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Child Abuse and Neglect, Posttraumatic Stress Disorder

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Introduction

Background

Child abuse and neglect, or, more generically, child maltreatment, is a pervasive problem facing children and families throughout the world. In the United States, approximately 905,000 children were found to have been maltreated in 2006, most of whom (66.3%) were neglected. Sixteen percent were physically abused, 8.8% were sexually abused, and 6.6% were psychologically or emotionally abused.^[1] These various forms of child maltreatment can result in many long-term physical and emotional consequences, including posttraumatic stress disorder (PTSD).

In a 2005 survey of mental health clinicians who treat pediatric patients, interpersonal victimization emerged as the most prevalent form of trauma exposure, including physical abuse, sexual abuse, and emotional abuse, as well as exposure to domestic violence and the disorganization that results from parental substance abuse in the household.^[2] van der Kolk points out that surveys such as these reveal a relatively low prevalence of childhood exposure to noninterpersonal trauma such as accidents, disasters, or several illness compared with the intrafamilial and interpersonal traumas delineated above.^[3] This topic discusses the problem of PTSD and how it manifests in children.

Children may face trauma that threatens their integrity, safety, or even life. The loss of control, the unpredictability, and the extremely aversive nature of the event or events are the main pathogenic elements. The family is known to play a vital role in determining the eventual impact of the traumatic experience on the child, and parental support is often determined to be a key mediating factor in how the child experiences and adapts to the victimizing circumstances.^[3] The support of a child's family, along with adequate coping and emotional functioning of the child's parents, may very well mitigate against the development of PTSD in a child exposed to trauma.

The range of normal emotional responses to trauma is broad, encompassing fear, anger, sadness, and humiliation. Traumatic stress refers to the physical and emotional responses to events that threaten the life, physical safety, and/or psychological integrity of the child or someone important to the child. Traumatic experiences are described as unexpected and unpredictable and are experienced as uncontrollable and terrifying. Emotional responses to traumatic experiences are typically perceived as overwhelming and may include terror, helplessness, and extreme physiologic arousal.

Most traumatized children do not develop long-term sequelae as a result of the trauma; however, a significant minority respond in a way that has a long-lasting, major impact on their emotions and behaviors. These children are at risk for PTSD, regardless of whether the child is subjected to a single traumatic event or to an ongoing pattern of abuse. Traumatic experiences may vary according to numerous characteristics, including (1) the immediate cause; (2) the number of experiences over time (chronicity); (3) the degree of physical effect, both immediate and long term (severity); and (4) the occurrence of subsequent disruptive events (associated factors).

Some forms of child maltreatment result in actual physical injuries that may require intensive, often painful and frightening, medical treatment. In such cases, the psychological impact encompasses the experiences of both the physical abuse and the

painful medical treatment required. Accordingly, it is left to the child victim to define an event or experience as traumatic; the role of the health care professional who seeks to help such a child is to shoulder the responsibility of treatment and assistance.

The essential features of PTSD include the following:

- A child is exposed to an actual or threatened death or serious injury to himself or herself or to another person and has a reaction to this event that includes intense fear, horror, or, particularly in children, disorganized or agitated behavior.
- The child re-experiences the event (eg, through flashbacks or nightmares). In children, nightmares may have general frightening themes rather than one that specifically involves the abuse. Re-experiencing may take on the form of repetitive play.
- The child avoids stimuli associated with the trauma, has a numbing of emotional responsiveness, and experiences diminished interest and a sense of a foreshortened future. Children may not report diminished interest, but caretakers may observe it. In children, a sense of a foreshortened future may manifest as a belief that they will never become adults.
- Children may also have somatic symptoms, such as stomachaches and headaches.
- The child has increased physical arousal with an exaggerated startle response.

In this article, the nature of the effects of traumatic experiences on the psychic functioning and emotions of children is examined, as well as the effects of traumatic experiences on the child's physiology, the clinical picture of these conditions (ie, how to recognize them), and several intervention strategies for children of different ages. Other topics are devoted to the problem of child and adolescent maltreatment and disordered parent-child relationships (see Child Abuse & Neglect: Physical Abuse, Child Abuse & Neglect: Sexual Abuse, Child Abuse & Neglect: Reactive Attachment Disorder).

Posttraumatic stress phenomena in children and adolescents have been recognized only in the past few decades. In adults, the effects of exposure to violence and witnessing atrocities were first clinically described after World War I. Severe anxiety symptoms such as persistent and frightening recollections, flashbacks, and constant anxiety were described as war neurosis or shell shock syndrome. After the Vietnam War, many veterans sought help because of the constant anxiety and re-experiencing of war scenes, which, in some cases, continued for years after they returned home.

Until recently, immaturity was believed to protect children from long-term sequelae of trauma. Traumatic experiences that occurred during infancy and preschool years were thought to be forgotten, and older children were thought to recover quickly. However, research has confirmed that children may experience PTSD.

The frequency and total number of traumatic events appears to influence the presence and severity of psychological sequelae. This is also often complicated by further traumatic experiences. However, not all children who experience acute stress reactions develop PTSD.

Terr (1983) made a groundbreaking contribution to the understanding of PTSD in her research of 25 children who had been kidnapped from a bus and buried underground for an extended period. She found that a considerable proportion of the children had troubling recollections, felt a great deal of anxiety, and re-experienced the traumatic event. Her report called attention to the reality that children can be traumatized and can experience incapacitating anxiety after such events.^[4]

Pathophysiology

The immediate physiologic response to trauma can be significant and may set the stage for persistent PTSD symptoms. Alterations in the noradrenergic and dopaminergic neurotransmitter systems and the stress response of the hypothalamic-pituitary-adrenal axis are well documented in PTSD. Effects of this set of responses in the central nervous system can affect later neurophysiologic responses. Hyperarousal and overgeneralization of threat can evolve, prompting the child to react in an extreme fashion to events that resemble or remind the child of the original trauma. Some evidence suggests that chronic PTSD, perhaps through these physiologic changes, can lead to changes in brain microarchitecture.

PTSD can be viewed as a phenomenon resulting from a gene-environment interaction. It appears that individuals with significant interpersonal sensitivity and marked emotional reactivity either to personal distress or to distress in others may also be more likely to develop significant traumatic stress. In addition, females are twice as likely to develop PTSD as males, while males are more likely to develop conduct disorder, antisocial behavior, and/or criminal behavior following significant violent trauma.^[5] Children with pre-existing mental health problems are recognized as being more likely to be affected by a traumatic experience, particularly if the child was previously anxious or if the child is described as having a slow-to-warm-up temperament.

Risk and protective factors for developing posttraumatic stress disorder after trauma

- **Personal threat:** The degree to which the child actually feels frightened or personally threatened by the traumatic experience(s) is known as personal threat. PTSD is more likely with higher degrees of violence and personal threat.
- **Developmental state:** Younger children are less able to process traumatic experiences verbally and less able to narrate them and understand their meaning; in some cases, this may mitigate their risk for PTSD.
- **Relationship to perpetrator:** Being abused by a known and trusted person undermines the child's sense of safety and increases the likelihood of PTSD.
- **Support:** Traumatized children who are developing in a secure and supportive environment are less susceptible to PTSD than children who endure ongoing abuse. The caregiver's response is also critical. If the caregiver reassures the child, the outcome of the trauma is better than if the caregiver is also shaken, devastated, or withdrawn.
- **Guilt:** Guilt about or feeling somehow responsible for the trauma predicts more severe PTSD and depressive symptoms.
- **Resilience:** This refers to a person's ability to cope with difficult circumstances; it seems to be related to intelligence, the ability to talk about one's experiences, the ability to understand others, and the ability to seek help. People with greater resilience are at a decreased risk for PTSD (see Resilience).
- **Symptoms at time of abuse:** Eventual PTSD is more likely in children who have symptoms of avoidance, emotional constriction, and physiologic hyperarousal soon after the abuse.
- **Physiologic response:** Those who have an elevated heart rate in the period soon after the trauma (eg, those seen in an emergency department) are more likely to develop PTSD.

Resilience

In its most general sense, resilience may be defined as the ability to adapt positively to adversity.^[6] Research of resilience in adolescence and adulthood following childhood maltreatment has identified essential components to resilience, including genetic, biological, cognitive, and interpersonal factors.^[7]

Earlier work that focused on resilience noted that individual characteristics such as intelligence, physical attractiveness, and temperament are protective, whereby adults are attracted to the individual in order to provide support and care (Masten, 1990). More recent studies have identified neurobiological variables. For example, studies have found that individuals with high levels of monoamine oxidase A are less likely to develop antisocial behavior following maltreatment in childhood.^[8,9,6]

A longitudinal study of maltreated children through adolescence and mid life by Collishaw et al (2007) also provided valuable insights into our understanding of how resilience emerges. The dimensions of resilience evaluated were similar to those evaluated in other studies, including (1) the presence or absence of major depressive disorder, recurrent depressive disorder, suicidality, suicide attempts, any anxiety disorder, PTSD, substance-related disorder, (2) personality functioning, (3) relationship stability, (4) legal status, and (5) self-rated health.

While controlling for adversity experienced in adolescence, the maltreated group was found to be at a higher risk for adult substance-related disorders, PTSD, suicidality, and recurrent depression than controls. However, despite this increased risk,

44.5% were characterized as resilient. In addition, recovery and resilience appears to occur in concert with parental support and encouragement. Positively perceived parental care, supportive adolescent peer relationships and adult romantic relationships, and positive personality factors were variables that supported resilience.

Frequency

United States

The National Center for PTSD estimates the incidence of adult PTSD at approximately 5.2 million cases per year.^[10] The prevalence in women is approximately 10%, whereas the prevalence in men is approximately 5%. Considering that approximately 60% of men and 50% of women experience a traumatic event in their lives, these incidence and prevalence statistics for PTSD obviously show that not all people who experience trauma go on to develop PTSD. However, being a victim of a crime appears to predispose to PTSD more so than other traumatic events, with 25% of crime victims experiencing PTSD compared to 9.4% of persons who experience non-crime-related trauma. In 2004, the PTSD Alliance estimated the risk of PTSD after rape to be 49%; a severe beating or physical assault, 31%; a nonrape sexual assault, 23.7%; a shooting or stabbing, 15.4%; a sudden unexpected death of a loved one or family member, 14.3%; and witnessing a murder or violent attack, 7.3%.

Epidemiologic studies of the incidence and prevalence of PTSD in children and adolescents remain limited. In the general US population of children and adolescents, approximately one third of children (range, 14%-43%) have experience a traumatic event prior to adulthood, including the death of a loved one, a serious accident, a natural disaster, sexual abuse, or rape.^[10] Of children and adolescents who have had a traumatic experience, 3%-15% of girls and 1%-6% of boys could be diagnosed with PTSD.

Studies of PTSD in at-risk pediatric and adolescent populations (as opposed to general population) paint a different picture, with much higher rates of PTSD. As examples, nearly all children who witness a parental homicide, approximately 90% of sexually abused children, 77% of children exposed to a school shooting, and 35% of urban youth exposed to community violence go on to develop PTSD. A National Institute of Justice (2003) report, based on an analysis of the 1995 National Survey of Adolescents (NSA), found a 4- to 5-fold increase in the lifetime prevalence of PTSD among sexually assaulted boys (28.3%) over that in boys who had not been sexually assaulted (5.4%). The rates in girls were similar, at 29.8% and 7.1%, respectively. The lifetime prevalence of PTSD in girls who were either physically assaulted or received physically abusive punishment compared to those who did not were 27.4% and 6%, respectively, while the rates in boys were 15.2% and 3.1%, respectively.^[11]

Internet-related posttraumatic stress disorder

As the use of the Internet grows, the risk of Internet-related sex crimes, such as cyberstalking, increases. The Youth Internet Safety Survey, conducted first in 2001 (YISS-1) and then again in 2006 (YISS-2), collected survey data from nationally representative groups of children and adolescents aged 10-17 years who regularly used the Internet.^[12,13] Although the percentage of children and adolescents who received unwanted sexual solicitations and decreased from 19% in 2001 to 13% in 2006, the percentage who encountered unwanted exposures to sexual material increased from 25% to 34%. The percentage of participants who experienced online harassment also increased, from 6% to 9%.

Among solicited youths, 25% reported high levels of distress after the incident or incidents. The participants most disturbed by the unwanted sexual solicitations included younger individuals (aged 10-13 y), those who were solicited on a computer away from their home, and those who experienced aggressive solicitations (defined as the solicitor attempting to make contact with the youth offline).^[12]

International

Little data exist concerning the prevalence of PTSD in countries outside the United States, and the incidence and prevalence vary widely from country to country because of differences in data collection methods, as well as widely divergent cultural and societal factors. Hepp and colleagues (2006) summarized a great deal of data from numerous countries and found the lowest lifetime prevalence of PTSD (0.4%) to be in males aged 14-24 years in Germany and the highest prevalence (43.8%) to be in Algerian females older than 16 years.^[14]

In places where armed conflicts exist, children experience frequent trauma by acting as direct victims, by witnessing violence, and by living amid dangerous conditions.

Mortality/Morbidity

PTSD is not a directly fatal condition. However, PTSD is associated with significant comorbidity (see Complications), including substance abuse and dependence, depression, interpersonal difficulties, and other mental health–related conditions.

Race

PTSD has no known racial predilection.

Sex

Males are more likely to be victims of physical assault, and females are more frequently victims of sexual assault.

Girls report greater PTSD symptoms after trauma and are 2-6 times more likely to experience PTSD after sexual abuse than boys. Women have a higher lifetime prevalence of PTSD, but it is unknown if this is related to rates and types of trauma exposure or to a particular vulnerability to PTSD.

The non-PTSD symptoms that abused and neglected girls experience may differ from those of boys. Among sexually abused children, boys are at a higher risk of developing externalizing behaviors (oppositional behavior, impulsivity) and girls are more likely to develop internalizing behaviors (depression, anxiety).

Age

Older children with language abilities are more likely to be able to recount traumatic episodes. In younger children, behavioral changes may be the only observable signs of trauma.

Clinical

History

Assessment of posttraumatic stress disorder (PTSD) begins with clinical interviews of the child and the caregiver. The interviewer should be aware that caregivers may also be involved in abuse.

For many reasons, the traumatic experience itself is not openly discussed. Parents may be unaware of or in denial of the traumatic event, and children may be afraid to disclose what happened to them. Clinicians should be aware that children are just as much at risk of victimization from people they know as from strangers.

The interview with caregivers should elicit the child's developmental history, family history, the abuse history (if known), and their perception of what has changed in the child since the traumatic event.

The symptoms of PTSD can be subtle and may resemble other psychiatric and behavioral disorders. Children who have experienced trauma may exhibit sleep difficulties, attention deficit disorders, aggressive and defiant behavior (leading to the misdiagnosis of a conduct disorder), anxiety symptoms, phobias, and social avoidance, as well as depression, agitation, or learning difficulties.

A formal diagnosis of PTSD requires that symptoms persist for more than 1 month (similar symptoms <1 mo duration may meet criteria for acute stress reaction). The most common symptoms of PTSD include the following:

- Re-experiencing the trauma: Children may re-experience the trauma in various ways.
 - Flashbacks and memories: These may be intrusive and may interfere with function at home or school. In children, intrusive memories are more common than flashbacks. Flashbacks are vivid experiences that include visual and

auditory elements from the trauma; the child may feel like the trauma is happening all over again and may react with intense fear. Flashbacks may be more common among children who have depression in addition to PTSD.

- Behavioral re-enacting: Children may act out aggressively toward others or do and say things that they witnessed. Children are often unaware that this behavior is connected to their abuse.
 - Re-enacting through play: The child may represent the traumatic experience through repetitive play. For example, he or she may repeatedly play exactly the same scene of people fighting, a car crashing, or a house burning down.
- Symptoms of avoidance of memories or situations that remind the child of the traumatic event: The child may exhibit a general restriction in daily activities (eg, avoiding activities that could prompt excitement or fear) or may present with specific fears. They may lose previously acquired skills and show regression.
 - Avoidance: Children or adolescents with PTSD avoid thinking or talking about topics that could remind them of traumatic experiences. Some, especially young children, may refuse outright to acknowledge that the abuse occurred.
 - Triggers: Children may react to and attempt to avoid stimuli that trigger memories of the abuse. Some common triggers include phrases, songs, scenes on television, a perfume, or a person's appearance. Anniversaries, dates, and certain places may also trigger memories.
 - Sleep disturbance: Children may experience nightmares, fear of the dark, and fear of sleeping alone.
 - Physical contact: Children with PTSD may have difficulty managing physical contact because of a heightened sense of vulnerability or because it may be a reminder of abuse.
 - Emotional numbing: To manage difficult reactions to the abuse, children with PTSD may have to suppress memories and almost all emotional reactions. These children may seem emotionally numb. Normal human interactions appear not to resonate with them; they laugh less and show less human connection and empathy.
 - Sense of foreshortened future: PTSD is associated with a sense of pessimism about the future, with affected people occasionally feeling that there is no future for them. In children, this may manifest as the belief that they will never become adults or a lack of interest in planning for the future.
 - Dissociation: Dissociative episodes are periods of disconnection from the external environment. A dissociating child may appear to be absent and unresponsive for a few minutes. Events that remind the child of danger or threat may trigger these episodes. Children who experience dissociation soon after the disclosure of abuse are at significantly increased risk for developing PTSD. Some believe that this is because dissociation inhibits the appropriate level of experiencing and expressing their emotions concerning the abuse.
 - Symptoms of increased arousal and hypervigilance: The child may appear on edge, noticing small changes in the environment and closely tracking the behaviors of others. They may exhibit an increased startle response.
 - Cognitive function: A small study of neuropsychologic function in children with PTSD found deficits in sustained attention, problem solving, and abstract reasoning.
 - Sleep problems: The child may have much difficulty falling asleep. Many fears are experienced at night, such as imagining faces on the wall or eyes looking at the child. Many sleep disruptions, frequent nightmares, and awakenings at night can occur. Nightmares are common in children with PTSD. They may directly relate to the abuse or, more commonly, consist of frightening dreams with more generalized themes.
 - Behavioral inhibition: Some children with PTSD are inhibited and overly pleasing and attentive to their caregivers. This may be the case, particularly if the child has reason to fear that angering or disappointing the caregiver can trigger a negative encounter.

- Delays in development and learning: In younger children, traumatic events, particularly long-standing trauma or high-stress living conditions, are more likely to delay the development of the child in several important domains, such as reciprocity, relatedness, cognitive abilities, and adaptive behavior in general. Traumatized children may appear almost autistic and may display great difficulties with learning.

Physical

No specific physical signs of PTSD exist. The pediatrician may suspect PTSD in the child who is excessively frightened of being touched or approached by the doctor. When this circumstance arises, inquire about the child's history of traumatic experiences. In the case of physical or sexual abuse, the physician may detect the associated physical signs (see Child Abuse & Neglect: Physical Abuse and Child Abuse & Neglect: Sexual Abuse).

Studies have found that only a small minority of sexually abused children have physical evidence of abuse.

Causes

Not every child or adolescent who experiences trauma such as child abuse or neglect develops PTSD. The development of PTSD is unpredictable following a traumatic event, and, as more research on the condition emerges, it appears that PTSD can be viewed as a phenomenon resulting from a gene-environment interaction. The onset of PTSD may be initiated through either direct or witnessed exposure to a single or chronic trauma.

See Frequency for more details related to specific types of traumatic events, such as sexual assault. Some differentiate trauma exposures into two types, as follows:

- Type I: Single, acute, unpredictable stressor. One person may have repeated exposures to this kind of stressor.
- Type II: Chronic, enduring stressors, such as ongoing physical or sexual abuse, characterize type II.

The frequency and total number of traumatic events experienced (ie, chronicity) appears to influence the presence and severity of psychological sequelae. This is also often complicated by further traumatic experiences; for example, children who experience abuse and neglect may later be taken into state custody and moved among foster homes and child protective services (CPS) placements. As another example of additive traumatic exposures, children who experience a traumatic accidental injury may subsequently undergo painful surgery and invasive procedures in the hospital, which may only compound the initial traumatic experience.

Differential Diagnoses

Anxiety Disorder: Generalized Anxiety

Anxiety Disorder: Panic Disorder

Anxiety Disorder: Separation Anxiety and School Refusal

Anxiety Disorder: Social Phobia and Selective Mutism

Anxiety Disorder: Specific Phobia

Child Abuse & Neglect: Dissociative Identity Disorder

Child Abuse & Neglect: Failure to Thrive

Child Abuse & Neglect: Physical Abuse

Child Abuse & Neglect: Psychosocial Dwarfism

Child Abuse & Neglect: Reactive Attachment Disorder

Child Abuse & Neglect: Sexual Abuse

Learning Disorder: Mathematics

Learning Disorder: Reading

Learning Disorder: Written Expression

Mood Disorder: Depression

Mood Disorder: Dysthymic Disorder

Other Problems to Be Considered

Autism

Attention deficit/hyperactivity disorder (ADHD)

Workup

Laboratory Studies

No specific laboratory studies exist to make the diagnosis of posttraumatic stress disorder (PTSD). While this observation is not used clinically for diagnosis, research demonstrates exaggerated hypothalamic-pituitary-adrenal axis activity and increased overall adrenergic activity in acute PTSD.

Imaging Studies

No specific imaging studies for PTSD exist; however, in the case of physical abuse or torture, the corresponding physical signs, such as old fractures, may be discovered. See Child Abuse & Neglect: Physical Abuse and Child Abuse & Neglect: Sexual Abuse.

Other Tests

Several psychometric measures, such as semi-structured interviews or self-report measures, are used to evaluate PTSD in children. Semi-structured measures include the Child and Adolescent Psychiatric Assessment: Life Events Section and PTSD Module (CAPA-PTSD) and the Children's PTSD Inventory (CPTSDI). Self-report measures include the abbreviated UCLA PTSD Reaction Index, the Trauma Symptom Checklist for Children (TSCC), the Impact of Events Scale, and the Screen for Child Anxiety Related Disorders (SCARED).

Researchers have cautioned that children with PTSD symptoms who do not cross the traditional threshold for PTSD diagnosis may still suffer significant functional impairment.

Some research suggests that more functional impairment is observed in children who report intense (although not necessarily frequent) avoidance symptoms and distress in response to triggers.

Treatment

Medical Care

The first step of treatment in posttraumatic stress disorder (PTSD) is to provide a safe environment and to attend to urgent medical needs.

Immediately after a traumatic event, children are likely to be frightened and distressed. A sense of security can be achieved with a combination of respect, compassion, containment, assistance with helping the child experience consistency in their daily routines, and provision of opportunities for relaxation and positive experiences.

The role of formal debriefing sessions after a traumatic event is not entirely clear, but the discussion of trauma in asymptomatic individuals may increase the long-term risk of PTSD symptoms, possibly because the child becomes sensitized through exposure without having adequate treatment to process this stress.

Interventions with children

Cognitive behavioral therapy

- Of all treatments, cognitive behavioral therapy (CBT), especially CBT with a trauma focus (TF-CBT), is most efficacious based on empirical evidence. It seems to help children with both acute and chronic PTSD with PTSD symptoms, as well as those with depression, shame, social skills, and behavioral disturbances. The improvements have been shown to persist for at least 2 years after treatment.

- TF-CBT is a highly structured therapy that consists of manual-based sessions (eg, 10-18 sessions, each 1 h). The intervention focuses on stress management, education about symptoms, creating a narrative of the trauma (as a means of exposure), and cognitive reprocessing of the trauma and resultant symptoms.
- Preliminary findings suggest that, after a disaster involving many children, a school-based cognitive-behavioral 10-session intervention by trained school-based mental health counselors significantly decreases future PTSD symptoms.
- Other relaxation techniques, such as biofeedback, yoga, deep relaxation, self-hypnosis, or meditation, may be suitable in some children, but clinical evidence concerning their efficacy or use is unavailable.

Interventions with caregivers

Involving caregivers in treatment has been effective, particularly in reducing the child's comorbid depressive symptoms and improving the caregiver's own depressed mood, abuse-related distress, and ability to support the child. Caregivers and parents must be aware of the symptoms of PTSD, such as triggered memories, re-enactment, and hyperarousal symptoms (eg, sleep and appetite disruption, mood dysregulation, startle response). Caregivers should be instructed about the significance of these symptoms, which may warrant medical and psychological treatment.

Consultations

Consider consultation with a therapist to establish cognitive behavior treatments.

A child psychiatrist may also be helpful and can provide assessment and pharmacologic management for PTSD, as well as comorbid psychiatric conditions.

Physical complications may require the attention of physicians who specialize in orthopedic injuries or burns, depending on the nature of the concern (see Burns, Thermal). These issues are described in corresponding sections of this pediatric journal.

Diet

No restrictions are necessary in children with PTSD, unless clinically indicated.

Activity

No restrictions are necessary in children with PTSD, unless clinically indicated.

Medication

CBT, discussed in Medical Care, is the first-line treatment for posttraumatic stress disorder (PTSD) in children. In children with persistent symptoms despite CBT or those who need additional help with control of symptoms, pharmacologic treatment may be considered. When medication treatment is undertaken, target symptoms such as insomnia, irritability, and agitation should be defined and monitored for response.

No large-scale randomized clinical trials are available to guide choices for the treatment of PTSD in children. Clinical experience suggests that selective serotonin reuptake inhibitors (SSRIs) are helpful; SSRIs are a proven therapy for PTSD in adults. Additional pharmacologic agents have been used clinically to treat PTSD symptoms in children and adolescents; they include alpha-agonists (eg, clonidine, guanfacine), beta-adrenergic blocking agents (eg, propranolol), mood stabilizers (eg, carbamazepine, valproic acid), and atypical antipsychotic medications. However, the evidence supporting the use of these agents is not as robust as that for antidepressant medications.

Antidepressive agents

SSRIs inhibit CNS neuronal uptake of serotonin (5HT). Some have a weak effect on norepinephrine and dopamine neuronal reuptake. They have also been used to treat anxiety, phobias, and obsessive-compulsive disorders. Two SSRIs are FDA-

approved for the treatment of PTSD in adults: sertraline (Zoloft) and paroxetine (Paxil). Currently, no SSRIs are FDA-approved for the treatment of PTSD in the pediatric population. While randomized clinical trials are not available to test their efficacy in children with PTSD, SSRIs are thought to improve social and occupational functioning and to decrease core symptoms of PTSD, such as avoidance, numbing, and dissociation. They have the added benefit of treating comorbid conditions. However, using SSRIs for the treatment of PTSD in the pediatric population would be an off-label use.

SSRIs do not carry the risk of cardiac arrhythmia associated with tricyclic antidepressants (TCAs). One randomized trial of imipramine and chloral hydrate proved imipramine to be efficacious in reducing PTSD symptoms in children. However, the risk of arrhythmia makes the use of TCAs problematic and especially pertinent in overdose. Suicide risk must always be considered when treating a child or adolescent with mood disorder.

Physicians are advised to be aware of the following information and to use appropriate caution when considering treatment with SSRIs in the pediatric population. Informed consent regarding the FDA black box warning concerning the risk of suicidality must be obtained.

- In December 2003, the UK Medicines and Healthcare Products Regulatory Agency (MHRA) issued an advisory that most SSRIs are not suitable for use in persons younger than 18 years for treatment of depressive illness. After review, this agency decided that the risks to pediatric patients outweigh the benefits of treatment with SSRIs, except fluoxetine (Prozac), which appears to have a positive risk-benefit ratio in the treatment of depressive illness in patients younger than 18 years.
- In October 2003, the US Food and Drug Administration issued a public health advisory regarding reports of suicidality in pediatric patients being treated with antidepressant medications for major depressive disorder. This advisory reported suicidality (both ideation and attempts) in clinical trials of various antidepressant drugs in pediatric patients. The FDA has asked that additional studies be performed, as suicidality occurred in both treated and untreated patients with major depression, thus could not be definitively linked to drug treatment.

Numerous authors have addressed the controversy concerning when and how to use SSRIs in children. Cuffe (2007) has summarized the literature in a recent update available from the American Academy of Child Adolescent Psychiatry.^[15] When SSRIs are used, consultation with a child psychiatrist and close monitoring for suicidal ideation is important.

If the decision has been made, with appropriate informed consent (including information about the FDA black box warning concerning suicidality), to use an SSRI in a child, it should be started at a low dose with gradual dose escalation. Adverse effects include anxiety or agitation, behavioral activation, hypomania, headaches, hyperhidrosis, somnolence, GI upset, diarrhea, and anorexia. Dosing depends on the medication and the age and weight of the child.

Fluoxetine (Prozac)

Selectively inhibits presynaptic serotonin reuptake with minimal or no effect on reuptake of norepinephrine or dopamine.

Dosing

Adult

20 mg/d PO every am and increase after several wk by 20 mg/d; not to exceed 80 mg/d

Pediatric

Younger children: 2-4 mg/d PO (liquid)

Older children: 10-20 mg/d PO depending on the response

Interactions

Inhibits CYP450 isoenzymes 2C9, 2C19, 2D6, and 3A4; increases toxicity of diazepam and trazodone by decreasing clearance; also increases toxicity of MAOIs and highly protein-bound drugs; serotonin syndrome (ie, myoclonus, rigidity, confusion, nausea, hyperthermia, autonomic instability, coma, eventual death) occurs with simultaneous use of other serotonergic agents (eg, anorectic agents, tramadol, buspirone, trazodone, clomipramine, nefazodone, tryptophan), discontinue other serotonergic agents at least 2 wk prior to SSRIs

Contraindications

Documented hypersensitivity; concurrent administration of MAOIs or administration in the last 2 wk; fluoxetine must be discontinued for at least 4 wk before starting MAOI; coadministration with thioridazine

Precautions**Pregnancy**

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

Known or suspected history of mania or hypomania; hepatic impairment and history of seizures

Paroxetine (Paxil)

Potent selective inhibitor of neuronal serotonin reuptake. Also has a weak effect on norepinephrine and dopamine neuronal reuptake.

Dosing**Adult**

40 mg/d PO qd

Pediatric

<18 years: Not established

≥18 years: Administer as in adults

Interactions

Inhibits CYP450 2D6, thus may increase toxicity of 2D6 substrates (eg, phenothiazines, propafenone, flecainide and encainide, other SSRIs, tricyclic antidepressants); phenobarbital and phenytoin decrease effects of paroxetine; alcohol, cimetidine, sertraline, phenothiazines, and warfarin increase toxicity of paroxetine; serotonin syndrome (ie, myoclonus, rigidity, confusion, nausea, hyperthermia, autonomic instability, coma, eventual death) occurs with simultaneous use of other serotonergic agents (eg, anorectic agents, tramadol, buspirone, trazodone, clomipramine, nefazodone, tryptophan), thus discontinue other serotonergic agents at least 2 wk prior to using other SSRIs

Contraindications

Documented hypersensitivity; concurrent administration with MAOIs or administration within 14 d of discontinuing MAOIs; coadministration with thioridazine or pimozide

Precautions

Pregnancy

D - Fetal risk shown in humans; use only if benefits outweigh risk to fetus

Precautions

Newborn infants exposed to SSRIs during the third trimester of pregnancy have developed complications requiring prolonged hospitalization, respiratory support, and tube feeding; preliminary analysis of a retrospective study shows increased congenital malformations as a whole, particularly for cardiovascular malformations, with paroxetine compared to other antidepressants with exposure during the first trimester

Known or suspected history of mania or hypomania; caution with history of seizures, renal disease, and cardiac disease

Sertraline (Zoloft)

Selectively inhibits presynaptic serotonin reuptake.

Dosing

Adult

50 mg/d PO every am, may increase by 50 mg/d increments q2-3d to 100 mg/d, if tolerated; not to exceed 200 mg/d

Pediatric

<6 years: Not established

6-12 years: 6.25 mg PO qd, may increase gradually qwk; not to exceed 100 mg/d

>12 years: 12.5 mg PO qd, may increase gradually qwk; not to exceed adult dose

Interactions

Inhibits CYP450 isoenzymes 3A3/4, 2C9, 2C19, and 2D6, resulting in possible decreased clearance of isoenzyme substrates (eg, metoprolol, thioridazine, imipramine, haloperidol, phenytoin, barbiturates, glyburide, warfarin)

Increases toxicity of MAOIs, diazepam, tolbutamide, and warfarin; serotonin syndrome (ie, myoclonus, rigidity, confusion, nausea, hyperthermia, autonomic instability, coma, eventual death) occurs with simultaneous use of other serotonergic agents (eg, anorectic agents, tramadol, buspirone, trazodone, clomipramine, nefazodone, tryptophan), discontinue other serotonergic agents at least 2 wk prior to SSRIs

Contraindications

Documented hypersensitivity; do not use concurrently or within 2 wk of MAOIs

Precautions

Pregnancy

C - Fetal risk revealed in studies in animals but not established or not studied in humans; may use if benefits outweigh risk to fetus

Precautions

Known or suspected history of mania or hypomania; caution with preexisting seizure disorders and in patients who have experienced a recent myocardial infarction, have unstable heart disease, and have hepatic or renal impairment; dampening of sexual libido

Follow-up

Further Inpatient Care

Inpatient psychiatric care should be considered in patients who are at risk of harming themselves or others. Children with posttraumatic stress disorder (PTSD) are at increased risk of suicide.

Further Outpatient Care

Most of the treatment of psychologically traumatized children is conducted on an outpatient basis; see Treatment recommendations.

Inpatient & Outpatient Medications

See Medication.

Deterrence/Prevention

A description of efforts to prevent child maltreatment and traumatization is beyond the scope of this article, as is the prevention of accidents in children.

Complications

Children who are exposed to abuse and neglect are at an increased risk for psychiatric complications. For example, sexually abused children are 4 times more likely to develop psychiatric disorders. PTSD diagnosis in children correlates significantly with at least transient suicidal ideation.

- Anxiety and phobia: Approximately 30% develop social anxiety or specific phobia.
- Major depression and dysthymia: As many as 40% of children with PTSD develop major depression by age 18 years (compared to 8% of their unaffected peers).
- Aggression: Research findings are mixed as to whether children with PTSD are at increased risk for aggressive or oppositional behaviors.
- Substance abuse and dependence: An estimated 46% develop alcohol dependence, and 25% develop drug dependence.
- ADHD: The documented incidence of ADHD is higher in those with PTSD.
- Suicide: People with PTSD have a higher risk of suicidal ideation, as well as increased mortality rate associated with suicide.
- Physical comorbidities: In female children and adolescents, PTSD is associated with chronic fatigue, fibromyalgia, irritable bowel syndrome, chronic pelvic pain, and dysmenorrhea.

Prognosis

The outcome of PTSD depends on the severity and chronicity of the trauma and the impact on the life of the child, the reactions and behavior of caregivers, and the opportunity to receive treatment.

In a longitudinal study of teenagers and young adults aged 14-24 years who were observed for 34-50 months, 48% with a diagnosis of PTSD experienced no significant remission of their symptoms. Those with ongoing PTSD had an elevated risk for additional traumatic events during the follow-up period.

Patients with chronic PTSD have an increased risk of suicidal ideation and mortality from suicide.

- Chronic PTSD is associated with work impairment, with an impact similar to that of major depression.

- The prognosis tends to be worse in those experiencing ongoing trauma.

Patient Education

Children with PTSD should be encouraged to take part in their own treatment. They need to understand why treatment is required and that their difficulties are the result of traumatic events.

For excellent patient education resources, visit eMedicine's Mental Health and Behavior Center and Children's Health Center. In addition, see eMedicine's patient education articles Post-traumatic Stress Disorder (PTSD), Child Abuse, and Sexual Assault.

Miscellaneous

Medicolegal Pitfalls

Controversy exists concerning whether therapists can induce false memories of abuse in vulnerable patients.

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Further Reading

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