Asbestosis Characteristics and Presentation

Asbestos is a group of naturally occurring minerals that were widely used due to their resistance to heat, electricity and corrosion, but its use has been discontinued since the discovery that it can cause a disease known as asbestosis. Asbestosis is a pneumoconiosis caused by inhalation of asbestos fibers that damage the lung. Asbestosis is considered to be a restrictive lung disease due to causing a decrease in lung volumes. On radiographic imaging, asbestosis is usually seen in the periphery of the lower lobes of the lung. Risk factors for developing asbestosis include shipbuilding, roofing, smoking, and plumbing. The most common clinical features are dyspnea with exertion, cough and digital clubbing.

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Characteristics

Pneumoconiosis
Nude-Mona-cone-nose
Asbestosis is a pneumoconiosis caused by inhalation of asbestos fibers. Pneumoconioses are a group of interstitial lung diseases caused by the inhalation of certain dust particles that lead to lung damage.

Restrictive Lung Disease
Lungs Restricted by a Belt
Asbestosis is a restrictive lung disease caused by fibrosis of the lung tissue. Fibrotic lungs cannot expand properly which makes it harder for them to be filled with as much air as before, leading to a decrease in total long capacity.

Lower Lobes
Lower-lobes-bridge-arch
On radiographic imaging, asbestosis is usually seen in the periphery of the lower lobes of the lung. Some of the findings include peribronchial fibrosis, reticulation, parenchymal bands, and honeycomb fibrosis.

Risk Factors

Shipbuilding
Ship-builder
Asbestos used to be considered a critical element in the shipbuilding industry due to its resistance to corrosion and fires. Exposure in shipyards includes those who were unloading and loading ship materials, the construction workers as well as those assigned to do maintenance on these ships.

Roofing
Roof-builder
Asbestos cement sheets were used in roofing for durability, weatherproofing and heat resistance. Roofers were exposed to these asbestos materials until the toxicity of asbestos was discovered.

Smoking
Cigarette
The combination of asbestos and smoking can be deadly. Smoking damages the cilia in the lungs, making it harder for them to expel asbestos fibers. Smoking also changes how the immune system reacts to asbestos, causing the lungs to develop more scar tissue than they would when exposed to these fibers, which can accelerate the onset of asbestosis and asbestos-related lung cancer.

Plumbing
Plumber
Asbestos was commonly used in insulation of pipes, boilers, ducts and tanks for its fire and heat resistant properties. When plumbers cut or drill these pipes, the asbestos fibers are released into the air where they can be inhaled.

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Clinical Features

Dyspnea with Exertion

Disc-P-lungs with Exertion

Patients with asbestosis develop progressively worsening dyspnea 10 to 20 years after exposure. This dyspnea can progress to dyspnea on exertion, which means that they cannot breathe fast or deep enough during physical activity. The sensation of not being able to breathe properly is due to the asbestos fibers causing fibrosis of the lung parenchyma which leads to decreased lung compliance.

Cough

Coughing Coffee-pot

An intermittent cough is one of the main symptoms of asbestosis. Asbestos fibers cause fibrotic damage to terminal respiratory units causing bronchial and bronchiolar distortion. This distortion leads to alterations in the stimulatory and inhibitory nerve fibers involved in cough reflexes.

Digital Clubbing

Club Causing Clubbing

Digital clubbing is caused by the proliferation of connective tissue, which leads to the bulbous enlargement of the distal part of the fingers and toes, causing them to become rounder and spread out. Patients also present with increased sponginess of the soft tissue at the base of the nail. Clubbing may be hereditary, idiopathic, or due to various disorders. Asbestosis is one of the pulmonary conditions that can cause clubbing.

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