Differentiating Mild Traumatic Brain Injury from the Trauma Response

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Dr. Ronald Kessler found in his 2000 study that "Posttraumatic Stress Disorder (PTSD) is a highly prevalent and impairing condition. Only a minority of people with PTSD obtain treatment. Early and aggressive outreach to treat people with PTSD could help reduce the enormous societal costs of the disorder."

Neuropsychologists know that a small portion of those who sustain concussion continue to have very debilitating symptoms even 18 months after their initial injury. These individuals have been referred to as the "Miserable Minority." Based on recent theory and research, it may be that some of these individuals continue to suffer in part because of the cumulative adverse effects of the Trauma Response as described by Drs. Peter Levine and Robert Scaer. Early identification and proper treatment could greatly ease the suffering of these individuals.

Please note: the following is taken (often word for word) from the Scaer article and Levine's book "Waking the Tiger." (Thanks to my colleagues for their indulgence – they said it best! Also thanks to Marcus Kurek, Somatic Experiencing practitioner extraordinaire who helped with the formulation of this presentation.)

The Trauma Response

I. Traditional View of Posttraumatic Stress Disorder (PTSD)
   1. See attached handouts for diagnostic criteria

II. Description and Mechanics of the Trauma Response
   1. Fight, flight or freeze in the face of inescapable life threatening event
      a. Survival value of freeze
         1. Predator may become confused and go away
         2. Large amounts of endorphins released and dissociation (feeling detached from the situation) are nature's kind way of preparing us for a less traumatic death
   2. What happens in the nervous system?
      a. Bracing pattern to protect portions of the body from impact
         1. The bracing pattern can be maintained indefinitely in procedural memory (a form of unconscious, nonverbal memory involving learning sequences of synchronized motor acts such as athletic, musical or artistic skills). There is strong evidence that memories of the motor sequences of a traumatic experience may be stored in procedural memory - probably in orbitofrontal and limbic as well as cerebellar, vestibular and basal ganglia connections of the brain.
      b. Manifested by sustained muscular contraction of muscle groups.
      c. Sustained hyper arousal
         1. High state of autonomic arousal
            A. Autonomic nervous system – controls the glands and smooth muscles that comprise the heart, blood vessels, and the lining of the stomach and intestines.
            B. Divided into sympathetic – in emotional excitement it simultaneously speeds up the heart, dilates the arteries of the muscles and heart, dilates the pupil, and constricts the arteries of the skin and digestive organs; its

action leads also to perspiration and to secretion of certain hormones that increase emotional arousal. Dominant in violent and excited activity.

C. And parasympathetic – Dominant in quiescence. Participates in digestion and, in general, maintains the functions that conserve and protect bodily resources. The two divisions often act with one on and the other off. However, they interact in complex ways, and their interaction is not fully understood. For example, when under attack a trapped animal will enter a freeze response where it assumes a state of immobility while physiologically still manifesting high levels of both the parasympathetic and sympathetic nervous systems.

D. A state of sustained hyper arousal may markedly affect behavioral and characterological development.

3. Unfreeze
   a. If the animal survives the attack, it will go through a period of discharge of this high level autonomic arousal through the motor system involving trembling, running movements, shaking, sweating, and deep breathing.
   b. Important to complete the action of what the organism was trying to do to escape at the time of trauma.
      1. In humans, we have been seen to try to shake it off and/or run
      2. Or escape and/or yell
4. Societal Impediments to Unfreeze
   a. Blaming the victim
      1. Expectation that trauma survivor should have done something when nothing could be done.
5. Nervous System Learned Helplessness
   a. With multiple traumas there is a cumulative effect from the sequential elevation of the arousal mode of the autonomic nervous system with accumulated **unresolved** trauma.
6. Resiliency
   a. Ability to deal with freeze/unfreeze may depend on life experience with trauma
   b. Many chronic pain patients have history of child abuse or multiple traumatic experiences.
   c. Childhood trauma has also been linked to a variety of clinical syndromes including fibromyalgia, premenstrual syndrome, functional bowel syndrome, and chronic pelvic pain.
   d. Accident survivors with histories of multiple traumas are likely more at risk to develop the Trauma Response as a result. Dr. Scaer's research found that most of the patients he diagnosed with the Trauma Response (who had not resolved emotional, physical and cognitive problems after an accident or assault even after many months) had multiple traumas in their backgrounds. However, it is important to note that were it not for their accident, they would have very likely continued at their prior level of functioning.
7. Why the Trauma Response looks like the consequences of concussion/mild traumatic brain injury (MTBI)
   a. See attached diagnostic criteria for PTSD

Initial Common Symptoms of Trauma

I. Core Symptoms
   1. Hyper arousal ("the accelerator in nervous system")
      a. Increased heartbeat and breathing

b. Agitation
c. Difficulty sleeping
d. Tension
e. Muscular jitteriness
f. Racing thoughts
g. Episodes of intense anxiety including panic attack
h. Intrusive imagery (flash backs, terrifying visualizations)

2. Constriction in Body and Perception
   a. Changes in breathing, muscle tone and posture
   b. Constriction of blood vessels in skin, extremities and viscera (so more blood is available to the muscles which are tensed and prepared to take defensive action)
   c. Hyper vigilance- perceptual awareness of environment constricts so that full attention is directed toward the threat (during trauma only salient input is paid attention to)

If these first two reactions to defend self fail, then:

3. Dissociation as if watching self from outside of self; "a fearless calm" (breakdown in continuity of a person's felt sense, almost always includes distortions of time and perception)
   a. Feels like a "stupor," "dreaminess," "spaciness," "out to lunch"; benevolent reaction of nervous system to lessen impact of impending death

"keeps the undischarged energy of hyper arousal disconnected from the fullness of our experience," but " it interrupts the continuity of the felt sense, and in so doing prevents traumatized people from working effectively on resolving traumatic symptoms"

4. Helplessness- the emotional correlate to the physiological "response to overwhelming threat- the freezing response," "the brake" in the nervous system- but with a traumatic reaction. Both brake and accelerator operate together because the nervous system will keep mobilizing energy indefinitely until it "recognizes that the threat has passed" and this only happens when the "mobilized energy has been discharged" "at the same time the nervous system recognizes that the amount of energy in the system is too much for the organism to handle and it applies a brake so powerful that the entire organism shuts down on the spot. With the organism completely immobilized, the tremendous energy in the nervous system is held in check" p. 142 "Shaking the Tiger"
   a. Feels like "abject helplessness"; a "sense of paralysis so profound the person" (may not) "scream, move or feel."

   This symptom least "likely to be experienced, unless you have suffered an overwhelming threat to your life." "Yet…helplessness is nearly always present in the early stages of overwhelm" resulting from a traumatic event.

II. Early Symptoms of Trauma

1. Being "on guard" at all times
2. Intrusive imagery or flashbacks
3. Extreme sensitivity to light and sound
4. Increased activity- may be seen as restless, irritable, impatient, having trouble sticking with a task or concentrating for the usual period of time
5. Exaggerated emotional and startle responses
6. Nightmares and night terrors
7. Abrupt mood swings e.g. rage reaction or temper tantrums, shame

8. Reduced ability to deal with stress (easily and frequently stressed out)
9. Difficulty sleeping
10. Increased reactivity to feedback, especially if perceived as critical
11. May feel sense of detachment and shock as first sensations immediately following impact in motor vehicle accident, then development of increasing neck stiffness and pain. **Most symptoms do not appear for 24-48 hours.**

III. Next Stage of Trauma Symptoms

1. Panic attacks, anxiety and phobias
2. Mental "blankness" or "spaciness"
3. Exaggerated startle response
4. Hyperactivity
5. Exaggerated emotional responses
6. Nightmares and night terrors
7. Avoidance behavior (avoiding certain circumstances)
8. Attraction to dangerous situations or not being proactive about self-safety
9. Frequent crying
10. Abrupt mood swings: e.g. rage reaction or temper tantrums, shame
11. Exaggerated or diminished sexual activity (may include tactile defensiveness)
12. Amnesia and forgetfulness
13. Inability or severely reduced ability to live, nurture, or bond with other individuals
14. Fear of dying, going crazy, or having a shortened life
15. Reduced ability to deal with stress (easily and frequently stressed out) especially by changes in routine, unexpected occurrences, multiple demands and/or multiple sources of stimulation (sensory, environmental, cognitive, or emotional)
16. Difficulty with sleep (especially by "brain" not shutting down and by mid-cycle awakenings)

IV. Late Symptoms of Trauma (three to six months following trauma) – The Full Blown Trauma Response

These symptoms can be "stable (ever-present), unstable (will come and go), or they can hide for decades." The construction of symptoms usually "grow increasingly complex over time, becoming less and less associated with the original trauma experience."

1. Excessive shyness
2. Muted or diminished emotional responses
3. Inability or fearfulness about making commitments
4. Chronic fatigue or very low physical energy (very common, especially following re-activation of some aspect of trauma or over activation of nervous system)
5. Immune system problems and certain endocrine problems such as thyroid dysfunction
6. Psychosomatic illnesses, particularly headaches, neck and back problems, asthma, digestive, spastic colon, and severe premenstrual syndrome (a number of these patients are labeled as having a Somatization or Somatoform Disorder)
7. Depression, feelings of impending doom or "why bother" attitude
8. Feelings of detachment, alienation, isolation - "living dead"
9. Diminished interest in life/ reduced socialization
10. Fear of dying, going crazy, having a shortened life, fears of susceptibility of loved ones to harm
11. Frequent crying "for no reason"

12. Abrupt mood swings, e.g. rage reactions or temper tantrums, shame, feelings of "I should have done something" or "something more"
13. Exaggerated (infrequent) or diminished/absent (much more common) sexual drive or activity, may include tactile defensiveness
14. Amnesia and forgetfulness
15. Feelings and behaviors of helplessness
16. Sense of being abandoned, rejected, misunderstood (especially feeling that their symptoms are minimized by others)
17. Inability/difficulty to love, nurture, or bond with other individuals
18. Difficulty with sleep; over activation - repetitive awakening, sometimes with nightmares, often with themes of helplessness
19. Reduced ability to deal with stress and to formulate plans
20. Reduced ability to prioritize, organize or anticipate consequences- stuck in the now, hyper vigilant thinking and problem solving
21. Reduced word finding- word blocking and reversals, occasional neologisms (sound like made up words, or words that have beginning or endings mixed up or convoluted)
22. Impulsiveness
23. Pain- usually related to area that was affected by trauma
    a. Tension
    b. Trigger points- postural dysfunction- myofascial or pseudo-thoracic outlet syndrome. Fluctuating distal parathesias of arm and hand, often with edema and coolness of the hand
24. Irritability
25. Profound use of denial- others usually suggest they need help
26. Easily overwhelmed
27. Some behavioral manifestations of rage
28. Trouble keeping track of appointments
29. Often socially withdrawn secondary to low energy, reduced ability to decode nonverbal social sues, too much stimulation
30. Increased difficulty in relationships- can have major changes in their ability to fulfill role requirements
31. Reduced comprehension of speech- lose track of place in conversation
32. Binocular vision disturbance especially:
    a. convergence insufficiency
    b. impairment of binocular fusion
33. Unremitting tinnitus (ringing in the ears)
34. Atypical positional vertigo and balance disturbance
35. Facial parathesia
36. Autonomic dysfunction including orthostatic hypotension (head rush when they get up)
37. Atypical vascular headaches
    a. Both vasodilitory and vasoconstrictive; features similar to migraine, consistent with state of autonomic instability
38. Intrusive memories of accident trauma, particularly reactivity to "near misses" and viewing other accidents
39. May have symptoms even with a low velocity motor vehicle accident
40. Head forward position associated with protraction and elevation of the shoulder girdle (represents in many animal species the position of protection against threat as is bruxing and clenching of the teeth- typical neuromuscular pattern associated with threat)

41. Cognitive dysfunction often appears late
42. May look like attention deficit disorder
43. Over-responsiveness of sympathetic nervous system to even minor stressful stimuli
44. PTSD symptoms may have improved but then replaced with depression and variable state of dissociation and over activation

Differential Diagnosis of the Consequences of Concussion/MTBI

I. Importance of Taking a Comprehensive History

II. Importance of Extensively Evaluating – What's Going On?

1. Rorschach Inkblot Test now empirically validated using the Exner Comprehensive Scoring System (administration and interpretation do require significant training but Colorado has a number of excellent Rorschachers (Contact the International Rorschach Society, Rorschach Workshops C/O Society for Personality Assessment, 6109 H Arlington Blvd, Falls Church VA 22044, 703 534 4772, E-mail: Klecksen@aol.com Web Site: www.personality.org). Those with Trauma Response:
    a. Often see imagery of being trapped or damaged on the Rorschach
    b. They are usually in a high degree of overload with a lot of mental/emotional activity churning beneath the surface
    c. They often are working hard to prop themselves up to believe that they are just fine.
    d. The quality of their processing may be disturbed demonstrating distortion and poor problem solving but not usually so bad as to make them look like they have a thought disorder
    e. The ambiguous stimuli of the Rorschach may be upsetting to them – brings up emotions over which they don't feel a lot of control (if you can't figure it out, you're not safe)
    f. They often demonstrated extreme over reactivity to stress
    g. They don't usually show the kinds of difficulties that those with MTBI show on the Rorschach (positive on Coping Deficits Index, low EA, Low C, Passive movement, food response), inefficient processing.
2. Neuropsychological Testing of those with Trauma Response
    a. Do not usually have pathognomonic errors
    b. Do okay on delayed recall
    c. Lower scores on attention and concentration tests- especially tests that stress them and an increase in variability among their performances
    e. Usually better on visual memory than auditory- less multi-tasking
    f. May not do well on some forced-choice tests or tests of effort especially if they feel stressed by the task. However, they look fine on other tests of effort and clinically appear to be manifesting signs of cooperation and effort. This is why many folks with the Trauma Response are diagnosed as not giving their best effort and/or malingering.
    g. With effective treatment for the Trauma Response, there will usually be an increase in level of functioning on neuropsychological tests and in their

activities of daily living perhaps because they have more energy available for the thinking skills.

3. MMPI-2

a. MMPI either very defended – no problems at all, or shows very distressed – reporting increased level of symptoms
b. Sometimes misunderstand items or over analyze them

III. Importance of Using Clinical Intuition

1. Trauma survivors' symptoms have a different look and feel than MTBI
   A. Symptoms reported regarding multiple incapacities are not in line with neuropsychological results or neuropsychological results much worse than level of functioning. Their functioning may also be very dependent on how much stress activation there is just prior or during attempt of an activity.
   B. Dr. Bob Scaer and Marcus Kurek are giving daylong workshops on the Trauma Response so training in identifying this condition is available. Read the books noted in the bibliography for more information.

IV. Is Dual Diagnosis of MTBI and the Trauma Response Possible?

1. YES! It's even harder to tease out in the early stages of evaluation and treatment. Individuals are at higher risk for the Trauma Response if they have a history of multiple prior traumas, were rear-ended and/or saw the danger coming right at them. Look for a combination of the conditions and treat accordingly. It's very important to stage treatment for them so that they do not get overloaded. Neurobiofeedback seems to help.

Treatment

"Levine has found that by accessing the "felt sense" through therapeutic guidance, the individual may then access complex patterns of movement representative of prior traumatic experiences, may activate the sympathetic nervous system, and lead to a discharge of the retained autonomic energy through the somatic/motor system analogous to that which occurs with resolution of the freeze response in animals. This may be used as a therapeutic technique for desensitizing or deconditioning the autonomic nervous system and reducing the symptomatic load of autonomic arousal which causes many of the symptoms of post-traumatic stress disorder." Scaer, 1997 page 2. This then is the basis for the therapy called **Somatic Experiencing (SE)**. For most individuals suffering from the trauma response, it is among the most effective and quick methods for resolving trauma symptomatology. We are fortunate to have SE practitioners here in Colorado as Dr. Levine hails from Lyons and did a lot of training here. To locate SE practitioners please contact The Foundation for Human Enrichment, PO Box 1872, Lyons CO 80540, 303 823-9524, Email: Ergos1@earthlink.net, Web Site: www.traumahealing.com

There are other kinds of somatic therapy treatments that practitioners are using but with which this writer is not very familiar. Acupuncture, however, does seem to be quite helpful with calming down the nervous system! A supervised conditioning program also helps as it gets the individual moving again. This helps to fight against the toxic effects of the influx of stress hormones. Some professionals believe that chronic bathing in stress hormones is enough to produce subtle kinds of neuropsychological deficits and we know that they certainly contribute to biochemical depression.

Eye Movement Desensitization Reprocessing (EMDR) is also used for this condition and accesses the trauma through more mental/emotional routes. This technique is not for everyone!

You have to have a fair amount of emotional sturdiness to tolerate the intense emotions that come up in EMDR. However, according to Dr. Scaer, it is the treatment of choice for some Trauma Response survivors. EMDR with individuals suffering from the Trauma Response, because of the effect of multiple traumas, takes longer than for a single discrete trauma. Twelve to fifteen sessions are often required in this writer's experience. EMDR practitioners may be found through the EMDR International Association Directory (PO Box 141925, Austin TX 78714-1925, 512 451-5200, Email: EMDRIA@aol.com, Web page: www.EMDRIA.org).

Neuropsychotherapy can help individuals with the Trauma Response but often takes two to three years.

Bibliography

Kessler, Ronald. 2000. Posttraumatic Stress Disorder: The Burden to the Individual and to Society. Journal of Clinical Psychiatry, 61 [suppl 5]: 4-12.

Levine, Peter. 1997. Waking the Tiger – Healing Trauma. North Atlantic Books, Berkeley, CA.

Scaer, Robert. 1997. Observations on Traumatic Stress Utilizing the Model of the "Whiplash Syndrome." For a reprint of this paper contact Dr. Scaer at 372 Brook Circle, Boulder CO 80302 303 544-0717

For a full exposition of Dr. Scaer's paper, see his new book –
"Trauma, Dissociation, and Disease – The Body Bears the Burden." 2001. The Hawthorne Medical Press, Binghamtom, NY.

Please note: Dr. Michele Gerard maintains a private practice in Boulder, Colorado, evaluating children, adolescents and adults. She sees a limited number of full fee psychotherapy clients. Dr. Gerard is EMDR Level II certified but is not certified to practice the Somatic Experiencing (SE) technique.
Dr. Gerard does take auto accident (PIP) clients who **do not** have the Preferred Provider Organization (PPO) coverage, i.e. Sloan's Lake; does see a limited number of Worker's Compensation clients; but **cannot** take Medicare or Medicaid clients. For referrals of providers in the PIP PPO, and/or who take Medicare or Medicaid please contact BIAC (303 355-9969). Colorado neuropsychologists may also be found through the Colorado Neuropsychological Society or the National Academy of Neuropsychology's websites.

Dr. Gerard is a preferred provider for Blue Cross/Blue Shield **health** insurance only. If you would like to be seen by Dr. Gerard but are signed up with a PPO or HMO health insurance, please check with your health insurance to determine if they cover out of network providers before contacting Dr. Gerard. Thank you!

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