The Phenomenon of Chemo Brain

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As newer and more aggressive cancer therapies improve survival, issues relating to quality of life are becoming more prominent. One adverse effect of cancer treatment often not discussed between patient and provider is chemo brain, a constellation of cognitive deficits experienced by some individuals during and following chemotherapy. The purpose of this article is to define and review what is known about chemo brain and to offer suggestions to patients and professionals for managing this poorly understood phenomenon. The discussion that follows excludes disorders of thinking documented in the pediatric oncology population and the cognitive changes experienced by individuals with central nervous system (CNS) involvement and their treatments.

What Is Chemo Brain?

This cognitive deficit is referred to by a variety of terms (see Figure 1), but the most frequently used is chemo brain. It presents as weakened cognitive abilities, speed of information processing or reaction time, and organizational skills. Specific elements of thinking or cognitive function that can be affected negatively include language ability, memory, concentration, and attention. Executive function (which refers to hindsight, foresight, and judgment) also can be impacted. The clinical features of chemo brain, alone or in combination, can become a serious detriment to multitasking, create stress, and weaken performance when patients are challenged by high-level cognitive demands, including acquiring new skills (Ahles et al., 2002; Coyne & Leslie, 2004; Glaspy, 2002; Olin, 2001; O'Shaughnessy, 2003; Paraska & Bender, 2003; Parker-Pope, 2004; Saykin, Ahles, & McDonald, 2003).

Cognitive dysfunction has been reported in as many as 50% of women undergoing chemotherapy for breast cancer (Paraska & Bender, 2003). Severity has been described as mild to moderate (Foreman, 2003), with most deficits being subtle (Parker-Pope, 2004). High-functioning individuals may possess a heightened awareness of the deficits (Coyne & Leslie, 2004), leading to greater difficulties coping with this side effect. In a small minority of patients, chemo brain still is perceptible 10 years after treatment (Ahles et al., 2002; O'Shaughnessy, 2003; Saykin et al., 2003; Schagen et al., 2002; van Dam et al., 1998). Although the effect is believed to diminish with time, whether a patient returns to pretreatment levels of function is unknown (Breastcancer.org, 2002; Parker-Pope).

Consensus exists that chemo brain has a potentially profound psychological impact on those affected by it. To date, most studies have been conducted with female patients with breast cancer. Likely, this population has been researched because it represents the largest cancer survivorship group (Ganz et al., 2002). The age of patients during treatment laces them at life milestones where deficits are readily observable and potentially debilitating. Chemo brain also has been described in men and women with hematologic malignancies (Saykin et al., 2003) and in the testicular cancer population (Phillips &