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Biomarkers in Posttraumatic Stress Disorder: Overview and Implications for Future Research

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Disease Markers
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http://www hindawi com/journals/dm/2013/835876/

There are still no biomarkers for PTSD in clinical use. Anyhow, there are numerous studies describing potential PTSD biomarkers, some of which might progress to the point of practical use in the future. Here, we outline and comment on some of the most prominent findings on potential imaging, psychological, endocrine, and molecular PTSD biomarkers and classify them into risk, disease, and therapy markers. Since for most of these potential PTSD markers a causal role in PTSD has been demonstrated or at least postulated, this review also gives an overview on the current state of research on PTSD pathobiology.

Trauma Exposure Predicts Alcohol, Nicotine, and Drug Problems Beyond the Contribution of PTSD and Depression in Patients with Cardiovascular Disease: Data from the Heart and Soul Study

Angela E. Waldrop, Beth E. Cohen

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This study examined the role of lifetime trauma exposure in a longitudinal study of adults with cardiovascular disease to determine the unique contribution of trauma exposure to risk for drug and alcohol problems and smoking. Data were drawn from the Heart and Soul Study, a prospective cohort study designed to determine the mechanisms of associations between psychological factors and increased risk of cardiovascular events in high-risk patients. Lifetime exposure to a higher number of trauma types predicted substance use outcomes beyond risk explained by PTSD and depression. In addition, across trauma types, interpersonal traumas were most strongly associated with substance use problems. Our results suggest that, though PTSD and depression play a role in the association between trauma exposure and substance use, many other factors also contribute; therefore focusing on these psychological comorbidities alone is not sufficient. The integration of mental health care and/or case management support with primary and specialty medical care may improve detection and
Neuroimaging of resilience to stress: current state of affairs

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http://onlinelibrary.wiley.com/doi/10.1002/hup.2336/abstract;jsessionid=06E0C1AF202F54C4D044395734EC3EE8.d01t03?deniedAccessCustomisedMessage=&userIsAuthenticated=false

Resilience is defined as a dynamic, multidimensional process encompassing positive adaptation within the context of significant adversity. The complex nature of this construct makes it a difficult topic to study in neuroimaging research; however, in this article, we propose ways to operationalize resilience. The limited amount of structural and functional neuroimaging studies specifically designed to examine resilience have mainly focused on investigating alterations in regions of the brain involved in emotion and stress regulation circuitry. In the future, neuroimaging of resilience is expected to benefit from functional and structural connectivity approaches and the use of novel imaging task paradigms.

Reduced Specificity in Episodic Future Thinking in Posttraumatic Stress Disorder

Birgit Kleim, Belinda Graham, Sonia Fihosy, Richard Stott, Anke Ehlers

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PTSD has been associated with a tendency to remember past personal memories in a nonspecific, overgeneral way. The present study investigated whether such a bias also applies to projections of future personal events. Trauma survivors generated brief descriptions of imagined future experiences in response to positive and negative cues in a future-based Autobiographical Memory Test. Survivors with PTSD imagined fewer specific future events in response to positive, but not to negative, cues, compared to those without PTSD. Reduced memory specificity in response to positive cues was related to appraisals of foreshortened future and permanent change. Training to enhance specificity of future projections may be helpful in PTSD and protect against potentially toxic effects of autobiographical memory overgenerality.

Identifying Youth at Risk for Difficulties Following a Traumatic Event: Pre-event Factors are Associated with Acute Symptomatology

Megan C. Goslin, Carla Smith Stover, Steven Berkowitz, Steven Marans
This study examined factors related to children's acute symptoms following a potentially traumatic event (PTE) to more clearly identify domains that should be included in screenings of youth exposed to a PTE. In particular, the authors examined whether trauma category (e.g., sexual abuse) was related to symptoms after controlling for other relevant factors. Participants were youth presenting for clinical evaluation within a month of a PTE and their nonoffending caregivers. Prior trauma exposure, preindex event functioning, and hostile parenting were uniquely related to children's symptoms in the acute posttraumatic period after controlling for time since the event and child age, but trauma category was not. Implications for identifying and referring children at high risk for poor outcomes in the early aftermath of a PTE are discussed. An exclusive focus on the event is insufficient and more comprehensive understanding of the child and family is required.

Gender Differences in Subjective Sleep After Trauma and the Development of Posttraumatic Stress Disorder Symptoms: A Pilot Study

Ihori Kobayashi, Douglas L. Delahanty

This pilot study prospectively examined whether gender moderated the relationship between subjective sleep soon after trauma and PTSD symptom development. Injury patients completed a sleep questionnaire and a 1-week sleep diary 2 weeks after their injuries, and the Clinician Administered PTSD Scale at 7-weeks postinjury. Results showed that women reported greater frequency of nightmares and disruptive nocturnal behaviors following the trauma and more severe PTSD symptoms at 7 weeks. Further, gender moderated the relationship between sleep-onset latency and PTSD symptom severity, such that longer sleep-onset latency predicted more severe PTSD symptoms in men, but less severe PTSD symptoms in women. These findings suggest that gender-specific mechanisms may underlie the relationship between sleep impairment and the development of PTSD.

The impact of eye movements and tones on disturbing memories involving PTSD and other mental disorders

Ad de Jongh, Robert Ernst, Lisa Marques, Hellen Hornsveld
This study was aimed at investigating (1) the effects of taxing the working memory, as applied in EMDR, during recall of negative memories in patients with PTSD, and patients with other mental disorders, and (2) whether the results would differ between both groups. In a therapeutic session patients were asked to recollect a crucial upsetting memory while, in counterbalanced order (a) performing eye movements, (b) listening to tones and (c) watching a blank wall ('recall only'). Eye movements were found to be more effective in diminishing the emotionality of the memory than 'recall only'. There was a trend showing that tones were less effective than eye movements, but more effective than 'recall only'. The majority of patients preferred tones to continue with. The effects of taxing working memory on disturbing memories did not differ between PTSD patients and those diagnosed with other conditions. The findings provide further evidence for the value of employing eye movements in EMDR treatments. The results also support the notion that EMDR is a suitable option for resolving disturbing memories underlying a broader range of mental health problems than PTSD alone.

Measuring trauma and stressful events in childhood and adolescence among patients with first-episode psychosis: Initial factor structure, reliability, and validity of the Trauma Experiences Checklist

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Psychiatry Research
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Traumatic experiences are thought to be a socio-environmental risk factor not only for poorer outcomes, but also potentially for the onset of mental illness. Because improved measurement tools are needed, we developed and studied, among first-episode psychosis patients, the factor structure, internal consistency reliability, and initial validity of the Trauma Experiences Checklist (TEC), our measure of trauma and stressful events during childhood/adolescence. We assessed validity of subscales using correlations with Childhood Trauma Questionnaire-Short Form, Parental Harsh Discipline, Violence Exposure, and TEC-Informant Version scores. Exploratory factor analysis resulted in two internally consistent subscales, interpersonal abuse and family stress, and violence, death, and legal involvement. Scores from the former subscale were substantially associated with CTQ-SF physical, emotional, and sexual abuse and Violence Exposure. On the other hand, violence, death, and legal involvement scores were most highly correlated with Violence Exposure, and not with most CTQ-SF subscales. The TEC is a potentially useful tool in assessing diverse traumatic life events across various social contexts during childhood and adolescence.

Association Among Clinical Response, Hippocampal Volume, and FKBP5 Gene Expression in Individuals with Posttraumatic Stress Disorder Receiving Cognitive Behavioral Therapy

Einat Levy-Gigi, Csilla Szabó, Oguz Kelemen, Szabolcs Kéri

Biological Psychiatry
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PTSD is characterized by a reduced expression of FKBP5, a key modulator of the glucocorticoid receptor. Smaller hippocampal volume has also been documented in PTSD. We explored possible changes in FKBP5 gene expression and brain structure in patients with PTSD after CBT. We measured peripheral FKBP5 RNA and volumes of the hippocampus, amygdala, and medial orbitofrontal cortex in patients with PTSD before and after CBT. The control subjects were trauma-exposed individuals without PTSD who were also assessed twice. Gene expression changes were screened and brain volumes were measured. At baseline, patients with PTSD showed lower FKBP5 gene expression and smaller hippocampal and medial orbitofrontal cortex, but not amygdala, volumes relative to control subjects. At follow-up, we found significantly increased FKBP5 expression and increased hippocampal volume in patients with PTSD. At follow-up, patients did not differ from control subjects in hippocampal volume. Improvement in PTSD symptoms was predicted by increased FKBP5 expression and increased hippocampal volume, but the primary predictor was FKBP5 expression. The most significantly altered gene expression in patients with PTSD relative to control subjects was found for ribosomal protein S6 kinase, which did not change after CBT and did not correlate with hippocampal volume. Clinical improvement in individuals with PTSD was associated with increased expression of FKBP5 and increased hippocampal volume, which were positively correlated.

Exploring the Role of Insomnia in the Relation Between PTSD and Pain in Veterans With Polytrauma Injuries

Katie Lang, Katherine Veazey-Morris, Frank Andrasik

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Soldiers returning from Operation Enduring Freedom/Operation Iraqi Freedom experience polytrauma injuries including traumatic brain injury. Traumatic brain injury is often complicated by symptoms of insomnia, PTSD, and pain that can impact treatment and rehabilitation. The medical records of veterans seen at a Veterans Affairs Medical Center Polytrauma clinic who sustained traumatic brain injury in combat were reviewed for this study. Demographic variables include age, sex, ethnicity, military branch, and service connection. Outcome measures include PTSD, pain, and insomnia. Analyses revealed a high prevalence of PTSD, insomnia, and pain. Increased PTSD symptomatology was significantly correlated with reports of more pain severity, pain interference, and insomnia. Further analyses, controlling for service connection, indicated that insomnia partially mediated the relation between PTSD and both pain severity and interference. These results highlight the overlap and complexity of presenting complaints in veterans and help identify the role of sleep disturbances in complicating diagnosis and treatment of veterans. As sleep problems reduce pain tolerance and exacerbate other symptoms, such as cognitive deficits and irritability, failure to address sleep disturbances may compromise rehabilitation efforts, suggesting the importance of a multidisciplinary team approach to assessing and treating these veterans.
Regional cerebral volumes in veterans with current versus remitted posttraumatic stress disorder

Linda Chao, Michael Weiner, Thomas Neylan

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We previously reported that hippocampal volume was associated with current, but not lifetime PTSD symptom severity. In the present study, we test the hypothesis that like the hippocampus, the volumes of other brain regions previously implicated in PTSD, are also negatively related to current, but not lifetime PTSD symptom severity. Veterans underwent structural MRI. Seventy-five veterans were trauma unexposed, 43 were trauma exposed without PTSD, 39 were trauma exposed with current PTSD, and 34 were trauma exposed veterans with remitted PTSD. Hippocampal, amygdala, rostral and caudal anterior cingulate, insula, and corpus callosum volumes were analyzed by group using MANCOVA. Veterans with PTSD had smaller hippocampal, caudal anterior cingulate, insula, and corpus callosum volumes than the unexposed controls; smaller hippocampal, caudal anterior cingulate, insula and marginally smaller corpus callosum than veterans with remitted PTSD; and smaller hippocampal and caudal anterior cingulate volumes than veterans without PTSD. In contrast, there was no significant volume differences between veterans with remitted PTSD compared to those without PTSD or unexposed controls. The finding that current but not lifetime PTSD accounts for the volumes of multiple brain regions suggests that either smaller brain volume is a vulnerability factor that impedes recovery from PTSD or that recovery from PTSD is accompanied by a wide-spread restoration of brain tissue.

Individual Differences in Personality Predict Externalizing Versus Internalizing Outcomes Following Sexual Assault.

Jessica L. Combs, Carol E. Jordan, Gregory T. Smith

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For some women, the experience of being sexually assaulted leads to increases in externalizing behaviors, such as problem drinking and drug use; for other women, the experience of being assaulted leads to increases in internalizing distress, such as depression or anxiety. It is possible that preassault personality traits interact with sexual assault to predict externalizing or internalizing distress. We tested whether concurrent relationships among personality, sexual assault, and distress were consistent with such a model. We surveyed women just prior to their freshman year at a large public university. Consistent with our hypotheses, at low levels of negative urgency (the tendency to act rashly when distressed), sexual assault exposure had little relationship to problem drinking and drug use. At high levels of negative urgency, being sexually assaulted was highly associated with those externalizing behaviors. At low levels of internalizing personality traits, being assaulted had little relationship to depression and anxiety symptoms; at high levels of the traits, assault experience was highly related to those symptoms. Personality assessment could lead to more person-specific postassault interventions.
Shame and PTSD Symptoms

Heidi La Bash, Anthony Papa

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Although current theories emphasize the role of fear in the etiology of PTSD, recent research suggests that shame may also play a role in the development of PTSD symptoms. This study tested if the experience of peritraumatic shame mediates the relationship between 2 conceptually linked PTSD risk factors (i.e., experiencing an interpersonal vs. impersonal reference trauma and number of previous potentially traumatic events [PTEs]) and current levels of PTSD symptoms. Path analysis was used to test a series of nested models assessing the indirect effects of these risk factors on PTSD via peritraumatic shame, while controlling for the potential indirect effect of these risk factors via peritraumatic fear. The final structural model found that the number of previous PTEs had a direct effect on current levels of PTSD, no association with fear, and a marginally significant indirect effect on PTSD symptoms via shame. The effects of reference trauma type on PTSD symptom levels was mediated by levels of both peritraumatic shame and fear, suggesting that shame, in addition to fear, may contribute to the development of PTSD symptoms in survivors of interpersonal traumas. The results underscore the need for further, more fine-grained research in this area and contribute to the nascent literature suggesting that other emotions, beyond fear, are important to our theoretical understanding of PTSD.

Trauma-Informed Treatment Decreases PTSD Among Women Offenders

Nena Messina, Stacy Calhoun, Jeremy Braithwaite

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This study combined data from two previous studies of women offenders in order to provide greater statistical power in examining the psychological trends found in the individual studies. Specifically, women in gender-responsive treatment (GRT) were compared to women in non-GRT in regard to their change in PTSD and related symptomatology from baseline to follow-up. Fifty-five percent of the women reported histories of sexual abuse and 37% physical abuse. Thirty-one percent had a PTSD diagnosis. Using Generalized Estimating Equations, significant group*time interactions were detected in PTSD and some related symptomatology (re-experiencing and avoidance). Given the aggregate impact of trauma in the lives of women offenders, they, their families, and their communities could benefit from research on how trauma influences their lives and on services that mitigate the negative impact of such histories.

The Role of Trauma Symptoms in Nonsuicidal Self-Injury

Noelle B. Smith, Chrystyna D. Kouros, Alicia E. Meuret
Reports of traumatic events by individuals who engage in (NSSI) are common. This review explores the thesis that trauma symptoms, rather than the experience of a traumatic event per se, underlie this relation, specifically suggesting that trauma symptoms might serve as a mediator. The literature indicates that self-injury plays an important functional role in coping with trauma symptoms such that self-injury can provide an escape from intrusive thoughts and aversive emotional states, as well as end dissociation and periods of numbness through the generation of feelings. Additionally, trauma symptoms have been shown to mediate the relation between the occurrence of traumatic events and NSSI. Taken together, trauma symptoms may play an important role in the development and maintenance of NSSI. The review concludes with treatment implications and future directions for research.

Sudden gains in prolonged exposure and sertraline for chronic PTSD

Janie J. Jun, Lori A. Zoellner, Norah C. Feeny

Sudden gains are significant, rapid improvements in symptoms, larger than typical between-session symptom reduction. In the present study, we examined the occurrence of sudden gains in psychotherapy, specifically prolonged exposure (PE), and pharmacotherapy, specifically sertraline, for chronic PTSD. Sudden gains in PTSD symptoms (PTSD symptom scale self-report) were assessed in individuals with PTSD during 10 weeks of PE or sertraline. Individuals in both PE and sertraline exhibited sudden gains. Individuals in PE made more gains toward the end of treatment than sertraline. However, individuals in sertraline made larger gains during early treatment than PE. Notably, those on sertraline were more likely to exhibit a reversal of sudden gains than those in PE. Pointing to clinical significance, the presence of a sudden gain was associated with better reduction in symptoms from pre- to posttreatment.