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Mini Review: Psychosocial Stress such as Violence Against their Partners could Benefit General Immunity in Intimate Partner Violence Perpetrators

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ABSTRACT: *Intimate Partner Violence (IPV) perpetrators use physical and/or psychological abuse to control their partners and achieve a dominant status. As dominance is associated with low disease risk and fast quick illness recovery from an illness, such behaviors may contribute to improving their health at the expense of that of the battered women. Studies with immunological and hormonal parameters have recently revealed that IPV perpetrators present higher general immunocompetence (salivary IgA levels) in response to acute stress, especially during the preparation/anticipation period and when externalizing their anger. Salivary IgA levels have been proved to be increased by hormones, specifically by high testosterone and low cortisol characteristic in IPV perpetrators. Moreover, a high proneness to express anger (defined by high T/C ratio) supposes an increase in self-esteem and mental health. Thus, the use of violence against partners could reinforce their dominant status and, consequently, may serve to indirectly promote IPV perpetrators' immunity.*

Key words: *Anger expression, intimate partner violence, immunoglobulin A, testosterone, cortisol*

INTRODUCTION

From an evolutionary point of view, aggressive behavior is important for gaining and maintaining the dominant status, accessing to females and food, protecting young individuals, fighting off predators, and competing with conspecies for resources and territory (Granger, Booth, & Johnson, 2000). Accordingly, dominance is associated with low disease risk and quick illness recovery (Archie, Altmann, & Alberts, 2012). Hence, high immunocompetence could be a compensatory mechanism to protect aggressive individuals against their high risk of exposure to immune stimuli (Granger et al., 2000).

Human studies partially support this hypothesis, as aggressive individuals have been characterized by higher levels of antibodies, especially in adults with conduct disorders, compared with non-aggressive controls (Fetissov et al., 2006; Pajer et al., 2002). Moreover, a positive relationship between aggressive behavior and immune activity in non-aggressive individual has also been reported (Mommersteeg,Vermetten, Kavelaars et al., 2008; Pesce et al., 2013; Ranjit et al., 2007; Suárez, Krishnan, & Lewis, 2003; Suárez, Lewis, & Kuhn, 2002; Tsuboi et al., 2008). This relationship has been graphically described as an inverted U shape (González-Bono & Moya-Albiol, 2010).

Intimate Partner Violence (IPV) perpetrators use physical and/or psychological abuse to control their partners and achieve a dominant status within the dyad (Antai, 2011). According to WHO (2013), the global lifetime prevalence of intimate partner violence is approximately 30% among ever-partnered women. Although such behaviors are likely to lead to traumatic brain injury, chronic pain, gastrointestinal disorders, depression, post-traumatic stress disorder, and substance-related disorders in victims (Inslicht et al., 2006; WHO, 2013), they may contribute to improving perpetrators' health. Nevertheless, only few studies have examined the potential effects of IPV on perpetrators' immunology.

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In the present study, we sought to provide a synthesis of scientific literature analyzing specific immunological correlations of IPV in men who commit violence against women. It has been suggested that the existence of gender symmetry in domestic violence or that both men and women are violent in intimate relationships (Archer, 2000; Swan & Snow, 2002; Whitaker, Haileyesus, Swahn et al., 2007). However, we have focused on psychobiological characteristics of men as IPV perpetrators because most of existing studies are based on men as perpetrators. We first describe the main findings regarding the cell immunological basal levels as well as those found in response to acute stress in perpetrators. Finally, we present the major variables that affect these cells, such as testosterone (T) levels, prenatal T exposure levels, cortisol (C) levels and T/C ratio levels, as well as anger expression.

Salivary IgA Levels

Salivary IgA (sIgA) is one of the most important humoral factors of the oral cavity local immune system. It is produced locally in salivary glands by plasma cells, and can get through the mucous membrane. It can reduce bacterial aggregation and adherence to the oral cavity, allowing the elimination of infectious agents (Bosch, deGeus, Veerman et al., 2003). Several studies showed that high sIgA levels have been associated with low disease incidence and susceptibility to upper infectious diseases, such as respiratory and gastro-intestinal infections (Jemmott & McClelland, 1989; Kalha & Sellin, 2004; McClelland, Alexander, & Marks, 1982; Rein, Atkinson, & McCraty, 1995).

No differences were found in sIgA baseline levels between IPV perpetrators and in non-violent controls. However, IPV perpetrators differed from controls in response to acute psychosocial stress. IPV perpetrators presented higher sIgA levels than controls, particularly during the anticipation period to stress (Romero-Martínez et al., 2014). Moreover, higher anger expression, especially anger expression-out, was associated with increased sIgA levels in response to stress only for IPV perpetrators (Romero-Martínez et al., 2014), which diminishes the risk of developing respiratory and

gastro-intestional symptoms (Romero-Martínez, Lila, & Moya-Albiol, under review). Hence, it can be hypothesized that IPV perpetrators would have a more effective preparatory immune response or higher immunocompetence to confront psychosocial stress related to interpersonal interactions such as marital conflicts. However, it should be noted that the relationship between sIgA responses and stressors may not be linear, because relaxation as well as strong stressors can also lead to increases in sIgA (Green, Green, & Santoro, 1988; Rein et al., 1995). Therefore, further research is needed to test the hypothesis.

Several mechanisms, such as hormonal parameters, may underlie the relationship between immunocompetence and violence. A positive relationship between current T levels and the immune response to vaccines, moderated by low C levels have been recently reported (Rantala et al., 2012).

Modulatory Role of Salivary T and C Levels

C is released when immunological processes are stimulated, and the inverse relationship between C and T may be the only link between T and the immune system (Rantala et al., 2012). C may reduce T production by inhibiting the hypothalamic–pituitary–gonadal axis, and block T effects in target tissues, including the prefrontal cortex. In turn, T may affect the Hypothalamus–Pituitary–Adrenal (HPA) axis reducing C levels through the hypothalamus (van Honk, Harmon-Jones, Morgan et al., 2010). As IPV perpetrators tend to show higher T levels than non-violent controls and HPA axis hypoactivity (Romero-Martínez et al., 2013a), these results may partially explain the high sIgA values reported. Moreover, high current salivary T levels were associated with high sIgA levels among IPV perpetrators only, although a significant relationship with C levels or T/C ratio was not found (Romero-Martínez et al., 2014). Despite the absence of a significant relationship of C levels with sIgA levels, C levels could affect immunity indirectly via its relationship with T.

Violent subjects tend to show high T and low C individual levels (Popma et al., 2007), with a high T/C ratio being a marker of proneness to violence (Terburg, Morgan, & van Honk, 2009). This is in line with findings from research on mammals that show, dominance can affect the hypothalamic–pituitary–gonadal axis by means of increasing T levels (Zilioli & Watson, 2012), improving dominant individuals' health (Archie et al., 2012). This hypothesis has been supported by a recent finding that high T/C ratio was associated with a higher self-esteem and diminished psychopathological symptoms in IPV perpetrators (Romero-Martínez et al., 2013b). Evidence also appears to suggest that self-esteem may play a moderator role in the relationship between perceived stress and negative health effects or recovery for illness (Clow & Hucklebridge, 2001). High levels of self-esteem in IPV perpetrators were also associated with the level of violence in this population (Bushman et al., 2009).

CONCLUSIONS

The use of violence against their partners by IPV perpetrators could promote their immunity and, consequently, be perceived and felt as rewarding in this population. This effect may be reflected in the hormone profile, as it increases T which, in turn, may produce falls in C, reducing its immunosuppressive effects (González-Bono & Moya-Albiol, 2010). Moreover, the imbalance between T and C levels, which prone to violent behavior, was associated to high self-esteem and diminished psychopathological symptoms (Romero-Martínez et al., 2013b). The same relationship was obtained between T levels and dominant status in violent women (Dabbs & Hargrove, 1997; Dabbs & Ruback, 1988). Nevertheless, more studies are needed to examine if these patterns of findings hold true in both genders.

IPV phenomena has been explained from different perspectives such as sexism, the result of witnessing or experiencing abuse, the early social learning models, personality traits such as insecure attachment styles, early childhood family experiences, impulsivity, and borderline, antisocial and narcissistic traits (Pinto et al., 2010). Nevertheless, these hypotheses have limited power to explain IPV episodes or the efficacy of prevention and treatment programs because they can only identify static and distal variables (childhood abuse, etc) (Bell & Naugle, 2008). Although IPV models based on psychobiological variables have been limited in the literature (Pinto et al., 2010), emerging evidence suggests that psychobiological parameters may offer a more nuanced explanation of IPV. This paper provides recent findings on psychobiological factors involved in IPV perpetration, such as hormonal parameters (T and C imbalance) and its immunological consequences, which could explain the relationship between certain psychological traits in IPV perpetrators and the risk of becoming violent. Future research should investigate health effects of women as perpetrators as domestic violence. This research could benefit pharmacological targets for the control of violence. As a recent publication reveals, the prescription of testosterone-lowering medications coadjutant to psychotherapy moderately increases the treatment effectiveness in sex offenders (Turner, Basdekis-Jozsa, & Briken, 2013). Hence, a more comprehensive theoretical understanding of IPV, which would include biological as well as psychological attributes, may help improve design of existing IPV intervention outcomes, which have modest efficacy effects (Eckhardt et al., 2013; Stover, Meadows, & Kaufman, 2009).

Conflict of Interests

The authors have no conflicts of interest to declare.

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Declaration of Interest

The authors report no conflicts of interest.

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