

Editorial

Sham Peer Review and Increased Risk of Illness and Death

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It is an indisputable fact that sham peer review causes chronic stress for the physician victim. Peer review proceedings in a hospital often last months, and if the physician elects to sue the perpetrators, litigation can go on for years with the outcome uncertain.

Sham peer review is a moral injury, in which the physician is wrongfully accused of providing poor quality care or wrongfully accused of misconduct. Moral injury inflicts severe harm to the very core of a physician's identity. The physician's spouse and family are likewise subjected to severe chronic stress as the devastation unfolds.

In assessing the effects of stress on the body it is important to distinguish acute stress from chronic stress. Acute stress involves a brief event that has a predictable end. Chronic stress continues for a long time without foreseeable end. In general, acute stress produces a positive adaptive response in the body, and chronic stress produces a negative detrimental effect in the body.

The effects of chronic stress on the human body have been well studied. One article noted: "The recognition that chronic stress can cause serious diseases has intensified research to determine the biochemical perturbations that compromise homeostasis to a degree that prevents spontaneous recovery."¹ Another article stated: "The morbidity and mortality due to stress-related illness is alarming. Emotional stress is a major contributing factor to the six leading causes of death in the United States: cancer, coronary heart disease, accidental injuries, respiratory disorders, cirrhosis of the liver and suicide."²

Effects of Chronic Stress on the Immune System

Since the field of psychoneuroimmunology began about 50 years ago, it has been firmly established that stress alters the immune response. The physiology mediating the effects of chronic stress on the immune system is complex. It involves the sympathetic nervous system, which innervates bone marrow, thymus, spleen, lymph nodes and other organs.³ It also involves the endocrine system as mediated through the hypothalamic-pituitary axis, the sympathetic-adrenal-medullary axis and the hypothalamic-pituitary-ovarian axis.³ Secretion of cortisol, epinephrine, norepinephrine, growth hormone, prolactin, melatonin, β -endorphin, enkephalin, and insulin have widespread effects throughout the body.³

Receptors for stress neuropeptides and hormones are also present on white blood cells (immune cells).¹ Chronic stress is associated with suppression of both cellular and humoral immune responses.³ As noted in one article, chronic stressors "have negative effects on almost all

functional measures of the immune system.... Both natural and specific immunity [are] negatively affected, as were Th1 [T-helper lymphocytes] (e.g., T cell proliferative responses) and Th2 (e.g., antibody to influenza vaccine) parameters."³ Chronic inflammation can also cause activation of latent viruses.⁴ Vaccine studies have shown that chronic stress puts individuals at greater risk for a weakened response to both bacterial and viral vaccines, which can subject the individual to more severe illness or increased risk of death following infection.⁵ An excessive amount of cortisol present during chronic stress inevitably compromises immunocompetence. Excessive cortisol also drives gluconeogenesis in the liver, resulting in elevated glucose levels, increased insulin needs, and increased risk of developing Type II diabetes mellitus.² Chronic stress can also result in loss of control of diabetes.⁶

Studies have shown that the effects of stress-related chronic inflammation can contribute to the course of diseases like multiple sclerosis, rheumatoid arthritis, and coronary heart disease, and "thereby increase risk for excess morbidity and mortality."³ Corticotropin-releasing hormone, which is released during chronic stress, activates glial cells in the brain to release inflammatory molecules that cause inflammation of the brain and worsening of multiple sclerosis.⁴ Individuals with MS have difficulty down-regulating the immune response after exposure to stressors.⁴ This same response is seen with other autoimmune diseases⁴ including lethal brain conditions like progressive multifocal leukoencephalopathy (PML). Those who have a genetic predisposition to rheumatoid arthritis (presence of RF) are prone to developing rheumatoid arthritis under chronic stress.⁶ Lupus and Crohn's disease are also adversely affected by chronic stress.³ There is evidence that Th2 cytokine secretion can exacerbate diseases like asthma and allergies.³ The immunological effects of chronic stress can also shorten telomeres (end of chromosomes), an effect that is linked to the development of disease in older adults.⁴

Maladaptive behavioral responses to chronic stress, like excessive alcohol consumption, drug use, and other factors like altered sleep patterns, have an adverse effect on the immune system.³

Effects of Chronic Stress on Risk of Developing Cancer

Chronic stress is linked to the development of cancer and enhanced progression of existing cancer. Dr. Lorenzo Cohen, professor of general oncology and behavioral sciences and director of the integrative medicine program at the University of Texas MD Anderson Cancer Center, noted that

“stress makes your body more hospitable to cancer.”⁷ Dr. Anil K. Sood, professor of gynecologic oncology and reproductive medicine at MD Anderson, noted: “Chronic stress also can help cancer grow and spread in a number of ways.”⁷ This type of “no end in sight” chronic stress can weaken your immune system and leave you susceptible to neoplastic disease.⁷ Another article stated: “Chronic and acute stress, including surgery and social disruptions [e.g., sham peer review], appear to promote tumor growth.”⁶

The literature describes various mechanisms whereby chronic stress leads to increased risk of cancer or progression of existing cancer. Chronic systemic inflammation caused by sham peer review is paramount in promoting neoplastic disease.¹ Another mechanism by which sham peer increases the risk of cancer involves suppression of Type 1 cytokines and protective T cells and enhancing regulatory/suppressor T cell function.² Another such mechanism is by “direct induction of uncontrolled cell proliferation.”¹

Effects of Chronic Stress on the Heart

Chronic stress has a significant detrimental effect on the heart. As noted by one review article:

Psychosocial aspects of CHD [coronary heart disease] had been extensively studied and there is strong evidence that psychosocial stress is a significant risk factor for CHD and CHD mortality. Tennant found a positive relationship between life stress and cardiac infarction and sudden death; while study by Rosengren et al. reported that CHD mortality was increased two fold for men experiencing three or more antecedent life events. The INTERHEART study revealed that people with myocardial infarction reported higher prevalence of four stress factors: stress at work and at home, financial stress and major life events in the past year.⁶

Physician victims of sham peer review experience stress related to their work environment, stress at home as the family wonders how they will survive without income, financial stress related to attorney fees and deprivation of income, and the major life event of losing one’s identity as a physician.

The mortality statistics related to chronic stress and heart disease are shocking, especially for men with pre-existing cardiometabolic disease (e.g., CHD, stroke or diabetes). One study reported:

In men with cardiometabolic disease, age-standardized mortality rates were substantially higher in people with job strain (149.8 per 10,000 person-years) than in those without (97.7 per 10,000 person-years); mortality difference 52.1 per 10,000 person-years; multivariable-adjusted hazard ratio [HR] 1.68, 95% CI 1.19-2.35)....

Excess mortality associated with job strain was also noted in men with cardiometabolic disease who had achieved treatment targets, including groups with a healthy lifestyle (HR 2.01, 95% CI 1.18-3.43) and those

with normal blood pressure and no dyslipidemia (6.17, 1.74-21.9)....

In men with cardiometabolic disease, the contribution of job strain to risk of death was clinically significant and independent of conventional risk factors and their treatment, and measured lifestyle factors. Standard care targeting conventional risk factors is therefore unlikely to mitigate the mortality risk associated with job strain in this population.⁸

The American Heart Association acknowledges the effects of psychosocial stress on the heart, noting that it presents a barrier to lifestyle management and optimal medication management, and needs to be addressed in individuals at high risk for cardiovascular disease or who have pre-existing cardiovascular disease.⁸

Chronic stress-induced inflammation again plays a prominent role in the effects of chronic stress on the heart. A review article noted:

Predictably, the inflammatory response induced by the activation of this neuroimmune pathway may have adverse health effects, in particular by exacerbating pre-existing medical conditions. Specifically, the study demonstrated that this mechanism became activated when atherosclerosis-prone mice ApoE were subjected to long-term stress, leading to enhanced recruitment of inflammatory cells in atherosclerotic plaques, higher levels of proteases and increased plaque fragility.¹

Stress can cause increased serum cholesterol and can be a major factor in the etiology of hypertension, both of which can lead to coronary heart disease.⁶

Vasoconstrictive and prothrombotic effects of chronic stress also play a prominent role in the adverse effects of chronic stress on the heart. A review article published by the American Heart Association noted:

In the presence of a vulnerable atherosclerotic plaque, chemical, physical, and psychological stressors may trigger transient vasoconstrictive and prothrombotic effects that ultimately cause plaque disruption and thrombosis. Even in the absence of an occlusive thrombus, triggers may lower the threshold for cardiac electric instability and increase cardiac sympathetic activation via centrally mediated release of catecholamines, thereby evoking primary ventricular fibrillation and sudden cardiac death.⁹

Triggers can also increase platelet aggregation and plasma viscosity, either directly or through increased activity of the sympathetic nervous system, which can cause plaque disruption or thrombotic occlusion and result in an ischemic cardiac event.⁹ Increased cytokine production associated with chronic stress may also play a role in increased platelet aggregation.⁹

A multicohort study elucidated other mechanisms for chronic stress adversely affecting the heart.

Meta-analyses of prospective cohort studies have shown that psychosocial stress might increase the risk of cardiovascular disease and diabetes. The

underlying pathophysiological mechanisms include disturbed sympathetic-parasympathetic balance and dysregulation of the hypothalamic-pituitary-adrenal axis, which can accelerate the development of metabolic syndrome and lead to left ventricular dysfunction, dysrhythmia, and proinflammatory and procoagulant responses.⁸

Increased production of the stress hormone cortisol during chronic stress, can also induce endothelial dysfunction, myocardial ischemia, and cardiac arrhythmias resulting in increased risk of both fatal and non-fatal cardiac events.⁸

Effects of Chronic Stress on the Brain

The same prothrombotic effects, vasoconstrictive effects, increased platelet aggregation, acceleration of atherosclerosis, and increased plaque fragility that affect heart blood vessels also affect blood vessels supplying the brain, leading to an increased risk of stroke with chronic stress.

Chronic stress with increased levels of cytokines and stress chemical mediators can also cause neuronal cell death and structural changes in the brain. One article noted atrophy of the basal ganglia and significantly reduced gray matter in certain areas of the PFC [prefrontal cortex] in subjects afflicted with long-term occupational stress.

In general, the consequences of these alterations in a brain region can expand to other functionally connected areas, and potentially cause those cognitive, emotional and behavioral dysfunctions that are commonly associated with chronic stress, and that may increase vulnerability to psychiatric disorders.¹

Effects of Chronic Stress on Mental Illness

It is well established that chronic stress is associated with depression.¹ Chronic depression is also a well-known cause of pseudodementia, which adversely affects memory and cognitive function. The atrophy in the basal ganglia and prefrontal cortex that occurs with chronic stress is typically observed in depressed patients irrespective of the cause.¹ Chronic inflammation and proinflammatory cytokines accompanying chronic stress again play a major role in causing adverse effects. One article noted:

In the case of chronic inflammation that may set in with prolonged stress, persisting cytokine signaling in the brain prevents the resolution of sickness behavior that consequently can degenerate into depression.¹

Conclusion

Sham peer review causes severe chronic stress in physician victims. Chronic stress has widespread harmful effects on the body that increase the physician's risk of illness and premature death. Attorneys who represent physicians

in sham peer review cases may want to consider bringing a claim of intentional infliction of emotional distress against the perpetrators of sham peer review. In particular, when perpetrators of sham peer review cause moral injury by bringing false or fabricated accusations against a physician, they are intentionally acting to harm the physician and cause the physician distress. Such acts exceed the bounds of decency tolerated in a civil society and are thus outrageous and extreme. The anxiety and distress of a moral injury due to sham peer review is further exacerbated knowing that the physician is at increased risk for illness and death as a result of the chronic stress. Moreover, if a physician victim of sham peer review subsequently suffers one of the known conditions linked to chronic stress, including death, the physician's attorney may want to consider a claim of illness or death caused by sham peer review. Spouses and families that suffer the tragic loss of their loved one due to sham peer review deserve to be compensated for their loss.

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