

Neuropsychiatry of Persistent Symptoms After Concussion

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KEYWORDS

• Concussion • Brain injury • Neuropsychiatry • Chronic symptoms

KEY POINTS

- Symptoms that persist long after a concussion may be the result of multiple factors apart from the actual traumatic brain injury, including neurologic, psychiatric, physical, and psychological factors.
- Evaluation includes careful review of history, medical records, imaging, and neuropsychological tests.
- The presence of psychiatric disorders is often more correlated with continued symptoms than the actual brain injury.
- Certain behavioral dynamics can be activated by a neurologic event, but then take on a life of their own, even when detached from the neurologic cause. Adverse interactions with the insurance and legal system may exacerbate symptoms.
- Psychopharmacologic and other interventions, including exercise, often are beneficial in the treatment of neuropsychiatric symptoms.

INTRODUCTION

Acute postconcussion symptoms are fairly consistent in their presentation, and by definition are time limited. At the initial presentation, the individual complains of feeling fuzzy or slowed down; physical problems including insomnia, fatigue, headache, dizziness and visual problems; and emotional/behavioral problems, including feeling depressed/tearful, anxious, and irritable. Recent consensus statements comprehensively address the initial evaluation of concussion and return to play recommendations.^{1,2}

Although most individuals who have been diagnosed with concussion return to baseline functioning within several months, there is a subset of individuals who

Parts of this article have been adapted from Silver JM, Kay T. Persistent symptoms after a concussion. In: Arciniegas DB, Zasler ND, Vanderploeg RD, et al, editors. Management of adults with traumatic brain injury. Washington, DC: American Psychiatric Publishing; 2013. p. 475–500. Disclosure: Dr J.M. Silver is associate editor for *Journal Watch Psychiatry* and *Up to Date*. New York University School of Medicine, 40 East 83rd Street, Suite 1E, New York, NY 10028, USA E-mail address: jonsilver@gmail.com

Psychiatr Clin N Am 37 (2014) 91–102
<http://dx.doi.org/10.1016/j.psc.2013.11.001>

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CLINICAL VIGNETTE: SYMPTOMS AFTER CONCUSSION DUE TO VISUAL PROBLEMS

Ms. S, a 35-year-old professional, suffered a concussion while biking. She hit a rock, fell off her bike, and hit her head on the pavement (she was wearing a helmet). She felt dazed and “out of it” immediately afterward, and later that day she felt nauseated and dizzy. She tried to go to work the following day, but had problems “putting words together,” felt extremely tired, and had headaches, dizziness, and nausea. Brain computed tomography (CT) and magnetic resonance imaging (MRI) were normal. She saw several neurologists over the subsequent 2 months, and was told to not watch any television, work on the computer, or to exercise. After 4 months, she noted slow improvement, but continued to experience fatigue, dizziness and nausea, lightheadedness, and headaches, especially while reading or with visual stimulation. She denied feeling depressed or anxious, but was frustrated that she could not return to work.

After reviewing her history and symptoms, she was instructed to exercise on a treadmill while monitoring her pulse rate, and to note if she had any symptoms. She was asymptomatic at a pulse rate of 140. She was instructed to gradually increase her intensity (increasing maximum pulse rate by 5 beats per minute per week) and duration of exercise (to 30 minutes 5 days per week) on a weekly basis. She was instructed in slow breathing (5 breaths per minute) to practice twice a day. A computer cognitive game was suggested to monitor her memory and attention. She was referred to an optometrist specializing in brain injury vision problems, who found significant problems with convergence and accommodation. A course of vision rehabilitation was instituted.

Over the next several months, there was significant improvement in fatigue, headaches, ability to read, and all scores on the computerized cognitive games. With continued progress, she was able to return to work after two months.

experience persistent symptoms that affect quality of life. These symptoms may remain in less than 10% of individuals with sports concussions, and are significantly influenced by noninjury-related factors.^{3,4} Factors implicated in prolonged symptoms include the pathophysiology of the injury, preinjury factors (such as pre-existing psychiatric and substance use problems, previous traumatic brain injuries (TBIs), intelligence, gender, age, personality style), and postinjury factors (social support, availability of adequate treatment, litigation/compensation).^{5,6}

When symptoms spread into multiple domains, persist for more than a few months, and then begin to coalesce and globally impair functioning, it is no longer accurate to use the label postconcussion syndrome. The terms postconcussion syndrome and persistent (or chronic) postconcussion syndrome (or symptoms) are neither valid nor helpful, because symptoms do not represent a single pathophysiologic process.⁶ More accurately, these are persistent symptoms that occur after a concussion. TBI is an event, not an explanatory diagnosis. Because multiple factors play a role in the persistence of symptoms that may not reflect a continuation of those first evident after the concussion, it is more accurate to characterize them as persistent symptoms after a concussion, rather than postconcussion syndrome or symptoms.

This article discusses factors that influence the persistence of symptoms after a concussion, and important aspects of evaluation and treatment.

DID A MILD TBI OCCUR?

In assessing late postconcussional symptoms, one must pay close attention to the original event, via both self-report and medical records; neither in isolation is sufficient. However, months or years after the accident, even the diagnosis of TBI may be problematic, even when obtaining history of a mild TBI by screening questions.⁷

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