The psychiatric consequences of trauma

David A Alexander

Trauma can have marked and sustained psychological effects. Those at high risk thereof can be identified, and effective treatments are available. This review provides guidelines for the effective management of the psychiatric sequelae of trauma.

Even a casual reader of history would be aware that man is no stranger to extreme adversity in the form of natural catastrophe, civilian accidents and military combat. To the victims of such events, society has frequently displayed an ambivalent and inconsistent attitude, including sympathy, blame and a denial of their suffering. It is only relatively recently that there has been a dedicated commitment to understand the nature, aetiology and treatment of post-traumatic reactions.

This article will describe historical landmarks in the understanding of post-traumatic psychopathology, characteristic psychiatric sequelae of trauma, prognostic factors which contribute to adverse reactions to trauma and recent advances in the treatment and management of such reactions.

HISTORICAL LANDMARKS

Military trauma

The history of military combat offers an incomparable opportunity to gain insight into post-traumatic reactions, and some of these are recorded in Homer's *Iliad* (Atchity, 1978). However, each new military campaign sired new diagnostic terms to add to a burgeoning lexicon of diagnoses. The enthusiasm for generating new diagnostic terms was not reflected in an understanding of the true nature or cause of such reactions. Physical aetiologies were by far the most popular contenders, and these included carbon monoxide poisoning, fever, diarrhoea, damage to the heart or the cortex, and even the restrictive effect on the respiratory system of tight military webbing and belts. There seemed to be a strong resistance to the idea that the psychological impact of the horrors of military combat might be largely sufficient to explain the adverse reactions so widely reported.

One of the more durable and popular terms was 'shell shock', introduced by a British doctor, Charles Myers, in early 1915. Unfortunately, it was also considered by many to be a disgrace for soldiers to report with shell shock. Some treatments proposed for shell-shocked soldiers seemed to be more punitive than therapeutic in intent (e.g. the application of electrodes to highly sensitive areas, such as the tongue and palate, and the subcutaneous injection of ether). Moreover, a number of traumatized individuals were executed by firing squad on the grounds of 'cowardice' and 'a lack of moral fibre'.

CIVILIAN TRAUMA

Curiously, civilian life offered few insights into how individuals react to tragedy and trauma, but Samuel Pepys, who described in his diary the impact of the Great Plague and the Great Fire of London, seemed to have suffered post-traumatic symptoms in relation to the fire, although this may have been in part a self-inflicted psychological wound because he took a rowing boat to get a closer look at the fire (Bryant, 1952).

The industrial revolution created new opportunities for catastrophe and accidents. In particular, Victorian doctors were intrigued by the consequences of railway accidents on their victims. One of the most noted victims of so-called 'railway spine' was Charles Dickens who, following a derailment, reported: 'I have sudden rushes of terror even when riding in a hansom cab which are perfectly reasonable but quite insurmountable' (Beveridge, 1997).

PSYCHIATRIC SEQUELAE OF TRAUMA

The Vietnam war encouraged a radical revision of our thinking about the relationship between traumatic events and subsequent psychopathology. The diagnosis 'post-traumatic stress disorder' (PTSD) was coined by the American Psychiatric Association (APA) and was intro-

Professor David A Alexander is Professor of Mental Health, Department of Mental Health, University of Aberdeen and Director, Aberdeen Centre for Trauma Research, Royal Cornhill Hospital, Aberdeen AB25 2ZH

duced into the 3rd edition of the *Diagnostic and Statistical Manual* (DSM-III; APA, 1980). The distinctive feature of this diagnosis was the attribution of responsibility for the psychopathology to the external stressor rather than to some putative moral or personality weakness.

Diagnostic and Statistical Manual (4th edn)

In the current version of the *Diagnostic and Statistical Manual* (DSM-IV; APA, 1994), there are two criteria relating to the stressor which require to be satisfied for this diagnosis:

1. The person experienced, witnessed or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
2. The person's response involves intense fear, helplessness or horror.

International Classification of Mental and Behavioural Disorders 10

PTSD first appeared in the *International Classification of Mental and Behavioural Disorders* in 1992 (ICD-10, World Health Organization, 1992). In it, the stressor criterion is defined rather differently:

> **'… a stressful event or situation (either short- or long-lasting) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone (e.g. natural or man-made disaster, combat, serious accident, witnessing the violent death of others, or being the victim of torture, terrorism, rape, or other crimes)'.**

Although there are other differences between these two taxonomies, the diagnosis of PTSD in each is described in terms of three distinctive symptoms:

1. The victim repeatedly relives or reexperiences the traumatic event through the medium of flashbacks, intrusive memories and/or nightmares associated with the trauma
2. The victim persistently avoids reminders of the trauma (e.g. avoiding talking about it, looking at their injuries or revisiting the scene of the trauma)
3. There are signs of hyperarousal as evidenced by an exaggerated acoustic startle response, insomnia and irritability. Hypervigilance (i.e. an exaggerated sense of risk and vulnerability) may also accompany hyperarousal.

The standing of PTSD

The introduction of PTSD has legitimized the suffering of victims of various kinds of trauma, including military combat, major civilian catastrophe as well as serious accidents and incidents associated with normal living (e.g. road traffic, industrial and domestic accidents and assaults), and it imposed some conceptual order on what was diagnostic anarchy (Alexander, 1996). It is also worth noting, however, that PTSD as a single diagnosis is not particularly common; in about 80% of cases, it is likely to occur in the context of comorbidity (anxiety, depression and substance misuse in particular). With regard to physical comorbidity, PTSD patients are also likely to have high rates of cardiovascular, neurological and gastrointestinal complaints (Fairbank et al, 2000).

It is important not to abuse the stressor criterion otherwise there is a risk of devaluing the whole concept of PTSD. This is a risk in the medicolegal domain because PTSD is a lucrative diagnosis in the field of personal injury compensation law. The Law Commission (1998) has produced an excellent text on liability for psychiatric illness.

Although there have been attempts to identify a biological marker for the condition (e.g. Miller et al, 2001), the diagnosis is very reliant upon patient self-report, and there are long-standing concerns about malingering and factitious symptoms. However, Resnick (1995) has produced useful guidelines for assessing the risk of malingering in relation to PTSD, and generally there is little evidence to suggest that the course of or recovery from post-traumatic syndromes is affected by compensation claims (O'Brien, 1998).

Prevalence

The lifetime risk of PTSD in the community is approximately 1% (Helzer et al, 1987), a figure similar to that for schizophrenia. Reviews of epidemiological data from 'at risk' groups (e.g. Fairbank, 2000) confirm that PTSD is a major health problem. The following represent the percentage of victims of different kinds of traumas who developed PTSD: rape – 47% (Rothbaum et al, 1992), burns – 45% (Tarrier, 1995), road traffic accidents – 10% (Mayou et al, 1993).

Recent biological developments

PTSD has encouraged exciting research developments in a number of biological domains. For example, it has been noted that PTSD is associated with reduced hippocampal volume (Malazia and Nutt, 2000), and neuroendocrinological studies have also demonstrated that PTSD has a paradoxical neuroendocrine profile (Yehuda, 2000).

Other post-traumatic conditions

The ICD-10 recognizes a number of other post-traumatic conditions. These include:

Acute stress reaction (F43.0): The characteristic features of this transient disorder are an initial state of shock, numbness and disorientation, followed by fluctuating symptoms, such as depression, anxiety, anger, social withdrawal and autonomic overreactivity. This condition typically appears within a few minutes of the traumatic event and remits spontaneously within a few days thereafter.

Adjustment disorders (F43.2): The onset of these conditions is normally within about 1 month of the traumatic experience, and with the exception of one adjustment disorder (prolonged depressive reaction, which may endure up to 2 years), such conditions do not normally last more than 6 months.

Dissociative disorders (F44): These conditions are an unconscious response of acute onset and may take the form of amnesia, stupor, paralysis or sensory loss. The symptoms tend to remit within a few months post trauma.

Enduring personality change after catastrophic experience (F62.0): Following a stress of extreme severity (e.g. torture, being taken hostage and concentration camp incarceration), there may be irreversible personality changes including:

- A hostile and mistrustful attitude
- Social withdrawal
- Feelings of emptiness or hopelessness
- A chronic sense of being 'on edge'
- Estrangement.

PROGNOSTIC INDICATORS

There is no single trauma, however awful, which is guaranteed to cause post-traumatic symptoms or problems of adjustment in all those who survive it. There are factors relating to the trauma and to those who survive one which are particularly associated with adverse reactions (Alexander, 1999).

Features of the trauma associated with development of PTSD include:

- Prolonged exposure (e.g. being trapped, taken hostage)
- Threat to life (as perceived by the victim)
- Multiple deaths and/or mutilations
- Sudden and unexpected
- 'Man-made' trauma (i.e. those traumas caused by human malice or irresponsibility)
- Intensity of exposure.

Features of the victim which may predispose to development of PTSD include:

- 'Serious' physical injury (as perceived by the victim)
- Special meaning (e.g. events involving the death of or injury to children)
- A particularly anxious pre-trauma personality
- Previous psychiatric history
- A lack of social and family supports
- Concurrent life stresses (other pressures in the patient's life may compromise his/her ability to cope with the index trauma)
- Previous trauma to which the individual has not fully adjusted
- Particularly severe initial reactions to trauma
- Socioeconomic factors (female gender, low socioeconomic status, age – children, adolescents and the elderly are particularly vulnerable).

The ripple effect

The impact of a trauma may also involve a number of others, including those who witness it, those who just missed being involved and the relatives and families of those directly involved. In a recent publication, Alexander and Klein (2001) confirmed that even experienced professional staff in the trauma field may themselves be subject to adverse reactions.

TREATMENT AND MANAGEMENT OF POST-TRAUMATIC SYNDROMES

Systematic research into the treatment and management of such syndromes has a disproportionately brief history, although the number of psychoactive agents and psychological interventions which have been proposed is legion. Thus, at this stage, the database is still limited and only general guidelines can be offered.

Medication

Drugs do not themselves solve problems, and no compound can be expected to alleviate all post-traumatic symptoms or suffering, but there is a role for the selective use of medication (O'Brien, 1998).

Benzodiazepines: These may have a role to play as a short-term measure in the acute stage to combat, for example, overwhelming anxiety and impaired sleep. They have little impact on core PTSD symptoms, and caution needs to be exercised in view of their potential for dependence and tolerance, for lowering mood and for causing disinhibition.

Beta blockers: These may be used to alleviate autonomic overreactivity; they seem to have no significant effect on anxious thoughts.

Anticonvulsants: Claims have been made for the value of carbamazepine and valproate for combating intrusive phenomena and hyperarousal respectively.

Neuroleptics: Unless there is evidence of paranoid or other psychotic symptoms, or of uncontrollable aggression and/or self-destructive behaviour, neuroleptics have no primary role.

Antidepressants: These compounds have been the most rigorously tested and there is most support for them. Despite the problem of dietary restriction, the newer reversible monoamine oxidase inhibitors may be of value in the case of treatment-resistant symptoms.

Until recently, tricyclic antidepressants were the antidepressants of choice, but they have now been supplanted by the selective serotonin-reuptake inhibitors, such as fluoxetine and paroxetine. The latter is the only agent which has acquired a licence in the UK for the treatment of PTSD.

Psychological interventions

Randomized controlled trials confirm that the most effective psychological treatments incorporate:

- A degree of controlled exposure to trauma-related material (as with graded exposure therapy and systematic desentizisation), and
- The revision of thoughts and assumptions about the trauma and its sequelae (as is the case with cognitive behavioural therapy).

Group approaches may make a particular contribution because of the opportunity that they provide for mutual support and shared learning about how to cope with the aftermath of trauma.

An innovative and still controversial treatment called eye movement desentizisation and reprocessing therapy has been the subject of more systematic evaluation than any other psychological treatment. While its theoretical rationale awaits definition, there is persuasive evidence that it can be effective, particularly by combatting intrusive reminders of the event (Devilly and Spence, 1999).

Psychological debriefing was proposed initially as a group approach for emergency personnel after 'critical incidents' (as a means of ameliorating the effects of traumatic events and preventing the emergence of post-traumatic syndromes), but it has also been used for civilians on a one-to-one basis following various kinds of trauma. The Cochrane Review (Wessely et al, 1999) has cast doubt on some of the claims made for psychological debriefing, although there are many questions yet to be answered about this procedure (Raphael and Wilson, 2000).

A CAVEAT

Most psychological interventions have the potential to cause harm through retraumatizing victims by re-exposing them to reminders of the trauma. This observation encourages us to be alert to the potential for harm occasioned by ill-trained (even if well-intended) practitioners and by the inappropriate timing of psychological interventions. HM

Conflict of interest: none.

Alexander DA (1996) Trauma research: a new era. *J Psychosom Res* **41:** 1–5

Alexander DA (1999) Human reactions to trauma. In: Greaves I, Porter K, eds. *Pre-Hospital Medicine*. Arnold, London: 537–47

Alexander DA, Klein S (2001) Caring for others can seriously damage your health. *Hosp Med* **62:** 264–7

American Psychiatric Association (1980) *Diagnostic and Statistical Manual of Mental Disorders*. 3rd edn. American Psychiatric Association, Washington, DC

American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders*. 4th edn. American Psychiatric Association, Washington, DC

Atchity KJ (1978) *Homer's Iliad*. Carbondale, Southern Illinois, PU

Beveridge A (1997) On the origins of post-traumatic stress disorder. In: Black D, Newman M, Harris-Hendricks J, Mezey G, eds. *Psychological Trauma*. Gaskell, London: 3–9

Bryant A (1952) *Samuel Pepys: the years of peril*. London Reprint Society, London

Devilly GJ, Spence SH (1999) The relative efficacy and treatment distress of EMDR and a cognitive behavioural treatment protocol in the amelioration of post traumatic stress disorder. *J Anxiety Disord* **13:** 131–57

Fairbank JA, Ebert L, Costello EJ (2000) Epidemiology of traumatic events and post-traumatic stress disorder. In: Nutt D, Davidson JRT, Zohar J, eds. *Post-traumatic Stress Disorder. Diagnosis, Management and Treatment*. Dunitz, London: 17–27

Helzer JE, Robins LN, McEvoy L (1987) Post-traumatic stress disorder in the general population. *N Engl J Med* **317:** 1630–4

Law Commission (1998) *Liability for Psychiatric Illness*. Law Com No 249. The Stationery Office, London

Malazia AL, Nutt D (2000) Human brain-imaging and post-traumatic stress disorder. In: Nutt D, Davidson JRT, Zohar J, eds. *Post-traumatic Stress Disorder. Diagnosis, Management and Treatment*. Dunitz, London: 41–51

Mayou R, Bryant B, Duthie R (1993) Psychiatric consequences of road traffic accidents. *Br Med J* **307:** 647–51

Miller RJ, Sutherland AG, Hutchison JD, Alexander DA (2001) C-reactive protein and interleukin-6 receptor in post-traumatic stress disorder: a pilot study. *Cytokine* **13:** 1–3

O'Brien LS (1998) *Traumatic Events and Mental Health*. Cambridge University Press, Cambridge: 209–41

Raphael B, Wilson JP (2000) *Psychological Debriefing. Theory, Practice and Evidence*. Cambridge University Press, Cambridge

Resnick PJ (1995) Guidelines for the evaluation of malingering in posttraumatic stress disorder. In: Simon RI, ed. *Posttraumatic stress disorder in litigation. Guidelines for forensic assessment*. American Psychiatric Press Inc, Washington DC: 117–34

Rothbaum BO, Foa EB, Riggs DS (1992) A prospective examination of post-traumatic stress disorder in rape victims. *J Trauma Stress* **5:** 455–76

Tarrier N (1995) Psychological morbidity in adult burns patients: prevalence and treatment. *J Ment Health* **4:** 51–62

Wessely S, Rose S, Bisson J (1999) Brief psychological interventions ('debriefing') for immediate trauma related symptoms and the prevention of post traumatic stress disorder (Cochrane Review). The Cochrane Library, issue 4. Update Software, Oxford

World Health Organization (1992) *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines*. WHO, Geneva

Yehuda R (2000) Neuroendocrinology. In: Nutt D, Davidson JRT, Zohar J, eds. *Post-traumatic Stress Disorder. Diagnosis, Management and Treatment*. Dunitz, London: 53–67

KEY POINTS

- Post-traumatic psychopathology represents a genuine health problem.
- Post-traumatic stress disorder is but one of several important post-traumatic syndromes.
- 'At risk' factors are identifiable.
- Selective serotonin-reuptake inhibitors, cognitive behavioural therapy, eye movement desentizisation and reprocessing therapy are effective treatments.
- Failure to recognize and to treat post-traumatic psychopathology is inexcusable.