

718 Cardiac injury following immunization with mRNA SARS-CoV-2 vaccines

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Aims: Cardiac involvement as myocarditis and/or pericarditis is now recognized as a rare but possible adverse event following SARS-CoV-2 mRNA vaccines. In this brief report we describe a series of four subjects: three of them with myocarditis and one with pericarditis probably due to hypersensitivity and developed in temporal association with COVID-19 mRNA vaccination.

Methods and results: During last summer, we observed a series of four young Caucasian male [median (range) age, 25 (18-32) years] presenting to the Emergency Department with severe acute chest pain within few days after second dose COVID-19 mRNA vaccine administration [median (range), 3 (2-5) days]. All of these were previously healthy and fitness males. All patients had abnormal electrocardiogram (EKG) and three of them had elevated high sensitive cardiac I troponin (hs-cTnI) levels. These latter three were diagnosed as having myocarditis and undergone cardiac magnetic resonance imaging (CMR). None had acute or prior COVID-19 or pulmonary disease on chest X-ray. Moreover, ischaemic injury, other infections, adverse drug reactions or any autoimmune diseases were excluded by appropriate tests. All patients underwent ecocardiography which showed preserved ejection fraction and no wall motion abnormalities and it excluded coronary origin abnormalities in each patient. The hospital course was uneventful for all four patients and they were discharged within few days of hospitalization [median (range), 6 (3-8) days] after a conservative treatment. The four patients met CDC criteria for probable myocarditis and pericarditis. To date, it is recognized a possible clinical correlation between cardiac injury and SARS-CoV-2 mRNA vaccination. The following elements support this hypothesis: (i) short time lapse between vaccine administration and symptoms onset;

(ii) onset after the second dose suggesting an immune-mediated pathogenesis needing a previous sensitization; (iii) exclusion of other possible damage causes (ischaemia, infections, other immune-mediated diseases, toxicity). In particular, we did not perform coronary angiography given the low pre-test probability of coronary heart disease. Although comprising a small sample, our report includes a patient series with clinical features similar to those frequently encountered in other papers: i.e. a prevalence in young males without risk factors; symptoms onset within few days second dose administration; an eventful clinical course. This benign course, seen in the majority of cases in literature, raises the question of the need for specific therapy or an empirical one for symptoms control only. Our report suggests that possible cardiac involvement can range from isolated pericarditis to myocarditis with significant hs-cTnI raise and signs of acute inflammation at CMR or even a myocardial injury with a mild hs-cTnI raise in absence of pathological signs at CMR. This latter case suggests also a possible cardiac injury with subclinical course.

Conclusions: To date, we are observing a temporal association linking mRNA SARS-CoV-2 vaccine administration and cardiac involvement. According to the majority of papers, our experience suggests an acute benign course of such cardiac involvement; a longer follow-up will also reveal a long-term benign course or conversely the presence of any sequelae. Clinicians should adequately inform patients when receiving vaccine to ensure prompt symptoms recognition and consequently put in place the best management of myocarditis/pericarditis. Finally, it is important to keep in mind that the benefits of vaccines far outweigh the risks.