

Diabetic ketoacidosis as a rare complication of electromyography and nerve conduction velocity examination

Abbas Tafakhori, Masih Tajdini, Vajiheh Aghamollaii

Iranian Center of Neurological Research, Tehran University of Medical Sciences, Tehran, Iran

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Dear Editor,

Diabetic ketoacidosis (DKA) is a life-threatening condition in diabetic patients, which usually occurs after a major stress [1]. It has never been reported after electromyography (EMG) and nerve conduction velocity (NCV) examinations. We describe the development of DKA in a patient who underwent EMG-NCV.

A 45-year-old man was referred to the electrodiagnosis laboratory with a history of numbness and burning sensations in the thumb, index and middle fingers of both hands. Also, he complained of pain in the wrists that was most prominent at night. The patient underwent EMG-NCV to investigate a carpal tunnel syndrome diagnosis. The procedure lasted about 40 minutes and was painful due to hypertrophy of his hand and forearm muscles. The patient had type 2 diabetes mellitus for four years and had been irregularly treated with metformin (1500 mg daily).

One day after the electrodiagnosis examination, he was admitted to the emergency department because of confusion and Kussmaul breathing. The blood gas analysis showed metabolic acidosis. Plasma glucose was elevated (860 mg/dL); serum potassium level was low (3.4 mEq/L; normal range, 3.5-5 mEq/L) and urine analysis was two-plus positive for ketone bodies. These data are congruent with DKA diagnosis. Hydration and insulin therapy were started. His confusion was improved and blood glucose levels decreased. All common causes of DKA, such as infectious diseases (pneumonia, influenza, gastroenteritis, urinary tract infection), myocardial infarction, stroke or the use of cocaine were excluded. After insulin therapy, the patient was discharged after five days.

This is the first report of DKA in a patient who underwent EMG-NCV. EMG-NCV complications such as bleeding, infection, pneumothorax, nerve trauma and other local injuries are infrequent and patients with coagulation disorders, pacemakers and other cardiac devices are susceptible to them [2]. Diabetic ketoacidosis is caused by lack of insulin. Compensatory elevation of glucagon leads to increased release of glucose by the liver [1]. Theoretically, it seems that prolonged EMG-NCV leads to this hormonal imbalance due to physical stress caused by multiple needling and very painful examination.

Glucose metabolism and its level, especially in diabetic patients who undergo medical interventions, should be measured and monitored, whereas we usually focus on developing diabetic ketoacidosis in stressful situations. Although EMG-NCV has not been reported to be associated with the development of DKA, it can be the reason for the increase of blood glucose due to painful stimulations produced by repetitive needling during the procedure. Higher levels of insulin are needed and hormonal imbalance occurs. We should assume that EMG-NCV is a risk factor for the development of DKA.

References

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Correspondence address: Abbas Tafakhori, Iranian Center of Neurological Research, Tehran University of Medical Sciences, Tehran, Iran, e-mail: a_tafakhori@sina.tums.ac.ir