratory investigations showed raised CRP 13 mg/l (reference range 0–10 mg/l) and positive HLA-B27. MRI of the sacro-iliac joints and spine [axial spondyloarthritis (axSpA) protocol] demonstrated bone marrow oedema at both sacroiliac joints and at the left first costovertebral and costotransverse joints (Fig. 1). Hybrid PET-CT demonstrated focal increased <sup>18</sup>F-Fluorodeoxyglucose (FDG) uptake at the same sites as the bone marrow oedema on MRI.

In early June 2020, he was treated with intra-muscular methylprednisolone 120 mg and commenced on diclofenac 75 mg once daily. At three-month review, he reported significant clinical improvement, resolution of inflammatory back and anterior chest wall pain, feeling less fatigued and had resumed all his usual activities. CRP was undetectable at <1 mg/dl. A repeat axSpA protocol MRI showed near complete resolution of the previously observed inflammatory changes (Fig. 1). He

then stopped diclofenac. At review 6 weeks later, he remains asymptomatic.

ReA is traditionally defined as a sterile arthritis in response to genitourinary or gastrointestinal bacterial infection; however, viral triggers including HIV have been cited [3]. ReA usually presents as an oligoarthritis but is known to cause axial changes in some patients. In this case, there was a definite temporal relationship between COVID-19 infection and the onset of axial disease, in a timeframe that would typically be expected for ReA. HLA-B27 is positive, which is known to be an important risk factor for the development of ReA, as well as being implicated in ReA prognosis, conferring a higher probability of chronicity [4].

A potential limitation of this case is the absence of a nasopharyngeal swab at the time of his suspected COVID-19 infection; however, this was the only symptomatic illness to which the subsequent positive SARS-CoV-2 antibody test could be attributed. Other differentials for the MRI findings include a flare of pre-existing axSpA; however, there were no symptoms to suggest pre-existing disease. New onset disease is theoretically possible; however, this would be exceedingly rare in this age group [5]. A follow-up review is planned for 6 months to re-assess for this possibility, or of course sooner should the patient have a recurrence of symptoms in the interim. Given that this patient was asymptomatic before COVID-19 infection, and the rapid improvement within 6 months, we believe this case represents the first reported axial presentation of ReA secondary to COVID-19 infection. Clinicians should be vigilant regarding this potential complication of COVID-19.

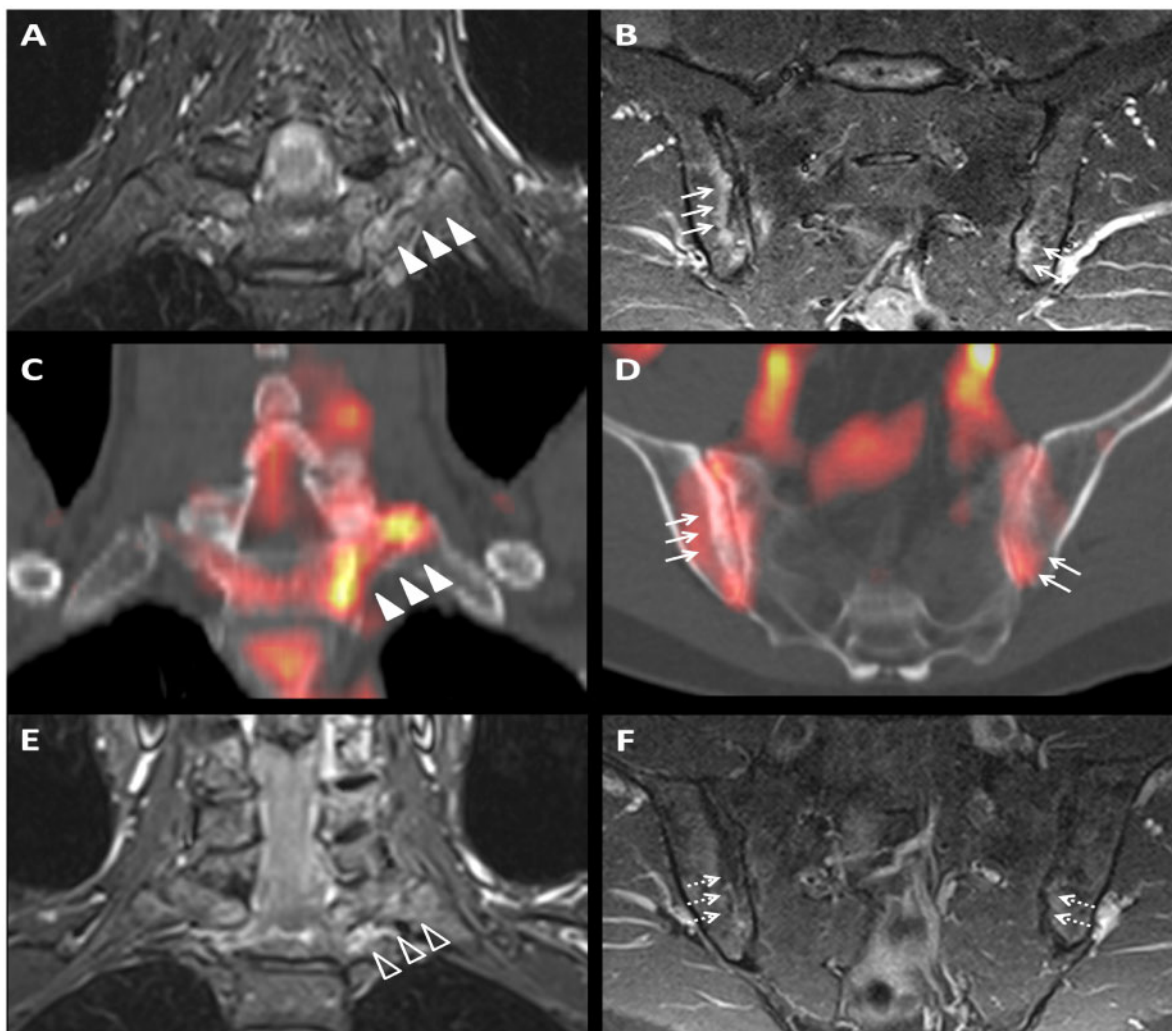
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Fig. 1 Baseline coronal STIR MRI



(A) and fused PET-CT (C) images showing left 1st costovertebritis and costotransversitis (arrowheads). Baseline coronal oblique STIR MRI (B) and fused PET-CT (D) images showing bilateral asymmetrical sacroiliitis (arrows). Follow-up MRI demonstrates partial resolution of left first costovertebritis and costotransversitis (E; arrowhead outlines) and near complete resolution of sacroiliitis (F; dashed arrows).

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### Data availability statement

All data relevant to this case report are included in the article.

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