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Fatigue and Disrupted Sleep-Wake Patterns in Patients With Cancer: A Shared Mechanism

The strong and potentially reciprocal relationship between cancer-related fatigue (CRF) and disrupted sleep-wake patterns suggests a possible shared physiologic pathway. A growing body of evidence supports this and shows that abnormalities in the 24-hour rhythm of stress-related hormones may be related to chronic fatigue and sleep disturbances. Aberrations in the hypothalamic-pituitary-adrenal (HPA) axis, the primary neuroendocrine interface responding to stress, induce important biologic and behavioral consequences. HPA aberrations have long been associated with chronic fatigue syndrome. Many overlapping symptoms exist between chronic fatigue syndrome and CRF, including sleep disruption. Therefore, in the absence of knowledge about CRF mechanisms, emerging biologic models from chronic fatigue syndrome may assist in understanding the cause of CRF.

Cancer-associated stressors also may alter the circadian functions of HPA-associated neuroendocrine activities, which result in the symptoms of fatigue and disrupted sleep-wake patterns in patients with cancer. Exploring promising physiologic models furthers the knowledge about CRF and disrupted sleep and may foster hypothesis-based studies of mechanisms that underlie apparent overlapping symptoms, providing the basis for new management to improve sleep and lessen fatigue.

Cancer-related fatigue (CRF) is a significant clinical problem that occurs across the spectrum of cancer diagnoses, major cancer therapies, and the entire illness trajectory. CRF is highly prevalent not only among patients undergoing cancer treatment, but also cancer survivors (Alexander, Minton, Andrews, & Stone, 2009; Barbara et al., 2010; Byar, Berger, Bakken, & Cetak, 2006; Curt et al., 2000; Davidson, MacLean, Brundage, & Schulze, 2002; Flechtnner & Bottomley, 2003; Fleming, Gillespie, & Espie, 2010; Johansson, Wilson, Brunton, Tishelman, & Molassiotis, 2010; Kirkova et al., 2010; Langeveld, Grootenhuis, Voute, de Haan, & van den Bos, 2003; Quick & Fonteyn, 2005; Reinertsen et al., 2010). Disrupted sleep patterns often are concurrent with fatigue in cancer; an estimated 31% of fatigued patients with cancer experience frequent insomnia (Sarna, 1993). Fatigue and disrupted sleep are severely impairing, and neither symptom has objective, and free from commercial bias. No financial relationships relevant to this article have been disclosed by the authors, planners, independent peer reviewers, or editorial staff. Wu can be reached at wuh@wayne.edu, with copy to editor at CJONEditor@ons.org. (First submission April 2011. Revision submitted August 2011. Accepted for publication August 20, 2011.)

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