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

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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; Barbera et al., 2010; Byrne, Berger, Bakken, & Cetak, 2006; Curt et al., 2000; Davidson, MacLean, Brundage, & Schulze, 2002; Flechtner & 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 affect all aspects of life for patients with cancer (Alexander et al., 2009; Byrne et al., 2006; Davidson et al., 2002; Fleming et al., 2010; Fortner, Stepanski, Wang, Kasprowicz, & Durrence, 2002; Grunfeld & Cooper, 2010; Redeker, Lev, & Ruggiero, 2000; Rosedale & Fu, 2010; Scott, Lasch, Barsevick, & Piault-Louis, 2011). Their coexistence heightens symptom distress (Sarna, 1993) and further decreases the patient’s ability to function. As a consequence, quality of life suffers. Fatigue and disrupted sleep are severely impairing, and neither symptom has been controlled fully in patients with cancer, largely because of a lack of knowledge about the underlying mechanisms.

The growing recognition of symptom clusters (Cleeland et al., 2000; Dodd, Miaskowski, & Lee, 2004) has led to speculation of common biologic pathways underlying some of the symptoms related to cancer (Cleeland et al., 2003; Lee et al., 2004). In addition to the frequent co-occurrence of fatigue and disrupted sleep, the two symptoms demonstrate a strong and possibly reciprocal relationship (Pud et al., 2008; Roscoe et al., 2007). Patients with CRF are more susceptible to sleep problems than their nonfatigued counterparts (Alexander et al., 2009; Davidson et al., 2002; Okuyama et al., 2001), and higher CRF levels are associated with more sleep disturbances (Alexander et al., 2009; Andrykowski, Curran, & Lightner, 1998; Berger, 1998; Berger & Farr, 1999; Berger & Higginbotham, 2000; Cheng & Lee, 2011; Davidson et al., 2002; Okuyama et al., 2001; Redeker et al., 2000).