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CLINICAL CORRESPONDENCE

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New challenges in psycho-oncology: Studying the direct relationships between biological markers and patients' subjective experiences. Response to Cole

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We were very pleased to read that Cole highlights the translational implications of recent research developments in the stress response system in relation to cancer progression.[1] Key factors associated with these new insights come from a better understanding of the interaction between the tumor and its surrounding microenvironment and contributions from social genomics, which has begun to map the biological pathways through which social and psychological processes can be involved in gene regulation.

Cole helps us understand how biological pathways involved in stress response that is relevant for the field of psycho-oncology. He thereby focuses on the intriguing yet understudied interplay between psychosocial interventions and their possible molecular effects on disease progression. For example, he comments, "… disease-predictive molecular biomarkers provide new opportunities for gauging the biological impacts of psycho-oncologic interventions, as well as selecting optimal intervention protocols on a patient-specific basis." (p. 2308).[1] Cole finalizes his editorial with sketching a future where psycho-oncologists add to their tool kit of psychological assessments molecular measures to assess the somatic impact of psychological well-being. We wholeheartedly endorse Cole's plea for such expansion of psycho-oncology's toolkit and research agenda.

We believe the field of psycho-oncology will further benefit from examining the direct relationships between genetic and molecular variables and biological pathways underlying patients' subjective experiences, such as quality of life (QOL). This idea is almost 15 years old.[2] It was fueled by the emerging evidence of a genetic basis of QOL based on twin research that indicated heritability estimates for stress[3] and QOL-related domains such as mood and self-reported health[4] that were comparable or even higher than that of most diseases (20%-40%). A stimulating first finding was the direct links between polymorphisms and cancer patients' QOL.[2]

To enable the identification of biological pathways and genetic and molecular variables underlying patients' QOL, we established the interdisciplinary Mayo Clinic/University of Amsterdam International Consortium for Genetics and Quality of Life Research (GENEQOL) (www.geneqol-consortium.org).[5] This GENEQOL Consortium was meant to provide the prerequisite platform for international and interdisciplinary collaborations. What began as an exploratory investigation of a selected multidisciplinary group with a shared interest is now evolving into a mature research area with established theoretical underpinnings[6] and empirical evidence. Recent findings among cancer patients corroborate the growing body of literature in social genomics of inflammation implicated in QOL detriments. Systemic inflammation was associated with deterioration in in QOL of patients with advanced cancer.[7] Cytokine gene polymorphisms have been shown to be associated with the physical and social domains of QOL[8] and clusters of symptoms commonly experienced by cancer patients.[9]

Research into the biological pathways, genetic, and molecular variables and epigenetic mechanisms involved in subjective health and symptom experiences is thus well underway.[10] The resulting scientific insights are a prerequisite for possible important clinical implications and the potential to improve the quality of health care delivery. Knowledge of how biological predispositions propel people toward negative or away from positive health experiences will allow us to identify patients who are likely to experience symptoms and QOL deficits from cancer and its treatments. As a consequence, oncologists may be able to intervene prophylactically, monitor patients' symptoms, side effects, and well-being, improve treatment decision-making, and improve outcomes encompassing survival, toxicity, and QOL. To cite Sloan and Zhao, "Doctors will eventually use genetic patterns for several tasks: to tell whether a cancer will spread, to predict how various therapies such as specific drugs or radiation

will work, and perhaps even to see how someone's QOL will be affected (page 259)."[2]

With this advancing knowledge, we will indeed enter "a new era of precision psycho-oncology that parallels the precision medicine approach" as Cole describes (p. 2308).[1]

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Key Points

- Cole helps us understand how biological pathways involved in stress response that is relevant for the field of psycho-oncology.
- The field of psycho-oncology will further benefit from examining the direct relationships between (epi) genetic and molecular variables and biological pathways underlying patients' subjective experiences, such as quality of life (QOL).
- Compelling evidence from twin studies suggests genetic involvement in QOL.
- Recent findings among cancer patients corroborate the growing body of literature on social genomics implicated in QOL detriments.
- These advancing scientific insights may have important clinical implications and the potential to improve the quality of health care delivery.

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