Risk of liver, oesophageal and stomach cancers in female textile workers

The manufacture of cotton, wool and synthetic fibre textiles is associated with exposures either known or suspected to be carcinogens. In spite of this, existing knowledge of cancer risks to textile workers remains incomplete. The emerging economy of China has provided the opportunity to study potential occupational cancer in huge cohorts of workers. A series of papers has now been published examining the incidence of cancer in a cohort of more than a quarter of a million female textile workers as well as the risks associated with specific occupational exposures [1–3].

In the latest papers, the incidence of liver and oesophageal and stomach cancers was ascertained from two tumour registry systems, and the cancer cases were compared to age-stratified reference sub-cohorts [4,5]. Cancer incidence was determined in 267,400 female textile workers in Shanghai who had been enrolled in an intervention trial of breast self-examination efficacy during 1989–98.

A total of 360 liver cases and 102 oesophageal and 646 stomach cases were identified and compared to 3,186 and 3,188 age-stratified randomly selected sub-cohorts, respectively.

Workplace exposures to dust and chemicals were assessed using both qualitative and quantitative methods with data derived from work history information, historical exposure monitoring data for selected agents and a job exposure matrix specifically designed for the textile industry.

Cox proportional hazards modelling adapted for the case-cohort design was used to estimate risks associated with workplace exposures, and adjustments were made for age and other potential confounders. Lagged exposure analyses were also applied to allow for disease latency. Exposure–response relationships were estimated for cumulative exposures to cotton dust and endotoxin and cumulative exposure was classified by quartiles among those individuals who were ever exposed.

In the case of liver cancer, the results of the analysis revealed a protective effect of cotton fibre exposure years [adjusted hazards ratio (HR) 0.64; 95% CI 0.44–0.92] or endotoxin (a contaminant of cotton dust) exposure (adjusted HR 0.60; 95% CI 0.41–0.88) for the highest quartile with significant trends for 20-year exposure lags.

Oesophageal cancer was associated with long-term (>10 years) exposure to silica dust (HR 15.8, 95% CI 3.5–70.6) and metals (HR 3.7, 95% CI 1.9–7.1). Cumulative exposure to endotoxin, however, was inversely related to risks of both oesophageal cancer (P trend = 0.01) and stomach cancer (P trend < 0.001) when exposures were lagged 20 years.

These studies suggest that chronic exposure to endotoxin (or possibly some other component of cotton dust) may have reduced liver, stomach and oesophageal cancer risks in this population, and therefore, workplace endotoxin exposure warrants further study.

Dipti Patel
e-mail: dipti_p_patel@hotmail.com

References