Asbestosis: A persistent nemesis

A disease with a long latency that can easily be overlooked.

Asbestos is a fibrous silicate mineral with numerous desirable characteristics, such as resistance to heat and chemicals, good tensile strength, and flexibility. As a result, it has been used in thousands of products, including insulation (acoustic, heat, electrical), friction material (brake pads), gaskets, concrete reinforcement (pipes, sheeting, tiles), plaster compounds, and spackling. In the past 40 years, as adverse health effects were recognized, the use of asbestos in Canada has been markedly curtailed. Despite this, the incidence of asbestos-related diseases has not declined, because of the long latency characteristic of these diseases and the ubiquity of materials containing asbestos.

Asbestos can cause a variety of pulmonary diseases, some generally benign pleural changes, such as effusion, plaques, calcification, and hypertrophy, and some more pernicious, such as asbestosis, bronchogenic carcinoma, and malignant mesothelioma.

Diagnosis of asbestosis

Asbestosis is a diffuse interstitial fibrosis of the lung parenchyma caused by prolonged repeated exposure to high levels of asbestos fibres. The fibrosis typically starts symmetrically at the lung bases and, as the disease progresses, can extend to all lung fields, producing stiffer lungs and reduced gas exchange ability. Advanced asbestosis can be debilitating, as severe fibrosis can lead to pulmonary hypertension and right-sided heart failure.

Asbestosis typically has a long latency period, with symptoms occurring 20 years after the onset of exposure. The severity and progression of the disease is dose dependent. Among workers with high cumulative lifetime exposure, the disease can continue to progress even with cessation of exposure.

Initially, workers with asbestosis complain of shortness of breath with exertion and decreased exercise tolerance. A dry cough can develop and rales can be heard at the lung bases. As the disease progresses, dyspnea occurs at rest and there may be clubbing, cyanosis, and signs of right-sided heart failure.

Lung function tests demonstrate a restrictive pattern with reduced FVC, lung volumes, lung compliance, and diffusion capacity. Asbestos by itself does not typically result in small airway disease or COPD, so obstructive changes on lung function testing are uncharacteristic. Oxygen saturation can decline with exercise or, in more severe cases, at rest. Small irregular opacities are noted on chest X-rays. Coincidental radiologic manifestations of asbestos-related pleural disease may be found.

Since asbestosis affects only the lungs, this is one way to differentiate it from other systemic diseases that also cause pulmonary fibrosis. Differentiating asbestosis from idiopathic pulmonary fibrosis can be challenging. The presence of asbestos-related pleural changes is very useful as a marker of asbestos exposure. However, the most essential diagnostic criterion is a history of prolonged and repeated exposure to asbestos. The risk of developing asbestosis is low if the cumulative exposure is less than 25 fibres/ml-years (the metric fibres/ml-years is analogous to pack-years for cigarette smokers).

Those at greatest risk for asbestosis are individuals who were actively working with asbestos in the past. In British Columbia, this includes workers generally older than 60 who were employed prior to the early 1980s as asbestos miners and millers, construction workers, insulators, pipefitters, millwrights, naval yard workers, power or chemical plant workers, or ship or train mechanics. Today, these types of workers are still at risk, although the risk is mitigated by improved work practices that reduce exposure. Other workers at risk for asbestos-related diseases are those involved in asbestos abatement, older building renovation and demolition, or building maintenance. The risk, however, is generally low because, in most circumstances, the presence of asbestos is recognized and exposure is controlled.

Treatment and prevention

Since there aren't any good treatments for asbestosis, the best approach is disease prevention. The prevention branch of WorkSafeBC has been actively involved through worker and employer education, workplace inspections, and overseeing abatement procedures. WorkSafeBC requires employers to maintain an asbestos inventory identifying all locations where asbestos is found and to control access to those areas.

Physicians can participate in preventing asbestosis by identifying patients at risk with a comprehensive occupational history, and referring suspected cases to WorkSafeBC. If inappropriate workplace exposure is suspected, please contact WorkSafeBC's prevention branch at 1 888 621-7233.

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of motor vehicles involved in fatal or personal injury crashes upon their entry into the hospital. These samples should be stored in a secure location and only released if the police can independently establish grounds for their seizure.

3) The Criminal Code and all laws governing patient confidentiality should specify what information physicians must provide to the police during an impaired driving investigation. The police cannot effectively investigate impaired driving cases unless they have been told that the patient has been admitted to hospital, the patient's location, if the patient can be interviewed, and if drawing blood would endanger the patient.
4) The Criminal Code should be amended to remove the "preference" for breath samples when suspected impaired drivers are taken to hospital.

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References

References are available at www.bcmj.org.

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For more information

For further information regarding asbestosis, contact Sami Youakim, MD, at 1 250 881-3490.

—Sami Youakim, MD, MSc, FRCP, WorkSafeBC
Occupational Disease Services

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of a suitable candidate, consider nominating him or her for the honor of receiving the first Dr Don Rix Award for Physician Leadership. The deadline for nominations is 30 March annually, and should be sent to the CEO of the BCMA at 115–1665 West Broadway, Vancouver BC V6J 5A4 or CEO@bcma.bc.ca.

Signs of Stroke materials available for physicians

The Heart and Stroke Foundation of BC & Yukon has launched a 2-year campaign to educate BC residents about the five warning signs of stroke and the time-sensitive nature of tissue plasminogen activator treatments.

The campaign will use a TV commercial, radio, and print advertising, and public relations. Posters, wallet cards, and other materials have been printed for physicians to display in their offices. If you are interested in ordering a few posters and other materials for your office, please e-mail info@hsf.bc.ca with "Signs of Stroke" in the subject line.

—Susan Pinton
Heart and Stroke Foundation of BC & Yukon

Body Worlds and the Brain exhibition

Telus World of Science is displaying the Gunther von Hagens' Body Worlds and the Brain exhibition until early January. The exhibit is renowned for the human bodies, specially preserved through a method called plastination, that are displayed in life-like postures. Different specimens allow visitors to appreciate the functional anatomy of the various body systems, including fetal development.

Since debuting in 1995, over 30 million people in 50 cities have seen Body Worlds. Dr von Hagens invented plastination in 1977 in an effort to

improve the education of medical students. He created the Body Worlds exhibitions to bring anatomy to the public. Understandably, an exhibit that presents human material in such a frank and vivid manner will attract both positive and negative interest, but such a valuable educational opportunity clearly deserves the support of the medical community. In addition to a special focus on the anatomy and function of the brain, the exhibit will allow people to see the consequences of a number of modifiable behaviors such as smoking, obesity, and poor eating habits. These are conditions that are not only important considerations for individuals, but are also major public health concerns. Visitor numbers are expected to be very high. Educational materials for school groups and adults are being prepared and extensive community consultations are underway.

Physicians interested in more information can find it at www.scienceworld.ca/bodyworlds and www.bodyworlds.com. Timed tickets are now available from Science World, either by phone at 604 443 7500 or online at www.scienceworld.ca/bodyworlds.

—Lloyd Oppel, MD
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