

THE PSYCHONEUROIMMUNOLOGY OF RAPE

Maureen W. Groer, RN, PhD, Sandra P. Thomas, RN, PhD, Ginger W. Evans, MSN,
Sally Helton, MSN
University of Tennessee College of Nursing
1200 Volunteer Bld., Knoxville, TN 37996-4180

rape, health, immunity

Purpose: The purpose of the study was to investigate the acute effects of a sexual rape assault on the inflammatory response and neuroendocrine systems of female victims. Understanding the physiological responses to the acute experience may illuminate the more long term effects of rape on psychological and physical sequelae. Rape victims are known to have increased frequencies of both depression and post-traumatic stress disorder as well as a number of chronic pain syndromes, genitourinary illnesses, and even arthritis and cancer.

Method: The study was approved by the university IRB. Twelve rape victims were studied within 24-72 hours by Sexual Assault Nurse Examiners in a local Sexual Assault Crisis Center. An extra tube of blood was drawn after the routine venipuncture was completed. Permission was given to selectively extract some of the victim's routine assessment data. The behaviors recorded by the SANE nurses were coded into a score of either "expressing emotion" or "controlling emotion" or mixed behaviors. These behaviors included agitation, sobbing, trembling, vs. listlessness, quiet, staring behavior. The blood sample was immediately brought to the lab and processed for serum cortisol, ACTH, IL-6, C-reactive protein (CRP), lymphocyte flow cytometry, proliferation, and mitogen-stimulated in vitro cytokine production. The twelve victims were age and race matched with normal, non-abused control subjects who volunteered to participate. The same assays were performed on the control subjects' blood samples.

Findings: Rape victims had a mean age of 30.2, and were 75% Caucasian and 25% African American. Rape victims had higher levels of IFN- γ , IL-6, and much higher levels of CRP compared to controls. Serum cortisol was positively correlated with the "controlling emotion" behavior ($r=.82$, $p<.02$) in the rape victims. Cortisol and ACTH levels were highly correlated ($r=.82$, $p=.002$) across the entire sample and rape victims had a mean hypocortisolemia compared to controls. Another correlate was between IFN- γ and IL-6 ($r=.87$, $p<.005$). The CD4/CD8 ratio, which stress research indicates rises in stress, was correlated with CRP ($r=.94$, $p=.005$).

Discussion: The data support evidence of a lower HPA response and greater proinflammatory response in the rape victims compared to controls. Some victims had higher cortisol and ACTH, a classic stress response, while some had markedly lower values suggesting that some have desensitized to stress. The CRP was 3 times higher in rape victims, and proinflammatory cytokines IL-6 and IFN- γ were also higher, although TNF was not. As seen in other stress research, the CD4/CD8 (helper:suppressor) ratio was increased in the stress group (Zorrilla, 2001). These acute responses may help to explain both the psychological and physical effects of rape, as the proinflammatory pathway leads to cytokines that act on the brain to influence depressive symptoms, as well as acting physiologically on immune and inflammatory regulation.

