Monitoring for Occupational Cancer Risks in Alberta

In response to public concern about the effects a work environment might have on the individual's risk for cancer, the Division of Epidemiology, Prevention and Screening, Alberta Cancer Board, in cooperation with Alberta Labour, monitored the work history of cancer patients in Alberta, between 1983 and 1992. The objectives of the monitoring project were: 1) to examine whether job exposures known to be carcinogenic from other studies were associated with increased risk for cancer at any site in Alberta, and 2) to identify any new occupational exposures that result in increased risk. These hazardous exposures could then be removed or reduced and the impact on risk for cancer minimized. This report describes the results from analysis of risk for breast cancer among women.

Method

The monitoring project included pathologically confirmed, first primary breast cancers, diagnosed in people aged 25 to 74, alive and residents of Alberta at diagnosis. Excluded were those people whose physician advised against contact. Data were collected using mailed self-report questionnaires, with written and telephone follow-up to encourage response and supplement incomplete information. Variables collected were lifetime occupational histories, including industries and detailed job descriptions, duration of work and self-reported job exposures. Cigarette smoking, alcohol consumption, family history of cancer and reproductive history were also obtained. The effects of work history were estimated using odds ratios (OR) and 95% confidence intervals (CI), calculated by conventional case-control analysis (Breslow and Day, 1980). The reference group consisted of cases with cancers other than breast or lung.

Results

Women whose major lifetime occupation was in the category Management, Social Sciences and Teaching were at greater risk for breast cancer, by about 15%, compared to women in other occupations. The OR, adjusted for age, cigarette smoking, drinking alcohol and number of pregnancies, was 1.15 (CI = 1.01-1.30). This is consistent with other studies; breast cancer risk was high among professional women and administrative workers in Japan (Kato et al, 1990), among managers and professionals in Italy (Barbone et al, 1996) and among schoolteachers, social workers and secretaries in the US (Morton, 1995). It is not clear what causal exposure(s) these occupations might share, which are not experienced in other occupations.

Women whose major occupation was in the Food, Beverage, Sports and Amusement industry were at 25% lower risk, compared to women in other industries. The OR was 0.76, after adjustment for age, cigarette smoking and education (CI = 0.62-0.92). No work exposures were reported which might reliably be associated with lower risk for breast cancer in this industry. The lower risk could be due to some common lifestyle factor, rather than to occupational exposure. However, among these Alberta women, risk for breast cancer was not affected by smoking or alcohol. ORs were 1.03 (CI = 0.94-1.14) and 0.99 (CI = 0.88-1.18), respectively.

Conclusions

This analysis of the effects of work history on risk for breast cancer among women in Alberta is useful because it suggests areas that should be further explored. Self-reported job exposures and job histories will be cross-referenced in the data set and examined to better estimate exposure prevalence by occupational category. For example, exposure to electromagnetic fields from computers may be more common in the Managerial, Social Sciences and Teaching category; there is a possibility that exposure to low frequency electromagnetic fields is associated with increased breast cancer risk (Goldberg and LabrAech, 1996). Self-reported family history of cancer will also be explored as a potential confounder (Hulka, 1996; Unic et al, 1997). Unequal prevalences of breast cancer in first degree relatives among women in different occupational categories may bias the analysis and prevent the detection of real job-related risks. Current knowledge of occupational effects on breast cancer risk is limited. Further analysis of this data set will complement what is already known and may suggest new avenues to explore.

Shirley M. Fincham, PhD and Voon Siaw, Alberta Cancer Board

References

This issue was published in conjunction with the Alberta Cancer Board, Division of Epidemiology, Prevention and Screening.