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Effect of daily aspirin on long-term risk of death due to cancer: analysis of individual patient data from randomised trials

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Summary

Background

Treatment with daily aspirin for 5 years or longer reduces subsequent risk of colorectal cancer. Several lines of evidence suggest that aspirin might also reduce risk of other cancers, particularly of the gastrointestinal tract, but proof in man is lacking. We studied deaths due to cancer during and after randomised trials of daily aspirin versus control done originally for prevention of vascular events.

Methods

We used individual patient data from all randomised trials of daily aspirin versus no aspirin with mean duration of scheduled trial treatment of 4 years or longer to determine the effect of allocation to aspirin on risk of cancer death in relation to scheduled duration of trial treatment for gastrointestinal and non-gastrointestinal cancers. In three large UK trials, long-term post-trial follow-up of individual patients was obtained from death certificates and cancer registries.

Results

In eight eligible trials (25 570 patients, 674 cancer deaths), allocation to aspirin reduced death due to cancer (pooled odds ratio [OR] 0·79, 95% CI 0·68—0·92, p=0·003). On analysis of individual patient data, which were available from seven trials (23 535 patients, 657 cancer deaths), benefit was apparent only after 5 years' follow-up (all cancers, hazard ratio [HR] 0·66, 0·50—0·87; gastrointestinal cancers, 0·46, 0·27—0·77; both p=0·003). The 20-year risk of cancer death (1634 deaths in 12 659 patients in three trials) remained lower in the aspirin groups than in the control groups (all solid cancers, HR 0·80, 0·72—0·88, p<0·0001; gastrointestinal cancers, 0·65, 0·54—0·78, p<0·0001), and benefit increased (interaction p=0·01) with scheduled duration of trial treatment (≥7·5 years: all solid cancers, 0·69, 0·54—0·88, p=0·003; gastrointestinal cancers, 0·41, 0·26—0·66, p=0·0001). The latent period before an

effect on deaths was about 5 years for oesophageal, pancreatic, brain, and lung cancer, but was more delayed for stomach, colorectal, and prostate cancer. For lung and oesophageal cancer, benefit was confined to adenocarcinomas, and the overall effect on 20-year risk of cancer death was greatest for adenocarcinomas (HR 0·66, 0·56—0·77, p<0·0001). Benefit was unrelated to aspirin dose (75 mg upwards), sex, or smoking, but increased with age—the absolute reduction in 20-year risk of cancer death reaching 7·08% (2·42—11·74) at age 65 years and older.

Interpretation

Daily aspirin reduced deaths due to several common cancers during and after the trials. Benefit increased with duration of treatment and was consistent across the different study populations. These findings have implications for guidelines on use of aspirin and for understanding of carcinogenesis and its susceptibility to drug intervention.