Lung cancer associated with beta-carotene supplementation in smokers

A meta-analysis of four randomised trials in a total of 109 394 subjects showed a statistically significant increase in the risk of lung cancer among smokers who used dietary supplements containing beta-carotene, at a mean dose of 20 to 30 mg/day. This contradicts the results of observational studies conducted in the 1990s.

In the 1990s, observational studies suggested that a diet rich in fruit and vegetables could reduce the risk of lung cancer. Because of its antioxidant properties, it was thought that beta-carotene, a vitamin A precursor that is abundant in fruit and vegetables, might help prevent primary lung cancer. However, intervention studies of beta-carotene supplementation in smokers provided unexpected results: two of three randomised trials comparing beta-carotene supplementation with placebo or vitamin E supplementation showed a statistically significant increase in the incidence of lung cancer, while the third trial showed no difference (1).

A meta-analysis of clinical trials was published in 2008, and its conclusions remain valid.

A meta-analysis including more than 100,000 subjects. A meta-analysis of 4 randomised controlled trials examined the relationship between beta-carotene supplementation and the risk of lung cancer (2). A total of 109 394 persons were enrolled: 54 955 in the beta-carotene group and 54 439 controls. Beta-carotene supplements of 20 to 30 mg/day were taken for 2 to 12 years (2).

Lung cancer was more frequent in the beta-carotene groups (odds ratio 1.21, 95% confidence interval CI 1.09 to 1.34) (b). Similar results were obtained in a more recent cohort study. The VITAL study (ViTamins And Lifestyle) retrospectively analysed the effect of supplementation with beta-carotene, vitamin A, lutein or lycopene over a 10-year period in 77 126 participants aged 50 to 76 years. Those who took beta-carotene for at least 4 years had a three-fold increase in the risk of small cell lung cancer (95% CI: 1.29 to 8.07) (3).

Disturbing results in smokers. In smokers, beta-carotene supplementation was associated with a statistically significant increase in the risk of lung cancer (odds ratio 1.24; 95% CI: 1.1 to 1.39) (2).

In practice: beta-carotene supplementation is not advisable for smokers. There is strong evidence that beta-carotene supplementation increases the risk of lung cancer, at least in smokers. Smokers who want to reduce their risk of developing lung cancer would be better advised to quit smoking rather than rely on beta-carotene supplements (4).

Benfluorex: yet more valve disorders

Analysis of health insurance databases.

In November 2009, the French Health Products Safety Agency finally suspended marketing authorisation for benfluorex, due to the risk of cardiac valve disorders (1,2). Reports were increasing, and a French study based on hospital data confirmed the risks associated with this drug.

In 2009 the French national health insurance system conducted a study of one million diabetic patients, about 43,000 of whom had been exposed to benfluorex (3). Compared to unexposed patients, those exposed to benfluorex in 2006 had approximately a 3-fold increased risk of being hospitalised for valve failure in 2007, while in 2008 the risk of valve replacement surgery with extracorporeal circulation was about 4 times higher. Both increases were statistically significant. This is an excellent example of how analysis of health insurance databases can contribute to improving patient safety.