LETTER TO THE EDITOR

Australian case of multisystem inflammatory syndrome in adults (MIS-A) occurs two months into 2021 SARS-CoV-2 Delta outbreak in New South Wales

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Abstract

We report, to our knowledge, the first Australian case of multisystem inflammatory syndrome in adults, a rare but severe systemic inflammatory syndrome occurring 4-6 weeks after COVID-19 infection. Clinicians should be aware of this syndrome in children or adults with shock, mucocutaneous and/or gastrointestinal features, even without prior symptomatic COVID-19 infection.

Multisystem inflammatory syndrome in children or adults (MIS-C/A) is a rare but severe systemic inflammatory syndrome,[1] with an epidemiological peak occurring 4-6 weeks following severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) outbreaks. Also known as paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS), this syndrome is the subject of active surveillance across paediatric centres.[2] The peak age for MIS-C is 9 years,[1] although cases have been reported in adults.[3] Here, we report, to our knowledge, the first Australian case of MIS-A, diagnosed two months into the SARS-CoV-2 Delta (B.1.617.2) outbreak in New South Wales (NSW), with 60,075 COVID-19 notifications to date (June 29th to October 4th 2021).

A 42 year old woman presented with 7 days of subjective fevers, myalgia, light-headedness, abdominal pain, nausea, palpitations and non-pleuritic chest pain. This occurred 27 days following polymerase chain reaction- and serology-confirmed acute COVID-19 pneumonitis. The acute illness was mild, requiring neither oxygen nor hospitalisation, and the patient recovered fully 72 hours before onset of this new symptom complex. She was unimmunised against SARS-CoV-2.

She was febrile (38.2°C) and tachycardic (114 bpm) with mild hypotension (79/56) but no respiratory distress. There was bilateral conjunctival injection, a widespread blanching macular rash (Figure), and oedema of the hands bilaterally. There was no lymphadenopathy nor oral mucosal changes.

Investigations revealed significant inflammation with raised C-reactive protein (119; normal ≤4 mg/L), lymphopenia (0.5; normal range (NR) 1.0-4.0 x 10^9/L), thrombocytopenia (74; NR 150-400 x 10^9/L), neutrophilia (12.2; NR 2.0-8.0 x 10^9/L), deranged liver function tests (ALT 160; NR 10-35 U/L) and hypoalbuminaemia (20; NR 35-50 g/L). D-dimer was raised (2.34; NR <0.5 mg/L), as was brain natriuretic peptide (1660; NR ≤125 ng/L); troponin and creatine kinase levels were normal. Blood and urine cultures were negative, and anti-streptolysin O and anti-DNase B titres were not raised. No echocardiographic evidence of myocarditis was seen, nor coronary artery dilatation.

The patient responded to two doses of intravenous immunoglobulin (2g/kg each) following 48 hours' inotropic support (metaraminol infusion then low dose noradrenaline). Aspirin (3mg/kg daily) was administered, as well as IV antibiotics for 72 hours whilst cultures were pending.

MIS-A was diagnosed on the basis of current case definitions,[4,5] though the patient also fulfilled criteria for probable toxic shock syndrome, as described in other case series.[6]

Adults and adolescents with MIS-C/A typically present with multisystem involvement often incorporating myocarditis, shock and gastrointestinal features[3,7] whereas younger children present more commonly with a Kawasaki disease-like illness.[7] Given the absence of specific diagnostic markers, the overlapping phenotype with toxic shock syndrome and the poor sensitivity of cultures and serological markers for these alternative diagnoses, such differentials must be carefully considered in the early phase of illness.

Nonetheless, clinicians should be aware of MIS-C/A in patients presenting with shock, mucocutaneous changes and/or gastrointestinal symptoms, even without preceding symptomatic COVID-19 infection. Prompt treatment with intravenous immunoglobulin and/or steroids is essential to minimise long-term morbidity from coronary artery dilatation.[1] Whilst rare, further cases of MIS-C/A are anticipated following increasing COVID-19 case notifications in NSW and Victoria.

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Figure. (A) Bilateral conjunctival injection and (B) diffuse blanching macular rash seen in patient with multisystem inflammatory syndrome in adults (MIS-A).