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The cortisol awakening response as a function of PTSD severity and abuse chronicity in sheltered battered women

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Abstract

Although intimate partner violence (IPV) is a significant social problem associated with severe psychiatric problems, most notably PTSD, only a handful of studies has examined PTSD and associated physiological factors in battered women. Further, no research to date has investigated impact of abuse chronicity on HPA functioning. The present study examined the impact of PTSD severity and abuse chronicity on the cortisol awakening response in a sample of 52 sheltered battered women. Results suggest that IPV-related PTSD and abuse chronicity have opposite effects on waking salivary cortisol curves in battered women. PTSD severity was associated with significantly greater cortisol output the first hour after awakening, while more chronic abuse was associated with lower total cortisol output in the first hour after awakening. Implications of findings and suggestions for future research are discussed.

Keywords: PTSD; Cortisol; HPA axis; Intimate partner violence; Battered women

Large-scale surveys conducted by the US Department of Justice suggest that as many as 22–29% of women report histories of physical abuse by intimate partners and that approximately 1.5 million women are raped and/or physically assaulted by a current or former partner at least once annually (Bachman & Saltzman, 1995; Tjaden & Thoennes, 2000). Battered women may comprise one of the largest traumatized populations in North America (Council on Scientific Affairs, 1992). Intimate partner violence (IPV) is often a chronic traumatic stressor, in that it typically involves prolonged and repeated episodes of physical, sexual, and emotional abuse that significantly disrupt a victim's sense of safety and security. As interpersonal abuse is associated with increased risk for developing posttraumatic stress disorder (PTSD; Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), PTSD is cited as one of the most frequent difficulties faced by battered women (Golding, 1999; Jones, Hughes, & Unterstaller, 2001). Further, battered women in shelters tend to experience greater severity of abuse and related injury (Saunders, 1994), and higher rates of PTSD (Jones et al., 2001) than battered women who never seek shelter. Battered women in shelters also provide a unique population of inquiry, in that the nature of their trauma is both recent and chronic. Unlike other trauma victims, sheltered battered women's trauma has often lasted many years and their fear for their safety and

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lack of resources is directly related to their need to seek shelter. However, research examining PTSD and associated physiological factors in battered women has been sparse at best. Given the unique characteristics of IPV, it is unclear if existing research on the biological correlates of PTSD would generalize to battered women in shelters. This study sought to extend the literature on the psychophysiology of trauma and PTSD by investigating the impact of PTSD severity and abuse chronicity on the cortisol awakening response in battered women in shelters.

Research suggests that PTSD may be associated with dysregulation of the hypothalamic pituitary-adrenal (HPA) axis. However, the exact nature and direction of these alterations is unclear. Research investigating association between PTSD and 24-h urinary cortisol levels has found both lower (e.g., Yehuda, Boisoneau, Lowy, & Giller, 1995; Yehuda, Boisoneau, Mason, & Giller, 1993) and higher (e.g., Lemieux & Coe, 1995; Rassmusson et al., 2001) cortisol output in PTSD patients compared to controls. Possible explanations for inconsistent findings include frequency, severity, and recency of the traumatic event, gender, menopausal status, inpatient versus outpatient status, and disease comorbidities (Yehuda, 2002a, 2002b; Rasmusson, Vythilingam, & Morgan, 2003).

Multiple methods have been implemented to assess cortisol levels in patients with PTSD, with most studies relying on 24-h urinary cortisol levels (e.g., Lemieux & Coe, 1995; Rassmusson et al., 2001; Yehuda et al., 1995; Yehuda et al., 1993) or low-dose dexamethasone suppression tests (e.g., Griffin, Resick, & Yehuda, 2005; Stein, Yehuda, Koverola, & Hanna, 1997). However, recent research suggests that the cortisol response to awakening can serve as a useful index of the dynamic activity of the HPA axis (Pruessner et al., 1997; Wust et al., 2000). Wust et al. (2000) reported that approximately 75% of people demonstrate a mean cortisol increase of about 50% within the first 30 min after awakening. Furthermore, the cortisol awakening response is believed to be a robust phenomenon, in that it is not significantly impacted by many of the confounding variables that may impact other indexes of HPA axis functioning (e.g., age, oral contraceptive use, habitual smoking). Only a handful of studies have investigated the cortisol awakening response as it relates to PTSD. This research has consistently found PTSD to be associated with lower cortisol output during the first hour after waking (Lauc, Zvonar, Vuksic-Mihaljevic, & Flogel, 2004; Neylan et al., 2005; Wessa, Rohleder, Kirschbaum, & Flor, 2006). However, no studies to date have specifically investigated this response in victims of IPV.

Similar to research conducted with other trauma populations, research investigating cortisol abnormalities in victims of IPV is also mixed. Griffin et al. (2005) found battered women with PTSD to have lower early morning plasma cortisol levels than battered women without PTSD or normal healthy controls. Additionally, they found PTSD to be associated with hypersuppression of cortisol following administration of 0.5 mg dexamethasone. However, Inslicht et al. (2006) found that battered women with lifetime PTSD have significantly higher salivary cortisol levels throughout the day than battered women without lifetime PTSD. Still other studies investigating the relationship between cortisol levels and PTSD in battered women found negative relationships between presence of IPV and morning cortisol levels but no relationship between PTSD and morning cortisol levels (Pico-Alfonso, Garcia-Linares, Celda-Navarro, Herbert, & Martinez, 2004; Seedat, Stein, Kennedy, & Hauger, 2003), suggesting that HPA alterations were a consequence of the abuse and not PTSD symptoms.

Considering paucity of research investigating HPA abnormalities in victims of IPV, and prior mixed findings, we sought to extend the literature on cortisol alterations associated with PTSD in several ways. First, in this study we investigated the cortisol awakening response as a function of IPV-related PTSD severity in a sample of recently abused battered women in shelters. Second, we also explored whether abuse chronicity, a variable whose relationship to cortisol output has yet to be explored, significantly impacted the cortisol awakening response in battered women.

1. Methods

The present study is part of a larger investigation evaluating efficacy of a brief treatment program for battered women with PTSD in shelters (Johnson & Zlotnick, 2006), and includes baseline data from treatment-seeking shelter residents who were assessed for inclusion in an ongoing randomized trial of that treatment program. Participants were recruited from two shelters from within the same shelter system over 1.5 years. All shelter residents who reported that their abuse was from an intimate partner were eligible for the current study. Shelter staff provided residents with brochures advertising the research and instructed residents to contact research staff for more information. After receiving a description of the study, interested participants were scheduled for a baseline