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Bimonthly ISSN: 0735-6757

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Case Report

Hypokalemia and muscle paralysis after low-dose methylprednisolone

Abstract

Glucocorticoids are commonly used as potent anti-inflammatory agents in several conditions. Hypokalemia and muscle weakness can be rarely seen after administration of high-dose glucocorticoids. In this report, we describe an acute onset of hypokalemia and muscle weakness after low dose of methylprednisolone therapy.

Glucocorticoids are among the most potent and effective anti-inflammatory medications available and widely used in clinical practice [1]. They may induce hypokalemia by transcellular potassium shift caused by several mechanisms such as increased Na^+/K^+ -ATPase pool in skeletal muscle, steroid induced hyperinsulinemia, and hyperglycemia [2–4]. They also have variable degrees of mineralocorticoid activity depending on their structures and metabolites [5]. Steroids can also cause muscle weakness as a result of renal potassium loss [6]. Short-term high-dose steroid therapy may lead to acute steroid myopathy [7]. In this case we describe a patient who developed hypokalemia and myopathy after low-dose methylprednisolone therapy.

A 53-year-old man admitted to the emergency department (ED) complaining of acute onset of muscle weakness. He was an apiarist. His medical history did not include any medication or chronic disease. Previously, he was admitted to another ED with complaint of itching and erythema after a honey bee sting 12 hours ago. During admission, 5 mg feniramine and 80 mg methylprednisolone were given intravenously and he was discharged after resolution of symptoms. Six hours after the discharge, he admitted to our ED complaining of muscle weakness at both upper and lower extremities. His vital signs were normal; his muscle power was 4/5 at all extremities. There was not any sensory loss. On laboratory examinations, his potassium level was 1.73 mmol/L and creatinine kinase (CK) 187 U/L. Brain computed tomography appeared normal. After 24-hour potassium replacement therapy, potassium level decreased to 4.48 mmol/L but muscle weakness remained the same and CK level peaked at 1450 U/L. It is presumed that

myopathy and hypokalemia were related to methylprednisolone therapy. At fifth day of admission, muscle weakness disappeared totally, CK level regressed to 184 U/L, and he was discharged from the hospital. Seven days after discharge, his neurologic examination and potassium level were normal.

Glucocorticoids are commonly used in clinical practice for a variety of conditions. Low-dose corticosteroids are given for allergic reactions concurrent with antihistaminic medications. Recently, hypokalemia and myopathy were reported after high-dose corticosteroid therapy [1,8–11]. In this case report, it was seen that even low-dose methylprednisolone can cause hypokalemia and myopathy. To avoid such adverse effects, indications for steroid therapy at allergic conditions must be well defined.

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doi:10.1016/j.ajem.2010.05.008

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