In a recent review of thyroid dysfunction induced by antineoplastic agents, Hamnvik et al. (1) highlighted hypothyroidism as a common side effect of certain anticancer agents, an effect with the potential for favorably modifying outcomes in cancer patients. The article indicates that spontaneous or intentionally induced hypothyroidism may be associated with better clinical response rates and longer survival in patients with diverse solid cancers. We note that at the opposite end of the thyroid function spectrum, subclinical hyperthyroidism may increase risk of developing certain cancers (2). We agree that L-thyroxine (T\(_4\)) replacement in asymptomatic hypothyroid patients has the potential for harm in the presence of cancer. In this regard, the description of a cell surface thyroid hormone receptor on integrin \(\alpha v\beta 3\) is relevant (3). Tetraiodothyroacetic acid (tetrac), unmodified or as a nanoparticulate, occludes the plasma membrane thyroid hormone receptor on the integrin and has significant anti-solid tumor and antihematologic malignancy properties that come in part from eliminating the proliferative and proangiogenic activities of T\(_4\) and 3, 5, 3'-triodo-L-thyronine (T\(_3\)) (4,5).

In preclinical studies, the tumor cell proliferative effect of T\(_3\) is achieved with supraphysiologic concentrations of this hormone, whereas the T\(_4\) effects are obtained with physiologic total and free hormone levels (6). Administration of T\(_3\) clinically will reduce serum endogenous thyrotropin (TSH), and thereby, circulating T\(_4\) levels. A recent clinical experience we have had (7) suggests that selective T\(_3\) supplementation in cancer patients—with or without hypothyroidism—merits study as a means of reducing any contribution that T\(_4\) may make as a tumor growth factor.

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References


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