CORRESPONDENCE

Re: Breast-Conserving y With or Without Radio y: Pooled-Analysis for Ris Ipsilateral Breast Tume Recurrence and Mortal

In a recent article in th al, Vinh-Hung and Verschraeg o- vided a valuable pooled a of randomized trials of postop ra- diotherapy after breast-cons ur- gery. They reported a small in breast cancer mortality and n- tial risk of local recurrenc he omission of breast radiother se important observations sho be interpreted to imply that a nts require breast radiother er breast-conserving surgery o- priate systemic therapy. W ve, however, that in contrast ger patients, there are insufficient data to draw this conclusion in older patients. Indeed, the U.S. National Institutes of Health, in its 2000 consensus statement for breast cancer *(2)*, makes no specific recommendation on adjuvant therapy for patients aged 70 years or older because of the paucity of data for this group of patients. Of the 15 randomized trials assessing the role of breast radiotherapy or its omission included in the pooled analysis by Vinh-Hung *(1)*, only three (Uppsala-Orebro, Tokyo, and the Cancer and Leukemia Group B [CALGB]) included patients over age 70. In this older group of patients, there are competing risks of mortality from predominantly vascular comorbidity. In addition, a body of data from both randomized and nonrandomized trials suggests that the risks of local recurrence decrease with age *(3)*. This observation reflects, in part, the increasing proportion of older patients with good prognostic characteristics.

Large, adequately powered trials with older patients are needed to assess the role of breast radiotherapy in local recurrence and breast cancer mortality. The dramatic impact of the competing risks of non–breast cancer mortality in the elderly is shown in the CALGB 9343 trial *(4)*, cited in table 1 of Vinh-Hung and Verschraegen *(1)*, which randomly assigned patients with T1, node-negative, ER-positive tumors to breast radiotherapy or no further treatment after breast-conserving therapy and tamoxifen. Of the 39 deaths among the 647 patients in the trial, only one was due to breast cancer. Ongoing trials, such as the Postoperative Radiotherapy In Minimum-risk Elderly (PRIME) trial *(5)*, are addressing issues of local control, morbidity, and quality of life in older, low-risk patients to establish a firm basis for the selection of patients for radiotherapy in this age group. We feel that until the results of randomized trials focused on evaluating breast radiotherapy in the elderly are available, the role of breast radiotherapy in this age group remains uncertain. For many such women, their informed recruitment into appropriately designed, randomized, controlled trials may be the most ethical way of determining treatment.

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(5) National Cancer Research Network (NCRN). Trials portfolio. Available at: http://www.ncrn.org.uk/portfolio/dbase.asp. Details on PRIME II can be found by selecting "PRIME II" from the Find Acronym pulldown menu. [Last accessed: July 19, 2004.]

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RESPONSE

Kunkler et al. address an important issue: whether or not to continue randomized trials of postoperative radiotherapy after breast-conserving surgery in selected patient subgroups such as those in the Scottish Post-operative Radiotherapy In Minimum-risk Elderly II (PRIME II) and the Italian RT 55-75 trials *(1)*. We welcome the opportunity to analyze the additional data that the PRIME II and the RT 55-75 trials will provide because we think these data will help patients make the best treatment choices.

In 2003, the updated report *(2)* from the 2001 Cancer and Leukemia Group B (CALGB) 9343 trial *(3)* provided insight into several age-related issues. One issue is that the extreme difficulty in following up older patients may have led earlier studies to mistakenly conclude a lower risk of recurrence. The updated report revealed substantially improved registration of deaths and recurrences—55 deaths were reported (30 deaths with no radiotherapy, 25 deaths with radiotherapy, and a statistically nonsignificant 19% excess relative risk of mortality from omitting radiotherapy). The updated report also showed statistically significantly poorer in-breast and poorer locoregional recurrence-free survivals in the absence of radiotherapy *(2)*.

Although elderly patients are underrepresented in clinical trials, the relationship between age and survival in breast cancer is now well established. All large studies concur that the effect of age is biphasic: high mortality in younger women, lowest in menopausal women, and then increasing again with age (Tai P: personal communication). To provide a concrete representation of the biphasic relationship and to obtain quantitative estimates of the risks associated with age, consider a cohort of low-risk patients who have a primary

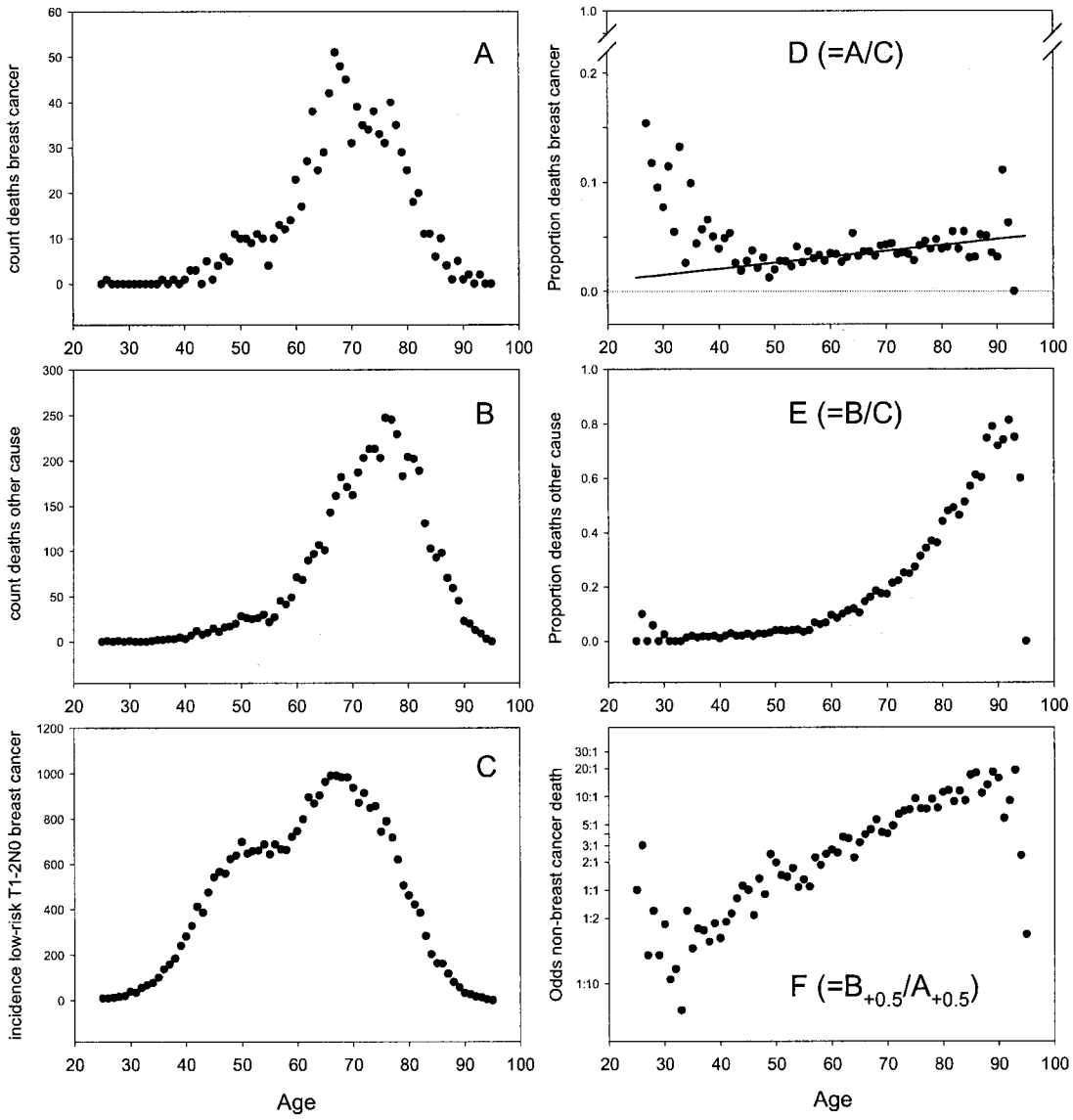

Fig. 1. Mortality as a function of age for low-risk breast cancer patients with the following characteristics: primary breast carcinoma ≤2 cm, pN0, excluding high-grade and estrogen receptor–negative tumors, from the Surveillance, Epidemiology, and End Results (SEER) Program 2004 database (9 registries), diagnostic years 1988–1997 *(4)*, irrespective of type of surgery or radiotherapy, age 25 to 95 years; N = 32 045. **A**) Counts of breast cancer–specific deaths. **B**) Counts of deaths from other causes. **C**) Total incidence counts. **D**) Crude rates of death from breast cancer. **E**) Crude rates of death from other causes. **F**) Odds of death from other causes versus from breast cancer, based on a log scale (empirical logistic transform).

breast carcinoma 2 cm or less in diameter, and a status of pN0 (axillary dissection) selected from the Surveillance, Epidemiology, and End Results (SEER) database, for diagnostic years 1988–1997 *(4)*. Figure 1 shows counts and rates of death in this cohort as a function of age. The average follow-up was 7.8 years. Despite the short follow-up period and the overall low breast cancer–specific death rate, the biphasic shape is immediately apparent: high breast cancer death rates in patients younger than 50 years and a small but steady increase in patients aged 50 years or older (Fig. 1, D). This biphasic relationship clarifies how breast cancer can be misperceived as being indolent in older patients. Group comparisons indicate that postmenopausal patients, as a group, have a lower risk of breast cancer death than younger premenopausal patients (Fig. 1, D). But by each successive year of age within their group, the older postmenopausal patients have a greater risk of dying of breast cancer than do younger postmenopausal patients (Fig. 1, D), which shows that older age is not associated with lower risk.

Should we infer from the unremitting risk that all patients, regardless of age, should receive adjuvant radiotherapy? Kunkler et al. draw attention to the importance of competing risks of death. Figure 1, E, shows an exponential increase of non–breast cancer deaths with age. Figure 1, F, shows the corresponding odds of non–breast cancer death. At age 60 years, the odds of death from breast cancer versus other causes are 1:2.5. At age 65 years, the odds are still substantial: 1:3.5. At age 70 years, the odds are 1:5. At age 80 years, the odds are 1:10. Considering mortality only, these odds suggest that it is reasonable to propose that low-risk older patients participate in the PRIME II trial. But taking local recurrences into account, if patients are considered fit for surgery, then it is unclear why they should be denied the chance to have radiotherapy to reduce their risk of recurrence. The evidence of risk reduction is strong, and improvements that will benefit low-risk and fragile patients are within reach *(5)*. Shouldn't the priority be to enroll these patients in trials of alternatives to conventional radiotherapy, whether it be short-course *(6)* or intra-operative radiotherapy *(7)*?

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