

LETTER TO EDITOR

Kounis syndrome must be considered in the differential diagnosis of myocardial infarction following COVID-19 vaccination

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We read with interest the case series ‘A spectrum of cardiac manifestations post Pfizer-BioNTech coronavirus disease 2019 (COVID-19) vaccination’.¹ The authors described three interesting cases of myocardial injury that occurred following the first dose of the BNT162b1 mRNA COVID-19 vaccine (Pfizer, New York, NY, USA). The first and third cases are myocardial infarction that manifested 6 and 2 h after the vaccine dose administration, respectively. In the discussion of the cases, the authors state that the Pfizer-BioNTech vaccine trials did not show any serious complication or side effect, except for anaphylaxis, and also state that current literature has not demonstrated any association between COVID-19 vaccines and potential cardiovascular complications. In view of this statement, we sought to add a comment.

We want to emphasize that allergic reactions following COVID-19 vaccination can cause cardiac injury. There are multiple reported cases of acute myocardial infarction occurring within minutes to hours after COVID-19 vaccine dose administration, some of which were associated with signs and symptoms of anaphylaxis.^{2–5} In an acute hypersensitivity reaction, activated mastocytes release allergic mediators, i.e. histamines, cytokines and tryptase. These mediators can cause coronary spasm or plaque rupture. In addition, drug-eluting stents can attract these mediators, causing platelet activation and stent thrombosis.⁶ This constitutes the pathophysiology of Kounis syndrome (KS), an under-recognized syndrome in clinical medicine. KS is defined by an acute coronary syndrome triggered by an allergic reaction. It is classified into four types: type I KS is characterized by coronary spasm in normal coronary

arteries, type II KS by atheromatous plaque rupture or coronary spasm with a pre-existing atheromatous disease, type III KS by stent thrombosis and type IV KS involves a coronary artery bypass graft thrombosis.⁷

Diagnosing KS can be sometimes very challenging because an acute myocardial infarction can result in reduced cardiac output, thus preventing or delaying the released mediators from reaching and acting on the skin to induce redness, rash or itching. Regardless, the management of myocardial infarction following vaccine administration must not differ from the standard protocol.

Conflict of interest. None declared.

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