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'Closer than the moon, even closer than the depths of the seas, the minds of children seem to most people not only mysterious, but impenetrable.'<sup>1</sup>

Few syndromes of psychopathology evoke as many powerful and diverse reactions in clinicians as trauma-induced syndromes, such as acute stress disorder (ASD) and post-traumatic stress disorder (PTSD), especially when they occur in children and in the youth.

The need for timely diagnosis and intervention is pressing. Treatment definitely prevents further morbidity and is also more effective when administered soon after the traumatic event.

Unfortunately, the recognition of trauma-related pathology is not easy in an age group in which development determines the form that the psychopathology will adopt. Children of all ages are susceptible to the effects of trauma. Many are particularly vulnerable to certain types of trauma because of their dependency on adults for care and safety, their limited ability to influence the events and surroundings in which they live, and their limited cognitive and emotional level of development.

The most prevalent and researched trauma is that which occurs directly to children, e.g. sexual and physical abuse, violent crime, motor vehicle accidents, and threatening illness, with invasive medical procedures. These children are at great risk of developing psychological symptoms. As recently as the 1980s it was widely believed that children only have transient reactions to single traumatic

events and soon put the experience 'behind' them. This misunderstanding largely resulted from a failure of researchers to interview children about their experiences and subsequent responses. Instead, they relied on reports from parents, teachers, etc. In fact, when questioned, children report a wide range of reactions and feelings after traumatic events. These tend to cluster around signs of re-experiencing the event, attempts to avoid dealing with emotions and a wide range of signs of increased physiological arousal. There may also be considerable co-morbidity, with depression, anxiety and pathological grief reactions.

After a traumatic experience repetitive, intrusive thoughts about the event trouble most children. Sleep disturbances, fear of the dark and nightmares are very common. Tiredness and difficulty with concentration as well as problems with memory are often seen. Separation difficulties are also prevalent in teenagers and it is not unusual for children not to let their parents out of their sight. Heightened alertness to danger is observed commonly. These children feel that life is 'fragile'. Children may have a loss of confidence in their future or a sense of a foreshortened future. Unsurprisingly, many develop fears associated with specific aspects of their experience and avoid situations which they associate with the event. Survivor guilt may also manifest. High rates of depression and anxiety as well as panic attacks may co-exist. Although not described in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV) criteria, psychotic symptoms may definitely be a component of PTSD. Unfortunately, many children and adolescents who survive traumatic experiences find it difficult to talk about their feelings with family and peers. Therefore other therapeutic approaches are of the utmost importance.

In children younger than 6 years the reaction to trauma is reflected in developmental aspects of their behaviour. These children can often convey

graphic accounts of their experiences if asked and often allude to the event in repetitive drawings and play. Antisocial and aggressive behaviour also occurs commonly.

**PREVALENCE AND INCIDENCE**

Considerable variability in prevalence has been reported in the literature, depending on the children's age, time lapsed since the traumatic event and assessment methods. An individual from the general population has approximately a 69% chance of experiencing a traumatic event during his or her lifetime. About 20% of children become traumatised by a traumatic event. Although studies vary, about 38% of children exposed to violence will develop a PTSD, 44% after sexual abuse and 20% after physical abuse.

After one episode children appear 'primed' to be more readily and easily traumatised in the future. A child's interpersonal and intrapersonal relationships have protective capabilities and a potential role in recovery. Children with adequate social support and strong, healthy familial interactions are more likely to recover completely from symptoms of trauma. In general, improvement may occur over relatively short periods of time when dealing with simple or single event-focused PTSD, especially with no underlying psychopathology and with normal, strong support.

**CO-MORBIDITY**

Children with unreported traumatic experiences may be misdiagnosed or partially diagnosed. Children may also be misdiagnosed or dual-diagnosed as suffering from attention deficit disorder or a learning disorder. Depression and diverse anxiety disorders often co-exist and adolescents may present with substance abuse. Behavioural problems are often the sole reason for referral of a child.

**TREATMENT**

Many traumatised children retreat into secrecy to 'deal' with the frightening event. The clinician must create a safe sanctuary where secrecy can be



*Fig. 1. Sandtray of a highly traumatised child.*

shared with an adult who can be trusted totally.

**PSYCHOTHERAPY**

Individual treatment is the mainstay of intervention.

- Cognitive-behavioural therapies help and support the child to master feelings of anxiety and helplessness.
- Desensitisation (with relaxation therapy) can be done but with extreme caution,<sup>2</sup> because children may suffer severe anxiety, owing to the vividness of their memories.
- Play therapy (structured or unstructured for the older child), as well as more psychoanalytical forms of therapy (like sandtray and art therapy) are promoted as diagnostic as well as therapeutic tools. These forms of therapy are much less threatening to the child than more direct forms.
- Sandtray therapy is an active psychological technique, incorporating elements of play therapy and analytical work. Children come to therapy in deep 'pain'. Often words fail to express their feelings. Facilitating symbolic expression of the conflict allows them to free blocked energy and discover a new pathway of resolution within the ultimate safety and trust of the therapeutic relationship.
- Psycho-education can be extremely beneficial for parents of traumatised children. The parents are

often scared, confused and uncertain about the origins of the child's behaviour. They often need to learn new strategies and parenting skills to deal with problematical behaviour and anger outbursts. In addition, children and adolescents gain security in knowing that their symptoms are valid and within the range of experiences for children affected by trauma.

- Dealing with bereavement in trauma victims who lost family or friends. A wide variety of techniques, including the use of play, drawings and storytelling, are used. Depending on the child's age, an appropriate psychotherapeutic model is utilised.

There is currently much interest in the technique of rapid eye movement desensitisation and reprocessing (EMDR). In this technique patients are asked to recall the traumatic event in images, while systematically moving their eyes rapidly.

**GROUP THERAPY**

The aim of group therapy is to share experiences and feelings, to boost children's sense of mastery and control and to share ways of solving common problems. Group therapy can also be handy and helpful as a means of continued support. There are different forms of group therapy, e.g. sandtray groups. There is a broad consensus that group treatment approaches will only be effective for some.

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Psychotherapeutic interventions should be the first line of treatment, especially in younger children.

### FAMILY THERAPY

When one member of a family experiences trauma, everyone in the family is affected. Feelings of insecurity, fear, guilt and shame can all be present in family members as a result of trauma. When the perpetrator of abuse is within the family, family therapy is essential for assessing the family structure and relationships, as well as new roles within the family. School teachers and other trustworthy role players may be involved to strengthen the child's support system.

### PHARMACOTHERAPY

Until recently drug treatment for PTSD has focused on treating only the co-morbidities, especially depression.

Literature on the use of medication in children with PTSD is sparse. Downward extrapolation from adult literature, combined with a clear understanding of the neurobiology of PTSD and its co-morbid conditions, may

serve as the basis for rational pharmacotherapy of PTSD. The pathophysiology of PTSD suggests an overactive noradrenergic system, serotonergic dysfunction, reduction in the volume of the hippocampus and involvement of brain-derived neurotrophic factor (BDNF). Currently there are too few studies in paediatric PTSD literature to confirm treatment regimens. Seedat *et al.*<sup>3</sup> conclude that although the selective serotonin reuptake inhibitors (SSRIs) have an established efficacy and safety in the treatment of adult PTSD, literature on their use in child and adolescent PTSD is rare. Although much more controlled data are desperately needed, SSRIs are currently among the most commonly prescribed psychotropic medication in children.

The following drugs may be used with care after the diagnosis of PTSD has been confirmed (and all other physical and mental dual diagnoses have been excluded):

- SSRIs — citalopram (Cipramil), fluoxetine (Prozac), fluvoxamine (Luvox), etc. may be considered for treatment as they seem to be effective for symptoms of re-experience and avoidance, as well as for depression and anxiety.
- Imipramine (Tofranil) is FDA approved for children for other indications and may be used for anxiety and insomnia.
- Hydroxyzine HCl (Aterax) has been

registered for anxiety disorders and sleep disturbances.

- Anticonvulsants are sometimes used as third-line treatment for their 'kindling' effects.
- Atypical antipsychotics — risperidone (Risperdal) and olanzapine (Zyprexa) — are used for symptoms of psychosis. Neither of these two has been registered for PTSD.

### CONCLUSION

- All children with symptoms of PTSD should ideally be referred to a specialist for evaluation, initiation of medication (if required) and psychotherapy.
- Psychotherapeutic interventions should be the first line of treatment, especially in younger children. Children and adolescents with severe symptoms and/or underlying psychopathology, insufficient support systems and a family history of psychiatric disease may duly benefit from medication.
- Because of the high degree of concomitant alcohol and drug abuse, benzodiazepines are usually best avoided in adolescents.
- Early detection and treatment are key elements in alleviating current symptoms and preventing further morbidity in the future.

'First of all...do no harm...' — Hippocrates

## SINGLE SUTURE

### HIPPO'S SUN PROTECTION SECRETS

A team in Japan have found that the slime on hippo skins protects them against not only bacterial infections, but the sun as well. When researchers collected fresh slime from a hippo's skin with a cloth, they found that the slime contains 2 pigments: a red one, which they called hipposudoric acid and an orange one, named norhipposudoric acid. The red pigment absorbs visible and ultraviolet light at wavelengths that show that it protects against the sun. Slime also stopped 2 colonies of pathogenic bacteria from growing.

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