EDITORIAL

Ataxia is Still an Important Clinical Finding in Severe High Altitude Illness

In this issue of *Wilderness & Environmental Medicine* a review article by Bird and colleagues¹ discusses the merits of evaluating ataxia at high altitude. The purpose of their review is to assess evidence of whether measurements of ataxia are able to predict acute mountain sickness (AMS). In their review, they discuss more sophisticated methods for evaluating ataxia and argue that none of these measurements add value to the evaluation of AMS. This is an important insight but does not negate the use of tests for ataxia in evaluation of severe high altitude illness. Ataxia is a key finding early in high altitude cerebral edema (HACE), and tests for ataxia should be included when the clinical presentation prompts consideration for HACE.

Ataxia results from disorders of the cerebellum and cerebellar pathways, sensory neuropathies, or loss of proprioception from posterior column spinal cord lesions.² The most basic tests for ataxia are the heel-to-toe tandem walk, which evaluates cerebellar function, and the Romberg Test, which evaluates the contributions of vision, truncal coordination, and proprioception to ataxia. The mechanism of ataxia in high altitude illness is unclear, so it makes sense to use more than one test to evaluate ataxia. The common clinical findings in AMS do not include ataxia because ataxia indicates progression to HACE, but testing for ataxia is recommended for evaluation of AMS in order to identify early HACE. Tests that are used to evaluate for ataxia in the setting of AMS include the traditional heel-to-toe tandem walk and the Romberg Test. More sophisticated tests for ataxia include the Sharpened Romberg Test (used in evaluation of decompression sickness)³ and the unstable platform test; these tests are proposed to be more sensitive and specific for ataxia in the evaluation of AMS. The review by Bird and colleagues, however, indicates that the more sophisticated testing for ataxia does not help predict AMS. This is important information for the clinician evaluating patients with possible AMS. Seeking sensitive indicators of ataxia does not aid in the diagnosis or management of AMS.

The most commonly used test for objective scoring of high altitude illness is the Lake Louise AMS score (LLS),⁴ where 5 symptoms of AMS are evaluated for severity: headache, gastrointestinal symptoms, fatigue or weakness, dizziness or lightheadedness, and disturbed sleep. A less commonly used addi-

tional component of the LLS includes a clinical assessment of 3 exam findings: change in mental status, ataxia, and peripheral edema. Ataxia is evaluated with a heel-to-toe tandem walk. The test score is zero if there are no problems with a heel-to-toe tandem walk; 1 point if the patient maneuvers to maintain balance; 2 points for stepping off the line; and 3 points for falling down. The heel-to-toe tandem walk, as described objectively in the LLS, is still a critical element of evaluation of severe altitude illness. In the review by Bird and colleagues, they focus on the Sharpened Romberg Test and the use of unstable platforms for evaluation of ataxia in AMS, and they find that these tests do not add to the diagnosis of AMS. This does not imply, however, that the traditional heel-to-toe tandem walk or the Romberg Test are without value in identifying onset of severe altitude illness in the form of HACE. Bird and colleagues appropriately recognize that ataxia is an important early sign of HACE, and they provide a nice summary of the study by Wu and colleagues⁵ regarding presentation of HACE in residents of lowland China who ascended to altitudes of greater than 4000 m to work on construction of a railroad. In this report, ataxia was an early and common finding in HACE.

In their review, Bird and colleagues¹ emphasize that ataxia, along with an altered level of consciousness, are the distinguishing characteristics of HACE. This is where ataxia is a critical finding for the clinician evaluating high altitude illness. The presence of ataxia indicates life-threatening HACE, prompting immediate evacuation to a lower altitude, administration of dexamethasone, and provision of supplemental oxygen⁶ before progression ensues that may result in death from cerebral herniation.

The main message of the review by Bird and colleagues¹ is that more sophisticated testing for ataxia, including the Sharpened Romberg Test or an unstable platform test, do not aid in the diagnosis of AMS. Ataxia in severe AMS or early HACE can be recognized with the simple heel-to-toe tandem walk or a Romberg Test. Ataxia, therefore, is an important sign in the evaluation of severe high altitude illness. The last sentence of the review by Bird and colleagues should not be taken to mean that basic tests to identify ataxia in severe altitude illness should not be performed. Basic tests for ataxia should be performed with the recognition that findings of ataxia will help in the diagnosis of life-threatening HACE.

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