Evidence of Associations Between Cytokine Gene Polymorphisms and Quality of Life in Patients With Cancer and Their Family Caregivers

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An increasingly recognized patient-reported outcome in oncology is quality of life (QOL) (Trask, Hsu, & McQuellon, 2009). A substantial proportion of the interindividual variability in QOL in patients with cancer (Montazeri, 2008; Singh, Trabulsi, & Gomella, 2010) and their family caregivers (FCs) (Kim & Given, 2008; Kitrungrote & Cohen, 2006) is not explained by demographic characteristics (Bloom, Stewart, Chang, & Banks, 2004; Lam, Ye, & Fielding, 2012), disease severity (Mehnert, Leibmann, Graeven, Huland, & Koch, 2010; Paika et al., 2010; Zenger et al., 2010), or treatment burden (Deshields, Potter, Olsen, Liu, & Dye, 2011; Reeve et al., 2012). Several lines of evidence suggest that genetic factors may account for some of the interindividual differences in QOL (Nes, Roysamb, Tambs, Harris, & Reichborn-Kjennerud, 2006; Romeis et al., 2000, 2005).

Findings from twin studies (Nes et al., 2006; Romeis et al., 2000, 2005) suggested that genetic predisposition influences QOL. In these twin studies, heritability accounted for 11%–35% of the variance in QOL. For example, in one study that measured QOL using the SF-36® (Romeis et al., 2005), additive genetic factors accounted for 17%–33% of the variance in each of the SF-36 subscales. However, the specific genetic variations associated with interindividual differences in QOL remain unknown. Given these initial findings, experts in the fields of QOL and genomics established an international Consortium for Genetics and Quality of Life Research and called for studies to identify the molecular mechanisms that underlie interindividual differences and changes in QOL (Sprangers et al., 2009). Given the potentially large number of genes that could be involved in QOL, the consortium encouraged a focused approach to the investigation of genetic variations in biologic pathways (e.g., candidate gene studies).

Although research on the relationships between genetics and QOL is in its infancy, a substantial amount of evidence suggests that genetic variations in...