

Multisystem inflammatory syndrome after SARS-CoV-2 vaccination (MIS-V), to interpret with caution

The introduction of safe and effective vaccines to prevent SARS-CoV-2 infection has been one of the key strategies in the global control of COVID-19 pandemic as they help in preventing SARS-CoV-2 infections (both symptomatic or asymptomatic), severe illness, COVID-19-related hospitalisation and mortality.¹ Side effects from COVID-19 vaccinations are usually minor and include local pain at injection site or general musculoskeletal features. There are multiple reports of adverse events following vaccination (AEFI), however, as causation is often not established, such AEFI must always be interpreted with caution.

Multisystem inflammatory syndrome in children (MIS-C) and adults (MIS-A) after COVID-19 infection has been described in the UK, Europe and the USA. This may lead to a poor prognosis if not diagnosed and treated early.^{2,3} A similar multisystem inflammatory syndrome has recently been reported following SARS-CoV-2 vaccination (MIS-V).^{4,5} Since MIS-V is a rare entity, the Centers for Disease Control and Prevention and US Food and Drug Administration managed the Vaccine Adverse Event Reporting System and are actively monitoring the same. The exact incidence, prevalence and pathophysiology of MIS-V are unclear till date. Theories of dysregulation of the immune system, cytokine storm and/or hyper-reactivity of the immune system due to a preceding asymptomatic or symptomatic COVID-19 infection have been suggested.⁴ However, subclinical SARS-CoV-2 infection around the time of vaccination leading on to MIS which is misattributed to vaccination is also a possible aetiology. Concurrently, the patients may have a positive test result for SARS-CoV-2 antigen or antibody assays, indicating recent COVID-19 infection, with a background of recent history of a COVID-19 vaccination.

The affected patients appear to present shortly after having received COVID-19 vaccination, with febrile illness and a

constellation of symptoms affecting the gastrointestinal, cardiovascular, renal, vascular, dermatologic and neurologic systems, without features of severe primary respiratory illness. Definitive, probable and possible diagnostic Brighton Collaboration criteria are applied to formulate management plans.⁴ Patients with MIS-V have markedly elevated laboratory markers of inflammation and coagulopathy. However, in view of varied clinical and laboratory profile and a rare occurrence, it is imperative to rule out other aetiologies including a recent or active COVID-19 infection. Management and treatment strategies for MIS-V are predominantly centred around the doctrines of managing MIS-C and MIS-A with an early recognition of the condition, high index of suspicion and principles of supportive measures including immunomodulatory therapy.⁴

The paediatric population is at a higher risk for MIS. Currently, trials are underway for the safety and efficacy of COVID-19 vaccination in children. Temporal association of MIS is not same as causation and MIS-V entity, which may soon be increasingly reported in children, must be interpreted with caution. A misattribution of MIS to vaccination can lead to increased vaccine hesitancy and blunt the global COVID-19 vaccination drive. Thus, strict surveillance, detailed evaluation and laboratory investigations to rule out active or recent COVID-19 infection and potential other causes must be carried out in all patients before attributing it to MIS-V after COVID-19 vaccination.

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