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Letter to the Editor

Differentiation of possible triggers of rhabdomyolysis in a patient after SARS-CoV-2 vaccination

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With interest i read the article by Unger *et al*. about a 69-year-old female who developed rhabdomyolysis one day after receiving the second dose of the Biontech Pfizer anti-SARS-CoV-2 vaccine (BPV) with a maximum creatine-kinase (CK) value of 8394 U/L 10 days after vaccination [1]. Later, the patient also developed renal insufficiency with a maximum creatine value of 2.73 mg/dl ten days after vaccination [1]. On normal saline (300ml/h), followed by Ringer's lactate with potassium (200ml/h), CK, transaminases and creatinine began to normalize [1]. BPV was considered to be the cause of rhabdomyolysis (Naranjo scale 4) [1]. The study is interesting, but other causes of rhabdomyolysis should be considered and discussed before BPV is accused as trigger for rhabdomyolysis.

The explanation that elevated CK was the cause of acute renal failure is unconvincing [1]. The elevation of CK was small compared to other patients with severe rhabdomyolysis. Therefore, the renal failure was more likely to be due to other causes, such as reduced fluid intake, premorbid renal dysfunction due to diabetes, or drug interactions due to polypharmacy.

As for the elevation of alanine aminotransferase (ALT) and aspartate aminotransferase (AST), these two enzymes are expressed not only in the liver but also in skeletal muscle. Because the patient had acute muscle damage, it is more likely that the elevations in ALT and AST are due to rhabdomyolysis rather than liver damage. This view is supported by the normal liver ultrasound, which was performed for suspected liver pathology. Elevation of ALT and AST associated with rhabdomyolysis does not necessarily require abdominal ultrasonography.

After a diagnosis of rhabdomyolysis, metformin, furosemide, and losartan were discontinued because of their potential to cause renal failure, and rosuvastatin because of its potential to cause rhabdomyolysis [2]. However, not only statins carry the risk of causing rhabdomyolysis, but also metformin[2] or furosemide [3]. Furosemide causes rhabdomyolysis due to its potassium-lowering effect, which can lead to muscle cell damage [3]. In addition, the combination of losartan with a statin carries an increased risk of rhabdomyolysis [4]. Therefore, metformin, furosemide and losartan should not only be discontinued because of their nephrotoxic side effects, but also because of their potential myotoxicity.

In order to assess whether the diabetes was balanced or poorly controlled, the HbA1c value should be available. Likewise, the determination of myoglobin in serum and urine to confirm acute muscle damage is missing. All medications that the patient regularly took are missing. Of particular interest are the types of antidepressants that have been administered for mood disorders and whether neuroleptics have also been administered. Venlafaxine is known to cause rhabdomyolysis [5].

The results of the neurological examination are missing. Any patient with rhabdomyolysis should be evaluated by a neurologist and, if possible, undergo needle electromyography (EMG) or muscle MRI with contrast. If the cause of rhabdomyolysis remains unclear, it is reasonable to begin evaluation for primary or secondary myopathy, including muscle biopsy or genetic testing if there is a positive family history, after resolution of the acute myocyte injury. In the case of the index patient, it cannot be ruled out that the patient was suffering from a previously unrecognized metabolic defect, a suspicion based on the clinical picture (diabetes, arterial hypertension, hyperlipidemia, hypothyroidism, breast cancer) and the family history that was positive for polymyositis. [1]

Overall, the interesting study has limitations that call the results and their interpretation into question. Clarifying these weaknesses would strengthen the conclusions and could add value to the study. Before SARS-CoV2-vaccinations can be considered as a trigger of rhabdomyolysis with subsequent renal failure, all other possible causes must be ruled out.

Declarations

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