Hazard ratio for thyroid carcinoma

Richard P. Spencer, M.D., Ph.D.
Univ. Connecticut Health Center
Farmington, CT 06030, USA.

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 by Vini and coworkers on thyroid carcinoma. 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:

\[
\text{Hazard ratio} = -16.2 + 0.72 \text{ (Age)}
\]  

(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:

\[
\log (\text{Hazard ratio}) = -3.89 + 2.99 \log \text{ (Age)}
\]  

(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