

Consequences of Post-Traumatic Stress Disorder: a Brief Overview of Existing Literature

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Received date: September 04, 2019; **Accepted date:** September 16, 2019; **Published date:** September 23, 2019

Citation: Mir Ali Raza Talpur, Amna Gul, Ahmer Miraj, Muhammed Anees Shahzad, Waqas Yaseen, Ali Khan. (2019) Consequences of Post-Traumatic Stress Disorder: a Brief Overview of Existing Literature. *J. Neuroscience and Neurological Surgery*. 4(5);

DOI:10.31579/2578-8868/091

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Abstract

Post-traumatic Stress Disorder (PTSD) can lead to multitudes of health consequences, including physical, reproductive and psychological which may be fatal. Consequences include suppression of immune system, increase risk of autoimmune diseases, sleep disturbance and behavioral regression. A body of data accumulated over several decades has demonstrated neurobiological abnormalities in PTSD patients. The authors have reviewed literature on various consequences of PTSD.

Keywords: Post traumatic stress disorder; Cognition; Mood; Sexual Abuse

Introduction

Experiencing a potentially life threatening situation (e.g. Rape) causes persistent hyper vigilance, avoidance of associated stimuli, intrusive re-experience of the event (e.g. flash backs, nightmares), changes in cognition or mood, which lasts for greater than 1 month with significant distress, depression or impaired functioning is defined as PTSD. According to WHO surveys in 24 countries, 29 types of traumatic events were identified and sexual abuse contributed 33% [1] The incidence of PTSD is higher in men compared with women (65% vs 46%), even though women are at a ten times greater risk to get raped.

PTSD is a disorder of stress response systems, it is known to have an increased rates of comorbidity with somatic disorders that involve immune and inflammatory process. Changes in hypothalamic-pituitary-adrenal axis and sympathetic-adrenal-medullary system are detected, which effects glucocorticoid and catecholamine's which are known to exert a powerful effect on the immune system. Persistent PTSD is associated with cognitive decline, sleep disturbance, physiological habituation, depressive disorders, and substance and alcohol abuse.

Review of Evidence

Surviving Rape is a traumatic experience that impacts its victims physically and psychologically and increases the risk of PTSD. Focusing on the consequences of PTSD multiple research and data was collected. Zuew wang [3] Indicated the immunological imbalanced skewed towards the pro inflammatory state. This is supported by increased levels of pro-inflammatory cytokines such as IFN- γ , IL-6, TNF- α , and IL-17 in the plasma, and increased levels of immune stimulatory Th1 and inflammatory Th17 cells in the blood [2]. The pro-inflammatory effect milieu of subjects with PTSD may predispose patients to autoimmune diseases such as thyroiditis, inflammatory bowel disease, multiple sclerosis, rheumatoid arthritis, and SLE [5]. A prospective twin study showed the risk factor for coronary artery disease to double in patients with PTSD, this could be due to the increased levels of immune chemokines such as CCL-2, which recruits monocytes toward the inflamed endothelium [6]. A meta-analyses [7-8] examined structural abnormalities of the hippocampus and other brain regions, using magnetic resonance imaging scans which have shown that there is significantly decreased volume of the right

hippocampus by 8%, left amygdala, and anterior cingulate cortex in

patients with PTSD compared with matched controls. Abnormalities in the frontal-limbic system were also detected. Deficits in short-term

verbal memory as

measured with the Wechsler Memory Scale were associated with smaller right hippocampal volume in the PTSD patients only.

Jenkins et al. [9] examined learning and memory in rape victims with and without PTSD. They used California Verbal Learning Test and found that women with PTSD performed worse on number of words learned ($p=0.02$; $d=-0.28$, $r=-0.13$) and long-delay free recall ($p<0.01$; $d=-0.24$, $r=-0.12$). In another study, Jenkins et al. [10] examined attentional dysfunction in rape victims with (N=15) and without PTSD (N=16) relative to non-traumatized comparison subjects (N=16), using a wide range of neuropsychological tests. Subjects with PTSD performed significantly worse on all measures, including Paced Auditory Serial Addition test, Continuous Performance Test sequential letter, Digit Symbol, and the Trails B. These results had strong effect size, even after accounting for depression. The authors concluded that measures of sustained and divided attention are associated with PTSD. Bremner et al. [11] focused on verbal and visual memory in premenopausal women who were sexually abused as children. They compared results in abused women with PTSD (N=18), abused women without PTSD (N=10) and women without abuse and with PTSD (N=15). On the Logical Memory Subtest of the Wechsler Memory Scale, abused women with PTSD had lower scores in verbal memory than abused women without PTSD ($p=0.002$; $d=-0.53$, $r=-0.26$), with medium effect size. This deficit remained after controlling for depression and correlated with severity of PTSD and sexual abuse. Authors concluded that PTSD associated with childhood abuse is related to deficits in verbal declarative memory.

Hans Selye was the pioneer to study the physiological consequences of acute and chronic stress on a range of organ systems 70 years ago. Recently, Greenberg MS [12] correlated the effects of early chronic stress with later life cognitive function dysfunction more commonly Alzheimer's, aging and vascular dementia. Given the magnitude of the issue, well-controlled studies are relatively few in number, and the effects they have revealed are modest in size.

A study was conducted to assess the relationship between trauma-related sleep disturbance and physical health symptoms in treatment-seeking female rape victims [13]. The PTSD symptom scale was used to evaluate

patients, the mean PTSD score on the PSS for the entire sample was 25.91 (SD = 8.01), indicating moderate PTSD symptoms. The mean score of PTSD-related sleep difficulties was 3.07 (SD = 1.53) indicating, on average, moderate problems with nightmares and insomnia. The correlational analyses showed a significant relationship of frequency of self-reported physical health symptoms with depression scores and all three PTSD sub-clusters of intrusion, avoidance, and hyperarousal symptoms.

Conclusion

Rape comprises of several consequences, which lead to PTSD and may cause long term psychological damage. Multiple researches have been conducted to prove that long term and persistent PTSD can severely dis-balance the immune system. Dysfunction the limbic system, sleep pattern and decrease verbal and visual memory.

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