CME

EARN CATEGORY I CME CREDIT by reading this article and the article beginning on page 22 and successfully completing the posttest on page 51. Successful completion is defined as a cumulative score of at least 70% correct. This material has been reviewed and is approved for 1 hour of clinical Category I (Preapproved) CME credit by the AAPA. The term of approval is for 1 year from the publication date of September 2009.

LEARNING OBJECTIVES

- Describe the epidemiology of posttraumatic stress disorder (PTSD)
- Identify the key features of PTSD and acute stress disorder
- Explain the neurobiological underpinnings of traumatic reactions
- Discuss the diagnosis and treatment of trauma in children and adults

PTSD: How to recognize the many faces of this hidden disorder

A broad view of the etiology, signs, and symptoms of posttraumatic stress disorder can help physician assistants take a more effective approach to diagnosis and treatment.

James E. Meyer, MD, FACP

Posttraumatic stress disorder (PTSD) has been discussed frequently in the news media in recent years; however, a rather restrictive understanding of the types of patients who may be affected by this disorder still exists. Considerable evidence in the medical literature indicates that many patients who present to their clinician with somatic complaints are experiencing the aftereffects of an emotionally traumatic event from the past.[1] These traumas may have been forgotten, repressed, or minimized by the patient, and the clinician often fails to ask about them.

If not recognized and treated, these symptoms can increase the patient's risk for suicide, vehicle collisions, job loss, divorce, social isolation, and illness.[2] Recent evidence suggests that trauma causes genuine neurophysiologic changes in the body. The person is physiologically "frozen" in a state of high arousal.[3] This aroused state consists of a highly activated, incomplete biological response to threat and is thought to consist of undischarged energy that produces physical symptoms.[4]

The National Center for PTSD estimates that the lifetime prevalence of PTSD in the general adult population is 6.8%; women are twice as likely as men to have PTSD at some time during their lives. Not everyone exposed to trauma develops PTSD. Persons who have experienced trauma earlier in life are more likely to develop the complex of symptoms characteristic of PTSD when exposed to a later traumatic event.[5] Sixty-one percent of men and 51% of women have experienced at least one traumatic event in their lives, and approximately 10% of men and 6% of women reported being exposed to four or more types of significant trauma during their lifetimes.[6]

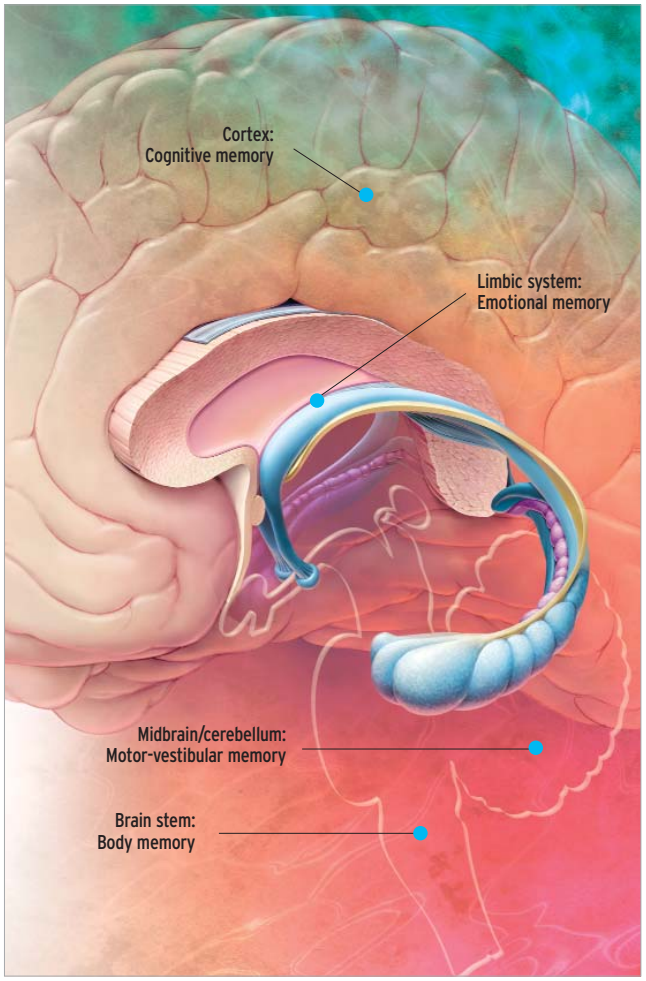

FIGURE 1. Where memory is stored

KEY DIAGNOSTIC FEATURES

Experiencing or witnessing a severe trauma that provokes fear, horror, and a sense of helplessness are the key diagnostic criteria for acute stress disorder (ASD) and PTSD as described in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*. ASD symptoms become apparent within the first month after the trauma occurs. PTSD refers to symptoms that continue beyond the first month or begin after the first month.[7]

The greater the sense of helplessness in the face of a stressor, the more intense the emotional reaction will be. Typical stressors are war experiences; rape; sexual abuse; fire; flood; vehicle collision; or any violent or intense, fear-inducing encounter. Afterwards, the patient re-experiences the event in some way, typically through flashbacks, nightmares, and/or intrusive images or feelings. Physiologic reactions, such as palpitations, sweating, or symptoms and signs of panic, commonly occur. In order to cope with these events, the person attempts to avoid situations that might trigger the memories. In addition, the person may remain in a state of high arousal and become hypervigilant, irritable, and increasingly likely to startle. In some cases, the person may develop a numbing of the senses as a defense against the intolerable reliving of the emotional trauma.[7]

Unexplained physical symptoms The usual reason for a visit to a clinician is for physical symptoms. Twenty-five percent to 35% of primary care patients are thought to meet criteria for a *DSM-IV-TR*-based psychiatric diagnosis, usually an anxiety or depressive disorder. Of those patients, 50% to 80% initially present with exclusively physical symptoms.[1]

A documented history of trauma sometimes makes a diagnosis of PTSD clear; at other times, the diagnosis may be quite elusive. Patients with a history of trauma frequently present with unexplained physical symptoms. Failure to inquire about a history of trauma is not unusual, and patients frequently do not volunteer the information.

THE NEUROBIOLOGY OF TRAUMA

Key researchers in the study of the neurobiological underpinnings of traumatic reactions believe that traumatic memories are locked in the deeper, nonconscious part of the central nervous system—the amygdala, thalamus, hypothalamus, hippocampus, and the brain stem[3,8,9]—in what has been called a *trauma capsule*.[9] These memories are not accessible to the thinking and reasoning parts of the brain, but they are present and real. A trauma capsule contains the cognitive, emotional, and body memories associated with each traumatic experience. Cognitive material is stored in the cerebral cortex, emotional memory in the limbic system, motor-vestibular memory in the midbrain, and body memories (physical sensations) are thought to be stored in the brainstem (**Figure 1**).

Emotional and body memories can be triggered or reactivated by present events. For example, a mildly demeaning comment by a coworker can trigger the emotional and bodily reactions of fear, helplessness, palpitations, and nausea originally experienced during an episode of childhood sexual molestation. The intense symptoms may not be connected to the past abuse but may instead be attributed to the negative comment. The intensity of the reaction may also be shocking to the coworker who made the comment. This example illustrates how the contents of the trauma capsule can influence reactions to present stressors.

> "A diagnosis of PTSD requires the person to have experienced a serious threat to self with a sense of intense helplessness."

A sense of helplessness, which is a major part of the original trauma, blocks the normal defensive reactions, and a person remains physiologically frozen in a state of high arousal even after the event has passed. The persistent arousal activates the hypothalamic-pituitary-adrenal axis, which produces increased levels of corticotropin-releasing factor and activates the autonomic nervous system.[8,10] These changes may result in physical symptoms that have no identifiable organic pathology. If the clinician concludes that the patient has a purely psychological illness, the patient will feel misunderstood and invalidated. These patients feel real pain and have real physical symptoms; therefore, the clinician should

KEY POINTS

- Experiencing or witnessing a severe trauma that provokes fear, horror, and a sense of helplessness are the key features based on the diagnostic criteria for acute stress disorder (ASD) and posttraumatic stress disorder (PTSD) defined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (*DSM-IV-TR*).
- Adults with multiple adverse childhood experiences are more likely to have adopted behaviors that increase their risks for disease, disability, and socialization difficulties that culminate in an earlier death.
- PAs need to realize that our understanding of the *DSM-IV-TR* criteria may be too restrictive. Ordinary trauma can also produce PTSD-like signs and symptoms. The difference between extraordinary trauma and ordinary trauma rests in the eye of the beholder.
- PTSD may be confused with other psychiatric disorders that produce physical symptoms in patients, such as somatization disorder, hypochondriasis, conversion disorder, and pain disorders, because of similarities in clinical presentation. Checking for a history of trauma can help make the appropriate diagnosis.

provide meaningful education about the physiology of these complex mind-body processes.

CHILDHOOD TRAUMA

The Adverse Childhood Experience study evaluated the relationship between childhood experiences and medical and public health problems among adults.[11] A 68-item questionnaire that asked about experiences in seven categories of childhood trauma was sent to 13,494 adults who had been recently examined at a medical clinic. Seventy percent (9,508) of the patients completed the survey. Of those who completed the survey, 25% had lived with a person who was a problem drinker, an alcoholic, or a street drug user; 22% had experienced overt sexual abuse; 19% had lived with a mentally ill person; 12% had witnessed their mother being treated violently; 11% had been emotionally abused; 11% had been physically abused; and 3.4% had experienced a household member being sent to prison.[11]

Adults with one to four adverse childhood experiences (ACEs) had a significantly increased incidence of health problems compared with persons who reported no adverse childhood experiences[11] (**Table 1**). Adults with multiple ACEs are more likely to have adopted behaviors that increase their risks for disease, disability, and socialization difficulties that culminate in an earlier death.[11]

In many cases, a diagnosis of PTSD does not adequately characterize the effects of chronic childhood trauma. Therefore, the clinical presentation of a child may be confusing and a diagnosis of ADHD, anxiety and depressive disorders, or a conduct disorder may be made. The National Child Traumatic Stress Network proposed a new diagnostic entity called *developmental trauma disorder*.[12] This entity takes into account the etiology of the presenting symptoms and recognizes the need for treatment to address a complex trauma history (**Table 2**). Because the disorder affects children during their critical developmental years, it results in both short-term and long-term sequelae.

TABLE 1. Health problems likely to be increased when four or more ACEs are experienced

Condition or health status	Increased likelihood of occurrence
Cancer	1.9×
Chronic obstructive pulmonary disease	3.9×
Depression	4.6×
Diabetes	1.6×
Excessive alcohol consumption	7.4×
Fractures	1.6×
Hepatitis	2.4×
Illegal drug use	4.7×
Ischemic heart disease	2.2×
Overall poor health	2.2×
Severe obesity (BMI ≥35 kg/m^2)	1.6×
Stroke	2.4×
Suicide attempts made	12.2×
Tobacco use	2×

Key: ACEs, adverse childhood experiences; BMI, body mass index.
Data from Felitti VJ et al.[11]

TABLE 2. Diagnostic criteria for developmental trauma disorder

Multiple exposures to interpersonal trauma – Abandonment and/or betrayal – Physical and/or sexual abuse – Witness to domestic violence
Physiologic dysregulation caused by these traumas
Multiple somatic sequelae
Emotional, behavioral, cognitive, and relational dysfunction

Data from van der Kolk BA.[12]

ADULT TRAUMA

Intimate partner violence is just one type of adult trauma, albeit a significant one. According to US Justice Department statistics, 1.3 million women and more than 800,000 men are physically assaulted by an intimate partner every year in this country.[13] Intimate partner violence may result in the *battering syndrome*, an increase in general medical symptoms and emotional problems, including anxiety, depression, and low self-esteem.[14,15] Negative health consequences persist long after the abuse ends. Psychological distress is believed to lower the symptom threshold, which increases the number and severity of physical and emotional symptoms. This results in increased seeking of health care, refractoriness to treatment, and increased referral to medical specialists. Although numerous other types of adult trauma could be discussed here, domestic violence is a representative example of repetitive trauma that can have lasting consequences. In addition, domestic violence is often missed by health care providers because patients are ashamed to mention it and clinicians do not ask about it.

MAKING THE CORRECT DIAGNOSIS

According to *DSM-IV-TR* criteria, a diagnosis of PTSD requires the affected person to have experienced an event that involved a serious threat to self with a sense of intense helplessness. PAs need to realize that our understanding of the *DSM-IV-TR* criteria may be too restrictive. Ordinary trauma can also produce PTSD-like signs and symptoms.[1] The difference between extraordinary trauma and ordinary trauma rests in the eye of the beholder. What may be consid-

ered by some to be minor, or ordinary, trauma may have felt overwhelming to the patient. Embarrassment; profound disappointment; a shameful event, such as a job loss or marital separation—these can all result in an intense feeling of helplessness and fear.

Although a single severely traumatic event can produce the classic symptoms of PTSD, repetitive trauma can have profound cumulative effects on the CNS. This leads to alteration in regulation of affect and impulses, attention or consciousness, self-perception, and perception of the perpetrator. This repetitive trauma over time results in *complex PTSD*.[16,17]

PTSD may be confused with other psychiatric disorders that produce physical symptoms in patients, such as somatization disorder, hypochondriasis, conversion disorder, and pain disorders. Checking for a history of trauma can help the clinician to make the appropriate diagnosis. Trauma can have a profound impact on a person's ability to function in a healthy manner, and PTSD may contribute to other comorbidities, such as depression, anxiety, and personality disorders.

SCREENING FOR TRAUMA

One of the best ways to screen for a history of trauma is to make it a routine part of the history, particularly the social history. A PA can introduce the topic by saying, "We're learning that past trauma can change the way the body functions or reacts to stress. Have you had any serious physical or emotional events that have upset you?" You can then ask more specific questions about childhood events, relationship problems, alcohol or drug-related events, and physical or sexual abuse[18] (**Table 3**). Patients will not share painful memories if they feel rushed or if they do not feel safe with you or trust you. Patients need to believe that you care about them and are trying to help. Sensitive information is commonly revealed slowly over time as trust is established.

TREATMENT FOR TRAUMA-RELATED DISORDERS

PTSD is a complex disorder with deeply embedded neurophysiologic effects; therefore, treatment is also complex. A multidisciplinary team approach is crucial for effective management. The team consists of a physician and mental health professionals experienced in abuse recovery work and may include a physician assistant. Frequently, abused persons resort to using substances to numb their pain. In those cases, substance abuse should also be dealt with.

Medication alone does not address the underlying trauma, and may only partially suppress unpleasant symptoms. In addition, the symptoms are likely to return when the medication is discontinued. However, selective serotonin receptor inhibitors play an important role in stabilizing the patient's mood and reducing anxiety while the patient deals with the past trauma.

Relaxation techniques, addressing negative self-talk and negative self-image, reframing, and various desensitization modalities can all be helpful and may be an integral part of treatment. However, recent research strongly suggests that truly effective therapy also focuses on dealing with the patient's body memo-

From the AAPA Committee on Diversity

The hidden injury in returning US military personnel

The prevalence of posttraumatic stress disorder (PTSD) among US military personnel returning from duty in Iraq and Afghanistan is estimated to be as high as 11% to 17%.[1] Given the increased deployment of reserve component personnel, civilian health care providers are more likely to be treating combat veterans. Inquiring about prior military service during the patient interview can provide valuable information that leads to effective referral and treatment of the patient. As a result of an alarming number of homeless veterans in US cities, a simple question during the history interview can make a profound difference in a patient's care.

The Department of Veterans Affairs (VA) is uniquely positioned to provide high-quality, low-cost treatment to eligible veterans without limits on mental health benefits. Some veterans may also be eligible for additional benefits, such as vocational rehabilitation, after further review of their cases.

As stated in the title of the accompanying article, PTSD has many faces. PTSD, anxiety, depression, and substance abuse are frequently associated comorbidities that may make the diagnosis and treatment of this disorder difficult. Identification of prior military service during the patient interview and referral to appropriate VA resources, when necessary, are important initial steps in the care of US combat veterans.

REFERENCE

1. Hoge CW, Castro CA, Messer SC, et al. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med.* 2004;351(1):13-22.

TABLE 3. Warning signs of trauma-related stress

Being on edge, easily startled
Changes in appetite
Despair/hopelessness
Extremely fearful for or protective of loved ones
Feeling emotionally numb, withdrawn
Feeling irritable, angry, resentful
Feeling anxious and fearful
Recurring thoughts and nightmares about the event
Trouble sleeping

Data from American Psychological Association.[18]

"A major goal of treatment is for patients to acknowledge what happened and process the horror of the event."

ries and emotional memories. Although some controversy exists about this, increasing evidence suggests that a body-mind approach using somatic and energy therapies to access the contents of the trauma capsule is important. Unless the somatic contents of the trauma capsule can be expunged, symptoms will emerge with every event, contaminate the present moment, and promote further sensitization to trauma.[9]

Some currently used therapies include somatic experiencing, eye movement desensitization and reprocessing, emotionally focused therapy, and thought field therapy. These therapies attempt to access and deal with some of the deeper contents of the trauma capsule.[9]

A safe therapeutic environment is crucial to successful treatment. A major goal of treatment is for patients to acknowledge what happened and process the horror of the event, while reconnecting with their emotions and physical sensations in a therapeutic manner. Patients must learn how to control and master the physiologic stress reactions that terrify them in order to deal with triggering events. Treatment needs to prevent the contents of the trauma capsule from spilling over into current experiences.[9,19]

CONCLUSION

The aftereffects of trauma are a common and underrecognized cause of many of the symptoms that patients manifest to their clinicians. Most PAs see patients on a regular basis who have a history of either childhood or adult trauma. As clinicians, PAs need to be alert to the clues that may help them to make a proper diagnosis, although most will not have the opportunity or training to become involved in the psychotherapeutic aspects of the treatment of PTSD. However, PAs can do their patients a great service by spending time with them, establishing a trusting relationship, listening for signs of emotional reactivity, and checking for evidence of prior trauma. Identifying community resources for effective treatment may be a challenge initially, but the rewards will be worth the effort and patients will benefit greatly. JAAPA

James Meyer is medical director of the PA program at Midwestern University, Glendale, Arizona. He has indicated no relationships to disclose relating to the content of this article.

REFERENCES

1. Katon W, Sullivan M, Walker E. Medical symptoms without identified pathology: relationship to psychiatric disorders, childhood and adult trauma, and personality traits. *Ann Intern Med.* 2001;134(9 pt 2):917-925.
2. Wilson JF. Posttraumatic stress disorder needs to be recognized in primary care. *Ann Intern Med.* 2007;146(8):617-620.
3. Levine PA. *Healing Trauma: A Pioneering Program for Restoring the Wisdom of Your Body.* Boulder, CO: Sounds True Inc; 2005.
4. Wylie MS. The limits of talk. *Psychotherapy Networker.* 2004;28(1):30-36.
5. Storr CL, Ialongo NS, Anthony JC, Breslau N. Childhood antecedents of exposure to traumatic events and posttraumatic stress disorder. *Am J Psychiatry.* 2007;164(1):119-125.
6. Epidemiological facts about PTSD. US Department of Veterans Affairs Web site. http://www.ptsd.va.gov/public/pages/epidemiological-facts-ptsd.asp. Accessed August 4, 2009.
7. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR).* Washington, DC: American Psychiatric Assoc; 2000.
8. van der Kolk BA. The body keeps the score: memory and the evolving psychobiology of post traumatic stress. In: van der Kolk BA, McFarlane AC, Weisaeth L, eds. *Traumatic Stress: The Effects of Overwhelming Experience on Mind, Body, and Society.* New York, NY: The Guilford Press; 1996.
9. Scaer R. The precarious present. *Psychotherapy Networker.* 2006;30(6):49-67.
10. Perry B. The psychology and physiology of trauma. Child Trauma Academy Web site. http://www.childtraumaacademy.com/surviving_childhood/lesson02/page01.html. Accessed August 4, 2009.
11. Felitti VJ, Andra RF, Nordenberg D, et al. The relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med.* 1998;14(4):245-258.
12. van der Kolk BA. Developmental trauma disorder. http://www.traumacenter.org/products.pdf-files/Preprin_Dev_Trauma_Disorder.pdf. Accessed August 17, 2009.
13. Tjaden P, Thoennes N. *Full Report of the Prevalence, Incidence, and Consequences of Violence Against Women.* Rockville, MD: US Department of Justice; 2000. http://www.ojp.usdoj.gov/nij/pubs-sum/183781.htm. Accessed August 4, 2009.
14. McCauley J, Kern DE, Kolodner K, et al. The "battering syndrome": prevalence and clinical characteristics of domestic violence in primary care internal medicine practices. *Ann Intern Med.* 1995;123(10):737-746.
15. Campbell J, Jones AS, Diennemann J, et al. Intimate partner violence and physical health consequences. *Arch Intern Med.* 2002;162(10):1157-1163.
16. van der Kolk BA, van der Hart O, Burbridge J. Approaches to the treatment of PTSD. In: Hobfoll S, de Vries M, eds. *Extreme Stress and Communities: Impact and Intervention* (NATO Asi Series. Series D, Behavioural and Social Sciences, Vol 80). Norwell, MA: Kluwer Academic. 1995. http://www.trauma-pages.com/a/vanderk.php. Accessed August 4, 2009.
17. Whealin JM, Slone L. National Center for PTSD FactSheet: complex PTSD. US Department of Veterans Affairs Web site. http://www.ptsd.va.gov/professional/pages/complex-ptsd.asp. Accessed August 4, 2009.
18. American Psychological Association. Warning Signs of Trauma-Related Stress. David Baldwin's Trauma Information Pages Web site. http://www.trauma-pages.com/h/ts-warng.php. Accessed August 4, 2009.
19. van de Kolk BA. In terror's grip: healing the ravages of trauma. *Cerebrum.* 2002;4:34-50.