Prophylactic cranial irradiation in advanced breast cancer: a case for caution.

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PURPOSE: Prophylactic cranial irradiation (PCI) has a well-recognized role in the treatment of leukemia and small-cell lung cancer. Clinical utility has yet to be determined for breast cancer, where an emerging group at high risk of brain metastasis has fuelled consideration of PCI. METHODS AND MATERIALS: In reviewing our experience with PCI as part of a complex protocol for advanced breast cancer, we present descriptive data on late central nervous system outcomes in those receiving PCI. After high-dose anthracycline-based induction chemotherapy, Stage IIIB/IV breast cancer responders underwent tandem autologous marrow transplantation. Those in continued remission were referred for PCI. Whole-brain radiotherapy was delivered by usual means, at 36 Gy in 20 fractions. RESULTS: Twenty-four women, with median age 45 (28-61), were enrolled between 1995 and 1998. Disease was largely metastatic (79%), and 75% were previously exposed to chemotherapy or hormonotherapy. Ten patients received PCI, at a median of 13.4 (11.8-16.5) months from study entry. Six patients developed brain metastases, 2 despite PCI. Striking functional decline was documented in 3 patients (at 9 months, 4 years, and 5 years post-PCI), including one previously high-functioning woman requiring full care for posttreatment dementia. CONCLUSIONS: We present a series of advanced breast cancer patients treated prophylactically with whole-brain radiotherapy following an aggressive chemotherapy regimen. Although the therapeutic benefit of PCI is not ascertainable here, we describe brain metastases occurring despite PCI and serious long-term neurobehavioral sequelae in PCI-treated patients. Any further investigation of PCI in high-risk breast cancer will need to be approached with caution.