Hazard ratio for thyroid carcinoma

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THE INCREASED INCIDENCE of malignancies, and seriousness of the diseases, has been recognized for many adult cancers as a function of the aging process. Perhaps nowhere is this better pointed out than in Table 4 of the report
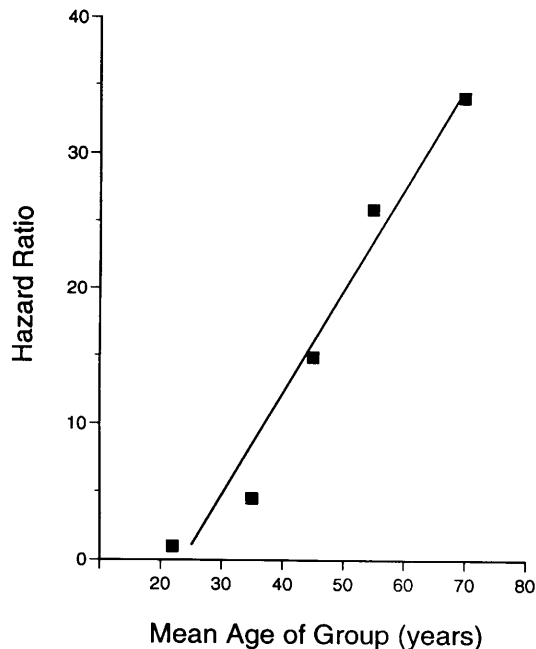

Fig. 1 A plot of the hazard ratio for thyroid cancer as a function of the mean age of the group.

by Vini and coworkers on thyroid carcinoma.[1] The table gives hazard ratios for differentiated thyroid carcinoma, as a function of age. The youngest age cohort was assumed to have a ratio of 1. We analyzed this data by using the mean age of each group, assigning those in the grouping below 30 years to a mean age of 20. Those in the cohort of age 60 or above, were treated as age 70. The 5 data points were well described by the least squares equation:

$$\text{Hazard ratio} = -16.2 + 0.72 \,(\text{Age}) \qquad (1)$$

The correlation coefficient was over 0.97. A graph of the points is shown in Figure 1. The limited number of data points were also well described by the logarithmic equation:

$$\log\,(\text{Hazard ratio}) = -3.89 + 2.99 \,(\log \text{Age}) \qquad (2)$$

The correlation coefficient was greater than 0.98.

Such an approach may be useful in at least 2 situations. A) In comparing the biological behavior with that of other tumors, as a function of age. B) In determining if various interventions can modify the natural history of the disorder.

Reference

1. Vini L, Harmer C, McCready VR. Thyroid cancer: a review of treatment and follow up. *Ann Nucl Med* 10: 1–7, 1996.