Psychotic Symptoms in Posttraumatic Stress Disorder

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ABSTRACT

Recent data suggest that the presence of psychotic symptoms in patients suffering from posttraumatic stress disorder (PTSD) may represent an underrecognized and unique subtype of PTSD. Among combat veterans with PTSD, 30% to 40% report auditory or visual hallucinations and/or delusions. The presence of psychotic symptoms in PTSD is associated with a more severe level of psychopathology, similar to that of chronic schizophrenia. In this review, the differential diagnosis of psychotic symptoms in PTSD is discussed, including possible comorbid schizophrenia, psychotic depression, substance-induced psychosis, and personality disorder. A recent biologic study supporting the existence of a unique subtype of PTSD with psychotic features is also addressed, as are the similarities between PTSD with psychotic features and psychotic depression disorder. Finally, data on the treatment implications of psychotic symptoms in PTSD are presented. The intriguing recent findings on psychotic symptoms in PTSD need further investigation in noncombat-related PTSD populations before findings can be generalized to all individuals with PTSD.

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INTRODUCTION

Hallucinations and delusions have been reported to sometimes occur after an individual has experienced a severely stressful event. In the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, (*DSM-IV*)[1] stress-induced reactions with psychotic symptoms are included in the brief psychotic disorders. Until recently, little attention has been given to the presence of psychotic symptoms in more prolonged reactions to severe stress, including posttraumatic stress disorder (PTSD). Recent findings suggest that hallucinations and delusions are frequently overlooked symptoms in a significant number of PTSD patients. Furthermore, evidence suggests that the presence of psychotic symptoms in PTSD may have important implications for clinical treatment and outcome.

PTSD is an anxiety disorder that can develop in a person who has been exposed to a traumatic event. The symptoms comprising PTSD are divided into three symptom clusters: (1) the reexperiencing of phenomena, including thoughts, images, and dreams associated with the trauma; (2) avoidance symptoms, including numbing and behavioral avoidance of stimuli associated with the trauma; and (3) hyperarousal symptoms, including intense psychological or physiologic reactivity in response to cues that are reminders of the event (eg, irritability, exaggerated startle, and sleep disturbances). PTSD rarely occurs in isolation; the core symptoms are often associated with the presence of comorbid conditions. Those that cooccur with high frequency include major depressive disorder, personality disorders, and alcohol and substance abuse.[2,3]

Psychotic symptoms have also been reported to occur with high frequency in patients with chronic PTSD. The presence of hallucinations in PTSD has been reported for a number of years,[4-6] but the frequency and characteristics of psychotic symptoms had not been systematically studied until recently. Among combat veterans with PTSD, 30% to 40% report psychotic symptoms in the absence of comorbid psychotic conditions, such as schizophrenia or bipolar disorder,[7,8] compared with a rate of 15% of persons with depression.[9] The rate of psychotic symptoms in persons who have PTSD from noncombat-related traumas is unknown.

In addition to being a relatively common finding in PTSD, the presence of psychotic features is linked to more severe psychopathology;[10] therefore, a greater understanding of this condition may have important clinical implications for the treatment of PTSD. This article reviews the recent findings on the psychological and biologic characteristics of patients with PTSD with psychotic features (PTSD-P), discusses issues concerning the differential diagnosis of the psychotic symptoms, and addresses clinical treatment implications. In the four case studies presented below, the diversity of presentation of psychotic features in PTSD is illustrated.

CASE DESCRIPTIONS

Case 1

A 46-year-old, African-American truck driver presented with a history of having his life threatened by police when he was a teenager. He was evaluated for medication treatment for intrusive thoughts, anger, avoidance, and hyperarousal symptoms that had worsened in the past year due to family and work stressors. In addition to symptoms of PTSD, he occasionally thought that he heard news commentators discussing the events of his life, and he heard his name being called at night. His wife complained of his social isolation. He had significant symptoms of depression, but denied any history of alcohol or drug use.

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Case 2

A 53-year-old, Caucasian man presented for treatment of PTSD symptoms upon the encouragement of a social worker. He was an unemployed factory worker with a history of severe social isolation since his service in Vietnam. The patient had a strict religious upbringing. When in Vietnam, he was hazed by his fellow enlisted men by being placed in a body bag while intoxicated for the first time. He volunteered for work in the morgue for the rest of his tour of duty.

On presentation to the clinic, he exhibited intrusive thoughts (particularly concerning the dead bodies he had seen), hyperarousal, and avoidance symptoms, as well as ideas of reference, paranoia, and occasional odd beliefs. (For example, he believed that the electricity in the building had an effect on his body.) None of the beliefs were clearly bizarre or disorganized. He also exhibited an odd, restricted affect. He denied auditory or visual hallucinations.

Case 3

A 54-year-old, Hispanic, homeless Vietnam combat veteran presented with PTSD symptoms associated with his combat experiences, including intrusive thoughts, nightmares, avoidance symptoms, and hyperarousal. He had also used methamphetamine up until 3 months before his evaluation. In addition to symptoms of PTSD, he occasionally heard his name being called at night outside his window, and heard the voice of a dead comrade calling to him.

Case 4

A 49-year-old, divorced Caucasian man presented with anger, isolation, and thoughts of suicide. He was a Vietnam combat veteran. In addition to symptoms of PTSD, he reported feeling "like everyone is trying to screw me over." He had a history of hearing footsteps walking behind him and seeing snakes on the ground. He became convinced that someone had poisoned his Christmas dinner. His belief that he had been poisoned declined when nothing happened to him after the passage of time.

SYMPTOM CHARACTERISTICS AND GLOBAL IMPAIRMENT

As illustrated by the above case examples, there can be a diverse presentation of symptoms in PTSD-P. Nonbizzare, positive symptoms of psychosis are the most commonly reported. Among the combat veterans with PTSD-P studied to date, almost all reported auditory hallucinations.[7,8] Most of these hallucinations related to their traumatic experience (eg, hearing the voice of a dead enemy calling to them), although many patients also report nontrauma-specific auditory hallucinations (eg, hearing their name being called). Delusions are also reported in as many as 86% of patients with PTSD-P and can include nontrauma-specific content (eg, the belief that one is being poisoned).[7,8,11] These symptoms are not confined only to known flashback episodes.

When present, psychotic symptoms are associated with an increased severity of a number of other symptoms. Among veterans with PTSD-P, significantly higher levels of general psychopathology, paranoia, violent thoughts, feelings, and behaviors have been reported, as well as greater degrees of depression, anxiety, and anhedonia.[8,10,11] (General psychopathology includes symptoms of somatic concerns, anxiety, guilt, tension, mannerisms, posturing, depression, motor retardation, uncooperativeness, unusual thought content, disorientation, poor attention, lack of insight, low volition, poor impulse control, preoccupation, and social avoidance.) Individuals with PTSD-P have levels of general psychopathology similar to those of patients suffering from chronic schizophrenia.[12] This high level of impairment in PTSD-P vs PTSD without psychotic features is similar to the greater levels of social impairment reported in depressed patients with psychotic features vs those without psychotic features.[9] It is interesting that the severity of PTSD symptoms, as measured by the Clinician-Administered PTSD Scale (CAPS), does not appear to be greater in patients with psychotic features.[7,13] This suggests that PTSD-P may reflect a distinct subgroup of patients, rather than simply very severe PTSD. Likewise, the presence of psychotic symptoms in depression is not associated with more severe levels of depression.[9]

The number of veterans with noncombat-related PTSD who report psychotic symptoms appears to vary across ethnic groups. The highest rates are among African-American and Hispanic populations.[6,8,13,14] It is not known what factors account for these ethnic differences, but ethnic and cultural differences are also noted in acute and brief reac-

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tive diagnoses where a disproportionately high rate of reporting is observed in individuals in developing countries.[15] These ethnic differences suggest a social factor in the reporting of stress-related psychotic reactions. Likewise, there may be ethnic differences in the risk factors for the expression of some psychotic symptoms. For example, it has been observed that minorities exposed to racist and discriminatory behaviors may tend to be more vigilant and suspicious about others in society, which may contribute to a higher rate of paranoid symptoms.[15]

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DIFFERENTIAL DIAGNOSIS AND RELATIONSHIP TO OTHER DISORDERS

Schizophrenia Spectrum Disorders

Persons who present with PTSD and psychotic features need to be carefully evaluated to determine if they meet the criteria for schizophrenia or schizoaffective spectrum disorders. Delusions and hallucinations associated with the presence of disorganized speech, grossly disorganized behavior, or negative symptoms (eg, affective flattening, alogia, or avolition), in addition to social and/or occupational dysfunction, suggest a schizophrenia spectrum disorder. Those who meet these criteria and suffer from PTSD are classified as having schizophrenia with comorbid PTSD.

The PTSD rate in patients suffering from schizophrenia and other chronic psychotic illnesses may be quite high. Because of their disabilities, patients suffering from schizophrenia have a greater chance of being traumatized (eg, homeless patients are at a greater risk of assault). In addition to reality-based traumas, it has also been suggested that the experience of psychosis itself, which subjects the individual to a terrifying inner life experience, may induce PTSD symptoms.[16-21] It is also possible that traumatic experiences could precipitate a psychotic decompensation in patients at risk for schizophrenia. The PTSD rate in individuals with either schizophrenia or a delusional disorder has been reported to be as high as 46% to 56%.[17,19] The traumatic experiences described in these studies have been the psychotic experience itself or the experience of subsequent forced hospitalization and treatment. It has been suggested that the symptoms of PTSD, resulting from psychosis, may be mistaken for the symptoms of schizophrenia. For this reason, consideration of a diagnosis of PTSD may be useful in the treatment of these patients.

Psychotic Major Depression

As noted above, depression occurs with a high frequency in chronic PTSD, with even higher rates observed when psychotic features are present. Because the rate of psychotic symptoms in depressed patients is as high as 15%,[9] it can be argued that the presence of psychotic features in those with comorbid PTSD and depression may be better classified as psychotic depression. This does not appear to account for all cases of PTSD-P, however, since as many as 32% of PTSD patients with psychotic features do not meet the criteria for either current or lifetime major depressive disorder.[13] It is interesting to note that when depression is present in patients with PTSD-P, both the psychotic and PTSD symptoms are more severe.[13] This suggests that depression is an important factor in the pathophysiology of psychosis in PTSD.

The reported increase in general psychopathology in persons with PTSD-P is similar to that reported in persons with psychotic depression. Specifically, the presence of psychotic symptoms in depressed patients is associated with higher rates of guilt, psychomotor disturbance, morbidity, and residual impairment.[9] Similar to PTSD-P, the presence of psychotic features in depression is not simply associated with more severe depression. Psychotic major depression has a poorer response to either placebo or tricyclic antidepressants than nonpsychotic major depression.[9] It may be that PTSD-P also has a poorer response rate to standard antidepressant treatment alone.

A further relationship between psychotic major depression and PTSD-P is suggested by the history of PTSD in psychotic major depression. In a study of first psychotic breaks, there was a significantly higher rate of PTSD preceding psychotic major depression than either bipolar psychotic depression or nonaffective psychotic illnesses.[22] In addition, in a study of outpatients with major depressive disorder, those with psychotic features were nearly four times more likely to have PTSD than those without psychotic features.[23] These findings indicate a possible link between PTSD and an increased risk of developing psychotic symptoms. They also suggest that PTSD may be an underrecognized, comorbid condition in individuals with psychotic depression.

Bipolar Disorder

Unlike depression, mania is normally not associated with PTSD.[2,3] The presence of grandiosity, a decreased need for sleep, pressured speech, the flight of ideas, or other symptoms of mania in the presence of PTSD-P are most consistent with a comorbid bipolar disorder as the primary source of the psychotic symptoms.

Substance-Induced Psychosis

Rates of comorbid alcohol and drug abuse are high in chronic PTSD. Therefore, it is possible that the majority of persons with psychotic symptoms in PTSD are suffering from alcohol hallucinosis, stimulant paranoia, or another substance-induced psychosis. Evidence suggesting the unlikelihood of this possibility includes the similar rates of alcohol or other drug use reported in PTSD patients with and without psychotic features.[8] In addition, PTSD-P patients with alcohol abuse histories have a lower intensity of psychotic features, as measured by the Positive and Negative Syndrome Scale (PANSS), than those without alcohol abuse histories.[13]

It is possible that, despite similar substance use histories, there are some PTSD-P patients with an increased sensitivity to substance-induced psychosis. Greater stimulant consumption is related to an increased probability of developing a substance-induced psychosis; however, there are significant individual differences in the susceptibility to psychosis.[24,26] In addition, once substance-induced psychosis has occurred, the patient has an increased sensitivity to developing a substance-induced psychosis in the future. It has also been reported that, in addition to possessing an increased sensitivity to future substance-induced psychoses, individuals who have experienced stimulant-induced psychosis may experience a stress-induced psychosis when abstinent from drugs.[27-30] Therefore, some instances of PTSD with psychotic symptoms may represent the existence of a substance-induced, psychosis-sensitive population.

Personality Disorders

High rates of character pathology occur in persons with chronic PTSD. These include borderline, schizotypal, and paranoid personality disorders.[1] The presence of a personality disorder may be a contributing factor to the development of psychotic symptoms in PTSD. For example, those with borderline personality disorder (BPD) may exhibit transient, stress-related, paranoid ideation and reality distortions, such as a belief that the treatment staff is conspiring against them. Because BPD is also associated with an increased rate of childhood trauma and neglect, there is an overlap between the diagnoses of BPD and chronic PTSD. There is some evidence that childhood trauma is associated with a higher rate of psychotic symptoms, as well as with a higher probability of PTSD and BPD.[31,32] It is possible that similar etiologic factors may be involved in the production of the psychotic symptoms in PTSD and BPD.

Patients with schizotypal or paranoid personality disorder may also experience psychotic decompensation under stress; therefore, individuals with premorbid cluster A personality disorders may be overrepresented in the population of persons with PTSD who develop psychotic symptoms. The patient described in the second case example appeared to have a cluster A personality disorder. The rate of character pathology in PTSD patients with psychotic symptoms vs those without psychotic symptoms is unknown.

Flashbacks Associated With PTSD

Reexperiencing is one of the three symptom clusters of PTSD. Reexperiencing phenomena can include intrusive distressing recollections of the event, including images, thoughts, or perceptions, as well as feeling or even acting as if the traumatic event were recurring. These experiences can range from a vague sense of reliving the experience to illusions, hallucinations, and flashback episodes. It has been argued that the psychotic symptoms in PTSD are simply flashback experiences, but most of the research to date has excluded patients whose psychotic symptoms occurred in response to traumatic cues. Psychotic symptoms that are not related to traumatic events appear to differentiate more clearly PTSD-P from flashbacks. In addition, it has been reported that the severity of psychotic symptoms, as measured by the PANSS, is not correlated with the severity of reexperiencing symptoms, as measured by the CAPS. This would be expected if PTSD-P were secondary to flashbacks.[13]

The distinction between a psychotic symptom and a reexperiencing symptom is not always clinically clear, and the relationship needs to be investigated further. Clinically, it

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is important to remember that psychotic symptoms, by definition, involve grossly impaired reality testing, in which the individual makes incorrect inferences about external reality, even in the face of contrary evidence.[15] This is distinct from how most patients describe flashback episodes (in which external reality testing is only briefly impaired, if at all).

Factitious/Malingering Disorders

As with all disorders in psychiatry, it is necessary to be attuned to the possible intentional production or feigning of psychological signs or symptoms either for social support or material gain. The rate of factitious disorders and malingering is increased in chronically disabled patient populations in which housing and/or financial incentives can be gained by having the disorder. Additionally, the need for social support through the production of symptoms may be higher in socially disabled populations. A factitious or malingering disorder is suggested by inconsistency between the symptoms that the patient reports and his or her observed behaviors. In addition, the report of psychotic symptoms that are rarely observed outside of general medical conditions or substance abuse, such as vivid visual hallucinations, increases the probability of a factitious or malingering component to the patient's condition.

BIOLOGIC FACTORS IN PTSD WITH PSYCHOTIC FEATURES

There is only one report in the literature examining biologic differences between PTSD patients with or without psychotic features. Dopamine β-hydroxylase (DBH) is the enzyme that converts the catecholamine neurotransmitter dopamine to norepinephrine in norepinephrine-containing neurons. It has been reported that plasma levels of DBH are reduced in patients suffering from psychotic major depression.[33]

Although the significance of plasma DBH is uncertain, it is released along with norepinephrine from synaptic vesicles in both the adrenal gland and sympathetic neurons. Hamner and Gold[34] reported that patients with PTSD with psychotic features had nearly twice as much DBH enzyme activity in the plasma as those without psychotic features (whose enzyme activity levels were similar to controls). They proposed that this might represent a trait difference that could contribute to the production of psychotic symptoms. The physiologic significance of an increased plasma level of DBH activity is unclear; however, this finding suggests that significant biologic differences may exist between PTSD patients with psychotic features vs those without psychotic features. This is the case for depression: The presence of psychosis in depression is associated with significant differences in a number of biologic markers, including greater elevations in cortisol, increased nonsuppression of cortisol by dexamethasone, differences in sleep measures, and increased ventricle-to-brain ratios.[35,36]

TREATMENT

The only published report on the treatment of PTSD-P is a case report of a 44-year-old Vietnam veteran with PTSD and auditory and visual hallucinations, as well as a thought disorder, paranoid ideation, and alcohol and cocaine abuse. The patient demonstrated marked improvement with clozapine therapy.[37] In addition to this case report, Hamner and colleagues[38] reported good responses to the atypical antidepressant risperidone in an open-label trial of patients with PTSD-P.

The recognition of psychotic symptoms in PTSD could have important clinical implications for medication treatments. In depression, the presence of psychotic symptoms is associated with a poorer response to tricyclic antidepressants alone, compared with depression without psychotic symptoms. The treatment response is significantly improved with the addition of an antipsychotic.[8,39,40]

CONCLUSION

The available data suggest that the presence of psychotic features in persons with PTSD may represent an underrecognized, unique subtype of PTSD; however, comorbid psychotic depression, substance-induced psychosis, personality disorder, or a factitious disorder must be carefully excluded as the source of psychotic symptoms. Further investigation of psychotic symptoms in noncombat-related PTSD populations is needed before findings can be generalized to all individuals with PTSD. The only published biological study[34] in this area suggests that patients with PTSD-P may possess unique biologic traits or states. The intriguing similarities between PTSD-P and psychotic depression suggest that recognition of psychotic symptoms in PTSD may have important clinical implications. CNS

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