Cancer Risks Associated with Drinking Water Tainted with Asbestos

Asbestos-Induced Gastrointestinal Cancer: An Update (2016)

Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4856305/

Abstract

Asbestos-related diseases, such as malignancies and asbestosis, remain a significant occupational and public health concern. Asbestos is still widely used in many developing countries despite being a recognized carcinogen that has been banned over 50 countries. The prevalence and mortality from asbestos-related diseases continue to pose challenges worldwide. Many countries are now experiencing an epidemic of asbestos-related disease that is the legacy of occupational exposure during the 20th century because of the long latency period (up to 40 years) between initial asbestos exposure and exhibition of disease. However, the gastrointestinal (GI) cancers resulting from asbestos exposure are not as clearly defined. In this review, we summarize some of the recent epidemiology of asbestos-related diseases and then focus on the evidence implicating asbestos in causing GI malignancies. We also briefly review the important new pathogenic information that has emerged over the past several years that may account for asbestos-related gastrointestinal cancers. All types of asbestos fibers have been implicated in the mortality and morbidity from GI malignancies but the collective evidence to date is mixed. Although the molecular basis of GI cancers arising from asbestos exposure is unclear, there have been significant advances in our understanding of mesothelioma and asbestosis that may contribute to the pathophysiology underlying asbestos-induced GI cancers. The emerging new evidence into the pathogenesis of asbestos toxicity is providing insights into the molecular basis for developing novel therapeutic strategies for asbestos-related diseases in future management.

Possible health risks from asbestos in drinking water (2016)

Link: https://www.ncbi.nlm.nih.gov/pubmed/27919155

Abstract

The recent finding of asbestos fibres in drinking water (up to 700,000 fibres/litres) in Tuscany (Central Italy) leads to concerns about health risks in exposed communities. Exposure to asbestos has been linked with cancer at several levels of the gastrointestinal tract, and it has been documented, in an animal model, a direct cytotoxic effect of asbestos fibres on the ileum. It has been recently described a possible link between asbestos and intrahepatic cholangiocarcinoma, and asbestos fibres have been detected in humans in histological samples from colon cancer and in gallbladder bile. Taken together, these findings suggest the possibility of an enterohepatic translocation of asbestos fibres, alternative to lymphatic translocation from lungs.
Cancer morbidity investigations: Lessons from the Duluth study of possible effects of asbestos in drinking water (1981)

Link: https://www.sciencedirect.com/science/article/pii/0013935181900797

Abstract

In 1973, 1 to 30 million asbestos-like fibers per liter of tap water were discovered in Duluth drinking water. Previous studies had linked mesothelioma, lung, and gastrointestinal cancers with occupational exposure to asbestos, so surveillance of cancer morbidity in Duluth was initiated to investigate effects from ingestion of asbestos in drinking water. Gastrointestinal and lung cancer incidence data for 1969–1974 were collected in the same manner as in the Minneapolis-St. Paul component of the Third National Cancer Survey; Duluth rates for 1969–1971 were compared with incidence rates for the cities of Minneapolis and St. Paul during the same time period; and Duluth rates for 1972–1974 were compared with Duluth rates for 1969–1971. Duluth females and both sexes combined had statistically significantly higher rates of pancreatic cancer than in Minneapolis and St. Paul in 1969–1971. These rates subsequently decreased in 1972–1974 for both sexes combined in Duluth. Duluth males and both sexes combined had similar excesses for gastrointestinal tract not specified in comparison with Minneapolis and St. Paul. Duluth and Minneapolis cancer incidence rates yielded less-exaggerated differences between the two study areas compared with mortality rates. Resources required for morbidity surveillance are described.

Report on Cancer Risks Associated with the Ingestion of Asbestos (1987)

Link: https://www.jstor.org/stable/3430303?seq=1#page_scan_tab_contents

Cancer of the gastrointestinal tract and exposure to asbestos in drinking water among lighthouse keepers (Norway) (2005)

Link: https://link.springer.com/article/10.1007/s10552-004-7844-1

Abstract

Previous studies of predominantly ecological design have indicated a possible elevation of gastrointestinal cancer risk in population groups exposed to drinking water contaminated with asbestos from natural sources or asbestos–cement containing water pipes. In the present study the possible effect of ingested asbestos fibers on gastrointestinal cancer risk was investigated in an occupational group where a proportion of the employees was exposed to asbestos in their drinking water.