

Asbestos Disease: An Overview for Clinicians



Exposure to asbestos is a major occupational health hazard in the United States. The first large-scale use of asbestos in the United States started in 1896. The adverse effects of asbestos on health have been known since the mid-20th century when an association was noted between asbestos and lung cancer. A short time later, it was noted that asbestos also caused pleural thickening. Asbestos has also been associated with mesothelioma since the later part of the 1960s. Although there have been reports of an association between asbestos and some gastrointestinal malignancies, pleural changes, mesothelioma, lung cancer and interstitial fibrosis are the primary adverse affects of asbestos exposure.

Asbestosis is the name of the pneumoconioses caused by the inhalation of asbestos fibers. It is characterized by interstitial pulmonary fibrosis and thickening of the pleura. Occasionally there is pleural calcification. In more advanced cases there may be dyspnea, dry cough, and rales. The latter are usually heard at the lung bases and are often called “cellophane” rales because of their crackling nature.

Severe cases of asbestosis may cause clubbing of the fingers. Lung function studies show a restrictive pattern. Radiographic changes show small irregular opacities in the lower and middle lung fields and pleural thickening. In less advanced

cases of asbestosis, radiographic changes may be difficult to interpret.

All histologic types of cancer are seen in most studies. However, most studies show a preponderance of adenocarcinoma. Mesothelioma is a rare tumor of the pleura and peritoneum that is associated with asbestos exposure. Studies of mesothelioma have been difficult to conduct because of the long latency between exposure and disease onset. This period is in excess of 20 years but may be as long as 30 to 40 years.

The pleural tumor tends to spread along the interlobar fissures and invade the subpleural portion of the lungs. Direct invasion of the tumor into adjacent tissues and organs is common. Smoking is not associated with mesothelioma.

Assessing Risk

The risk of asbestos-related abnormalities and disease generally increases with increasing levels of exposure. This dose-response relationship is less clear for mesothelioma, where even short-term occupational exposures or secondary household exposures (e.g., household contacts of asbestos workers) have been associated with the occurrence of this malignancy. As asbestos exposures have declined in the workplace due to regulatory control, cases of severe interstitial disease have also decreased. Among many recently

screened cohorts, pleural changes are more prevalent than interstitial changes. There is little evidence that general environmental exposures are associated with significant disease except in several regions of the world with endemic mesothelioma due to exposures from naturally-occurring deposits of asbestos.

The association between lung cancer and asbestos exposure is now well established. In the case of smokers who have had significant asbestos exposure, the risk of lung cancer is extraordinarily high. Lung cancer in asbestos exposed workers is thought to occur at a slightly earlier age than other lung cancers and are more common in the lower lobes.

Clinical Evaluation of Asbestos Exposed Individuals

Clinical evaluation of an asbestos exposed worker or others with a history of significant asbestos exposure should include a complete occupational and environmental history, chest radiographs, pulmonary function studies, and physical exam with special attention to the lungs, heart, and upper extremities (i.e., clubbing). However, physical examination is often unremarkable apart from basal crepitations. A single PA film is usually sufficient for screening purposes. Pulmonary function studies should include a diffusion capacity.

Asbestos exposed individuals may give a history of shortness of breath and dry cough. However, in the case of smokers, the presentation of clinical findings and pulmonary function studies may be mixed.

Pleural changes are not usually accompanied by changes in pulmonary function, however, some studies have shown restrictive changes as a result of pleural disease.

Radiographic Interpretation

Radiographic changes secondary to asbestos exposure may be difficult to interpret, even by experienced readers. Consultation may be required with pulmonary and occupational medicine specialists familiar with the diagnosis and evaluation of occupational lung diseases. NIOSH offers certification ("B reader") in the detection of the pneumoconioses. A list of currently certified readers can be found at <http://www.cdc.gov/niosh/pamphlet.html>.

What to Advise Your Patients

Patients may ask if the asbestos can be washed from the lungs. Once inhaled, asbestos cannot be removed from the lungs.

Patients who smoke should be advised to stop.

With regard to lung cancer screening, the evidence is weak at this time that ongoing screening for lung cancer is efficacious. MDH knows of no prophylaxis for lung cancer prevention. Patients should also be aggressively treated for respiratory infections and maintain routine immunizations for influenza and pneumococcal pneumonia.

Questions?

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