

The Management of Acute Stress Disorder: Implications for the Prevention of Posttraumatic Stress Disorder

Terror-Related Psychological Trauma and Anxiety in Children

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Abstract

This article addresses early intervention in Acute Stress Disorder (ASD) affecting children victims of terror and their parents, in an attempt to ease the reactive distress and prevent development of Posttraumatic Stress Disorder (PTSD). The latter disorder is chronic, associated with disability on numerous levels of functioning, and is highly prevalent among trauma victims, especially children. Construction of the interventional design involved reviewing the literature pertaining to the characteristics, risk factors, diagnostic classification and treatments of ASD. The treatment literature arises from studies of cognitive-behavioral intervention in adults suffering from ASD, as well as from studies of cognitive-behavioral intervention in children who have developed PTSD, with this technique having been found to be effective in both cases. The findings of these studies, in the absence of evidence-based medicine with respect to ASD intervention in the pediatric population, reinforce the assumed principle whereby relevance is attributed to early cognitive-behavioral intervention with the appropriate adaptation following trauma in this younger age group. The vignettes presented portray this principle, used to reduce reactive distress and facilitate organization and constructive coping of pediatric patients and their parents during the period surrounding the traumatic event. There remains a need for evidence-based trials providing long-term follow-up with respect to preventive efforts.

MeSH Words: Acute Stress Reaction, Pediatrics, Terrorism, Posttraumatic Stress Disorder, Disaster Medicine, Mass Casualty Event.

Introduction

In this presentation we will discuss a series of psychological interventions carried out with child victims of terror and their families, in the trauma unit of Schneider Children's Medical Center of Israel. The events described took place

in 2002, a period of escalating terror attacks during the Intifada, to which the Israeli population was exposed. In light of the random nature of the incidents, their geographical location and their frequency, a large number of injured and traumatized children were treated at our hospital.

The rationale for immediate intervention during the acute phase has two main aspects: First, to ease the immediate distress and 'reaction load,' of the traumatized children and their families [1]. Second, to prevent long term post traumatic effects given their devastating influence in many trauma victims [2]. In order to provide an effective response, the patterns of reaction and distress as well as the presence of risk factors for a long term disorder must be recognized.

The Range of Responses to Trauma in Child Victims

The reactive patterns described in the pediatric trauma literature are generally similar to those described in adults and include hyper-arousal, re-experiencing, and avoidance [2]. Amongst them are described several reactions unique to children, correlating to their abilities and their developmental limitations [3,4]. Thus, hyper-arousal in young children will manifest in crying, 'clinginess' to a parent, anxieties that are relevant to the developmental stage but not directly related to the trauma, including separation, strangers, darkness, and monsters, and, finally, sleep disturbances, such as bad dreams, night terror, and sleep walking. Re-experiencing can be evident in repetitive play or rigid reconstruction of the trauma during play, painting, or verbalizations. Avoidance can manifest itself in reduced play activity, as well as affect and developmental regression, such as the loss of acquired language skills or toilet habits [5-8].

With age, somatic complaints, anger, and difficulty handling frustrations, new fears, negativism, difficulty concentrating, and learning problems are added to the repertoire of traumatic symptoms. In adolescence, hyper-arousal, intrusive memories and flashbacks, numbing, dissociative symptoms, functional withdrawal, learning problems, low self-esteem, moodiness, general anxiety, depression, suicidal thoughts, and risky and antisocial behaviors have all been associated with post-trauma. [9-13]

Diagnostic Classification

The reactive overload described above usually eases within the first month after the traumatic event. Otherwise, it serves as an indication to the possible development of a posttraumatic disorder. The psychiatric classification is

divided in defining acute stress reactions, but regardless of the classification posttraumatic disorder is viewed as the continuation.

The ICD-10 defines Acute Stress Reaction (ASR) as an acute and passing disorder apparent in a person not showing another mental disorder, being a reaction to acute physical or mental stress [14]. The reaction has an immediate onset and it subsides within hours to a couple of days. The symptoms are severe, mixed, and variable, and include shock, disorientation, 'dissociative freezing,' agitation, and autonomic signs, including tachycardia, sweating, and blushing.

The DSM IV-TR (APA, 2000) defines Acute Stress Disorder (ASD) as a response to a traumatic event that involves a threat to one's life and/or body, massive fear, helplessness and horror, the appearance of severe dissociative symptoms and the three clusters of re-experiencing, avoidance, hyper-arousal, and distress and functional difficulties. ASD lasts at least 2 days - 4 weeks [2].

Posttraumatic Stress Disorder (PTSD) is similar to ASD with respect to the 3 categories of symptoms, distress, and functional disturbances, but differs with respect to the time dimension; it lasts longer than a month and lacks the dissociative reactions. Gilboa et al. (1994) suggest a different classification, defining burn victims as suffering from Continuous Traumatic Stress (CTSD) [15]. The definition of PTSD assumes that the traumatic event is over, whereas the burn victim faces ongoing severe physical pain and mental distress that can comprise an ongoing trauma. In such a situation, the defense mechanisms, including dissociative symptoms, can last or re-occur without being signs of pathology.

The traumatic reactions described here, in terror victim children in the acute phase (including those severely injured), likely parallel those described above for ASR, ASD, and CTSD.

Prevalence of Posttraumatic Disorder in Children

In spite of the lack of epidemiological data, available sources suggest a very high prevalence of PTSD in children, with estimates varying from 3 – 100%, depending on the type of the event, the measures used to assess trauma, the

sample, and the time elapsed since the traumatic event [16-19].

Chemtob & Taylor (2002) in their research review found the highest incidence of PTSD in children who witnessed the murder of a parent (100%), very high rates of assault, domestic violence, sexual abuse (more than physical abuse), and urban violence, as well among adolescent refugees [16]. Life-threatening illnesses and car accidents resulted in 34% PTSD, whereas natural disasters resulted in significantly lower rates of 3 – 9%. These trends suggest that deliberate acts result in more trauma compared to other events.

Regarding terror, Solomon et al. (2005) report prevalence of PTSD in 4.5 – 70% of adolescents exposed to war and political violence, with relationships drawn between the degree of exposure and the presence and severity of symptoms [13]. In a screening study on post traumatic stress in Israeli adolescence from areas with high terror exposure, PTSD was found in 4.3% of the teenagers studied, with an additional 4.8% showing partial symptoms [20]. Findings from a phone follow-up survey conducted in the Hadassah Medical Center in Jerusalem suggest that a large proportion of minors who were treated in the emergency department during the second Intifada suffered from symptoms of PTSD many months later [21]. Research which examined the prevalence of PTSD amongst American adolescents following terror events (9/11 and the Oklahoma City) found a rate of 5%-11% of PTSD sufferers [22, 23]. Research from different places throughout the world indicates that post trauma rates amongst minors exposed to terror are between 20 to 50% [9].

Risk Factors for the Development of PTSD in Children

Several risk factors are involved in the development of PTSD in children [24]. Foy et al. (1996) indicate the severity of exposure to trauma, parental distress relating to the trauma, and the time frame, as the most significant and consistent factors in the various studies [25].

The degree and severity of exposure relates to both subjective and objective factors, including the physical proximity to the events, direct versus indirect exposure, duration of exposure,

the feeling of threat, and the associated injury and/or loss [10,13,26,27].

In younger children, young age appears to be a risk factor for post trauma, due to the limits of cognitive ability, which makes it difficult for the child to evaluate and understand the event [28]. With respect to gender, girls are found at higher risk to develop PTSD compared to boys [29]. Also, with respect to parental distress, there is a consensus that the emotional response of the parents to the trauma has an effect on the development of PTSD in children, in particular when parental distress is severe or if there is a history of psychiatric disorders. (This factor is considered meaningful in various traumas, including severe physical traumas, which may be associated with wars, and is thus relevant to this study) [30-40].

Lyon (1987) claims that the best single predictor of recovery among children who survived a traumatic event is the ability of the parents and adults to cope with it [41].

Unlike adults, in which the presence of dissociative reactions was found to predict the development of future PTSD, research did not confirm the relationship between acute stress reaction in children and the development of PTSD [42-44]. Thus, the duration and persistence of symptoms over time, mentioned above as the third factor, seems to predict the development of PTSD in children.

Intervention During the Acute Phase in Adults

Several studies have been conducted with ASD patients in order to prevent PTSD. Most of them have investigated Cognitive Behavioral Therapy (CBT) in this context. CBT involved education about trauma reactions, breathing retraining, progressive muscle relaxation training, learning self-talk exercises to manage anxiety-producing situations, prolonged imaginal and in vivo exposure, and cognitive restructuring of fear-related beliefs. These studies show that CBT is effective in ASD treatment, and that early provision of CBT leads to better outcomes than provision of Supportive Counseling (SC) in the initial weeks after trauma [45-49]. However, some authors conclude that CBT may not be effective for certain individuals.

Memory Structuring Intervention in Early Intervention of Adult Trauma Victims

The above conclusion may suggest that some variations of the aforementioned CBT techniques might be necessary in targeting certain strata within the heterogeneous group of patients presenting with ASD. One such variation of the above CBT techniques in the treatment of ASD is the memory structuring intervention (MSI). It has been suggested that prevention or reduction of PTSD intensity may need to focus on shifting the processing of traumatic information from affective, somatosensory, and uncontrollable fragmented memory processes to linguistic, controllable, and more cognitive memory processes, by providing patients organization, labeling, and causality. [50]

The MSI involved asking the patient about an a priori set of time sections in his/her mind, clarifying the patient's details (e.g., upon the patient mentioning having shouted, asking whether the patient shouted because of pain), and precisely labeling thoughts and feelings. The therapist then repeated the trauma narrative in an organized, labeled, and logical manner, adding initial implications for the patient's life (insight). This was followed by the patient describing the traumatic event in the same manner as the therapist did, usually adding further details, describing events more objectively, and appearing less aroused. The patient practiced telling friends or family members the structured version of the traumatic event, to enhance the attempted memory shift. Finally, the patient rehearsed with the therapist in the second meeting the structured description of the traumatic events, and was taught about the importance of and asked about his/her social support.

Although MSI showed some superiority to supportive-listening control, the authors stated that no significant differences were found in relation to avoidance symptoms of ASD. In addition, the authors mentioned that MSI may not be indicated for patients with amnesia regarding the traumatic event.

PTSD Intervention in Children

Although there are quite a few studies of ASD intervention in the adult population, there remains a lack of literature dealing with ASD

treatment of children [12]. However, as a starting point, one might base the latter intervention on the already available principles.

In addition to the application of these principles, the approach to pediatric intervention for ASD can also be based on the knowledge of the 'late interventions' in children suffering from PTSD. Deblinger et al. (1996) studied the efficacy of short term CBT in children with PTSD following sexual abuse [51]. Treatment included components of gradual exposure, modelling, education, coping, coaching children body-defending techniques, and providing parents with appropriate skills and strategies. The outcomes indicate a significant decrease in symptoms and a significant advantage in involving parents in the treatment.

March et al. (1998) used a CBT group therapy with children victims of various trauma events, including accidents, injuries, storms, illnesses, criminal acts, burns, loss of a close adult, one or more years after the event [52]. The protocol included goal definition, skills practicing, expansion of knowledge, homework, and monitoring. They found that 57% of those completing the intervention no longer fitted the PTSD criteria. This research is significant in confirming the effectiveness of group work as a viable therapy option for children who experienced a range of traumatic events.

Chemtob et al. (2002) found a significant decrease in symptoms of PTSD, anxiety, and depression in children victims of a hurricane, treated with EMDR (Eye Movement Desensitization and Reprocessing) 3 years after the event [53].

Chemtob & Nakashima (2002) found that short-term psychosocial intervention with school-age children two years after experiencing a hurricane also confirmed significant reduction in symptoms [54]. The protocol included fostering a sense of increased control, adaptation to loss, forming new attachments, expressing and resolving anger, etc.

Rahamim et al. (2005) report on an ongoing study at the Schneider Children's Medical Center [12]. In this study, the effectiveness of Prolonged Exposure, an approach proven successful in alleviating the posttraumatic symptoms and in easing anxiety and depression

in adults, is examined in children and adolescents, with the outcomes seeming promising [55,56]. The intervention includes providing information on the syndrome, teaching relaxation techniques, live exposure to situations of avoidance developed after the trauma, and imaginary exposure to the traumatic story (organizing the memory story, habituating, and decreasing anxiety).

The approaches described support the effectiveness and benefits of cognitive behavioral interventions in the early phases in adults (prevention) and in PTSD in children. It is likely that a similar early approach properly adapted for children in the acute phase can also be preventative.

ED Protocols for PTSD

Several different protocols are used in Israeli EDs with ASD victims. These protocols are based on the same assumptions, and consist of determining the physical and mental status of the patient, including indications for distress and hyper-excitability, relaxing and normalizing responses, regulating anxiety, elementary cognitive construction through sharing information, orientation, setting goals and expectations for gradual return to normal function, providing instructions and coping skills, connecting the patient to other support systems, and deciding on a follow-up or individual treatment procedure.

In a workshop designed for professionals treating child trauma victims, Claude Chemtob (2002) suggested adaptations in light of his interpretation of the difficulties faced by children and parents following a severe traumatic event. For example, when a child falls and cries, the parent comforts him. When a child is traumatized, the parent's ability to cope is paralyzed, frozen, and in 'survival mode.' The parent is temporally unable to regulate him – or herself at all levels – physiologically, sensory-wise, emotionally, and cognitively). The role of intervention is thus to help the parent and child to shift from the emergency mode to a state allowing function and regulation. This is a positive rehabilitative approach. It does not support the use of cathartic processes, abreaction, or reconstruction or flooding, which can weaken the patient and support a state of helplessness. The aims of immediate

interventions are to achieve normalization of functioning through normalizing the major symptom of the child or parent, and to simplify the traumatic event and control the intensity of distress. These principals form the basis for the interventions herein presented.

Case Presentations

The present report describes vignettes of acute stress intervention for both children and their families at Schneider Children's Medical of Centre of Israel, following a wave of terror attacks.

February, 2002

A suicide bomber blows himself up in a pizza place inside a mall. Several youngsters are fatally injured. In the ED, there is a 14-year-old girl with facial lacerations, subdued. The physicians do not know as yet the severity of her injuries. The parents are withdrawn, and interaction is difficult. In an informal conversation with the staff, it is established that the father was injured and traumatized in another war. We know that emotional injury of a parent has an impact on the symptoms and posttraumatic coping of a child. This is noted as a high-risk criterion for subsequent PTSD in this child.

The 14-year-old girl has a cardiac injury as a part of a multiple system trauma. Upon arousal, she is flooded with flashbacks, viewing again and again the bomber's face and smile. The staff provides clarification, normalizes her reactions, and suggests that she expect attenuation over time. She is asking about her friends. The parents are instructed as to the importance of providing answers, as opposed to allowing information slipping through from random chats in the corridor or from the media. The parents gently refuse. But, several days later, having to inform their child about the death of another friend, the parents ask for staff assistance. However, they have already adopted previous suggestions and provided privacy and intimacy for their child, while delivering the news.

For a 16-year-old girl with a severe head injury, intervention included support and practical help for the family as well as psychological support for the girl upon awakening until she is transferred to a rehabilitation center. The

medical staff experiences great difficulty interacting with her because she seems to them to be helpless and depressed. With facialis, hemiparetic weakness, aphasia, blunt affect and lack of mimics (all signs of her brain injury) it is not easy to smile at all. A staff member sits with her, making conversation, giving simple instructions, and hand touching. All of this is in keeping with Claude Chemtob's approach: "When the therapist is at your side the tiger looks smaller."

Another 16-year-old girl is packed in bandages and ventilated. It will prove to be a fatal injury. By her bed is her energetic mother, who moves back and forth between two intensive care units; her 14-year-old son is in another hospital. As the son's condition stabilizes, he is transferred to our hospital in order to get him closer to the family and friends. We assess his physical and mental condition, and an immediate dialogue is formed, in preparation for the coming stress, related to the quick deterioration in his sister's condition. When she expires, we share the parents' pain and support them in the 'death telling' encounter with their son and friends.

Gradually, the families make their way back home. They will come back for rehabilitation, continuation of treatment, follow-up, and further surgeries. We try to tie loose ends as much as possible, in order to create a continuum of care.

March, 2002

Passover eve. A suicide bomber blows himself up in a hotel, in the midst of the Passover dinner. There are dozens of casualties, among them a 4-year-old boy, with a severe lung injury. He is sedated and ventilated, and undergoes weeks of intensive care. He has a tracheostomy. Upon awakening, he is scared, unable to talk, and panicked by the sounds of the tracheostomy. Therefore, the psychological intervention moves to non-verbal channels, with communication through play, as well as activation and relaxation in the 'white room,' including sensory activation and multimedia stimulation. This is done with the assistance of the educational team. Transferring him to the surgery ward allows interaction with other children and a more vital atmosphere.

The family members, who all witnessed the traumatic event, receive support and assistance in

the community. Yet we know about the vulnerability of the mother from a previous acquaintance, involving the hospitalization and surgery of their baby girl a short while ago. Here we also note a 'high risk' sign. With closure of the tracheostomy, the child can talk again and once more becomes friendly towards his family. He is discharged from the hospital, and the treatment moves to the community.

Two years later, in the midst of first grade, the child is referred to our trauma clinic. The referral describes attention and behavior problems, hyperactivity, and dysfunctional academic adjustment. In the course of the intake, the team is having difficulty reaching a diagnosis, with the differential including ADHD, either a developmental problem or a result of his injury, and partial PTSD, as there are no indications of avoidance or intrusive memories, due to his young age at the time of injury and his being unconscious in the context of anesthesia. In the course of therapy, the content of his play leaves little room for doubt. The therapist and the child reconstruct the story of his injury – the story of the event.

May, 2002

Summer, evening time. A suicide bomber explodes himself in a neighborhood commercial center in the vicinity of the hospital. The ED of the Children's Hospital is bracing to accept the psychologically traumatized children and families. It appears as if every symptom picked a different child. A 12-year-old boy comes in confused. His 11-year-old friend can't stop wetting his pants. A girl six and a half years old has difficulty breathing and is mute. Two brothers, an 8 and a 13 year-old come in with one detached and staring, looking dissociative, and the other aroused and in psychomotor agitation. We consider the two brothers to be at high psychological risk due to inappropriate parental reactions. Months later the older child will tell his therapist about the image of the decapitated head of the bomber.

In all these cases, psychological intervention consisted of acquaintance, evaluation, and orientation, done separately with each family, as well as clarifying the situation, providing information, and normalizing the reactions, with an emphasis on the main response of the child in order to avoid flooding). Thus, the child who

wet his pants was given the suggestion that even army officers would have wet their pants in similar situations. Relief was immediate. The six and a half year old girl started breathing, talking, and playing following an explanation that sixth-grade children would be more scared than her, but that they would then relax and communicate again. We expected attenuation and gradual relaxation. Provision of behavioral recommendations for the home and school, including following daily schedules and preferring children channels to news channels, which provide close ups of horror, anatomy, and destruction, was done. We established contact with the local education and community services, and organized the psychological follow-up, by phone or, when necessary, face-to-face. In receiving feedback on the recovery process, it was found to be very good, except in the case of one family, with the two brothers, whose complexity, already noticed in the ED, required expanded treatment.

Discussion

The article deals with the intervention in acute stress events, with an emphasis on the pediatric population. Treatment of ASD has been found to be especially important, because of its high association with PTSD, a chronic illness involving disability of its victims on numerous levels of functioning. Children are especially vulnerable to developing PTSD, as they may have limited ability to understand and appreciate the traumatic situation in the context of their being in the process of cognitive development. Also, they are naturally influenced by their parents, who inadvertently may actually serve to exacerbate the child's response under the stressful circumstances.

Due to the limited amount of available literature dealing with pediatric ASD intervention, early treatment to date of pediatric trauma victims is based, in part, on principles adopted from studies of adults with ASD. In the adult population, CBT has been found to be an effective treatment, apparently superior to supportive treatment. In addition, early intervention in children is based on the knowledge that CBT is an effective tool in decreasing the symptoms of PTSD in this younger age group.

Our experience while providing psychosocial care in the emergency department setting at

Schneider Children's Medical Center of Israel during a wave of terror events has emphasized the importance of early assessment and intervention in children exhibiting acute stress reactions. In the case of the severely injured children, there were additional elements of intervention, taking into account the ongoing trauma brought on by the necessary intensive medical treatment as well as the receiving of traumatic news. Although our individually-tailored intervention has enabled each child and her or his parents to better deal with the grave situation in the acute phase, long-term follow-up with respect to prevention unfortunately could not be achieved, due to transfer of treatment from the hospital setting to that in the community.

Today, we are in the midst of developing a protocol for early assessment and treatment as well as follow-up of children presenting to emergency rooms following different types of trauma. This protocol is based on standardized approaches, yet at the same time preserves the principle of tailoring the intervention to each child's needs.

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