

## Mesothelioma

Mesothelioma is a malignant pleural tumor that most commonly results from asbestos exposure. It presents with dyspnea and decreased breath sounds on auscultation as well as constitutional B symptoms. Mesothelioma can be identified on imaging by the presence of a hemorrhagic pleural effusion or pleural thickening. Biopsy of the pleura may reveal Psammoma bodies that stain positive for calretinin. Treatment can include surgery and/or chemotherapy.



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### Characteristics

#### Malignant Pleural Tumor

[Malignant-man with Pearl and Tumor-guy](#)

Mesothelioma is a tumor of mesothelial cells, derived from mesoderm. It is a malignancy found in the body's serous cavities. These cavities include the pleura (87% cases), peritoneum (11% cases), pericardium (<1% cases), and testis (<1% cases). The main function of these cells is to protect the inner organ by providing a slippery and non-adhesive surface. Mesothelioma can technically occur anywhere there are mesothelial cells.<br>

#### Asbestos Exposure

[Exposed to Ass-best-toes](#)

Asbestos is carcinogenic, and exposure can increase the risk of mesothelioma. Occupations associated with asbestos are logging, machinery mechanics, shipbuilding, mining, construction, plumbing, and roofing. Mesothelial cells are more responsive to asbestos cytotoxicity, resulting in chronic inflammation. This process is related to mineral fiber buildup in tissues and mutagenic oxygen radicals production.

### Presentation

#### Dyspnea

[Disc-P-lungs](#)

Mesothelioma commonly causes patients to seek medical attention because of dyspnea. This can occur due to pleural effusion, which can reduce the lung's ability to expand naturally.

#### Decreased Breath Sounds

[Down-arrow Muffled Lungs](#)

The presence of pleural effusion in mesothelioma patients leads to decreased breath sounds on auscultation.

#### Constitutional B Symptoms

[Constitution \(B\) Bee](#)

Other symptoms patients can also complain about are dry cough, fatigue, non-pleuritic chest pain, weight loss, and fatigue. Night sweats and fever are seen less frequently. Worsening of symptoms develops along with the progression of the disease. These constellation of symptoms are known as constitutional B symptoms.

### Diagnosis

#### Hemorrhagic Pleural Effusion

[Hemorrhage-hammer with Pearl holding E-fuse Fluid](#)

Pleural effusion can be seen in > 90% of mesothelioma cases. It is often exudative and hemorrhagic. Thoracentesis is performed to relieve the patient's symptoms and collect the fluid for cytological examination.

## **Pleural Thickening**

### [Thick Pearl](#)

Pleural thickening is seen in more than 50% of chest X-rays of patients with mesothelioma. This is often due to pleural nodules that may be calcified thus thickening the thin membranes.

## **Psammoma Bodies**

### [Samoa](#)

Psammoma bodies are a form of dystrophic calcification characterized by a lamellated concentric calcified structure. It occurs as a product of tumor cell degeneration and secretions. Psammoma bodies can also be seen in papillary thyroid carcinoma, somatostatinoma, meningioma, ovarian serous papillary cystadenocarcinoma, and prolactinoma.<br>

## **Calretinin**

### [Calcium-cow-red-tin](#)

Calretinin is a calcium-binding protein in neurons that is overexpressed in mesothelioma patients. After pleural fluid cytologic analysis, cytoplasmic and nuclear staining will reveal a "fried-egg" appearance, which is characteristic for mesothelial cells. Thoracoscopic-guided biopsy is the gold standard for diagnosis, but pleural fluid analysis is less invasive.<br>

## **Interventions**

### **Surgery**

#### [Surgeon](#)

Surgery is limited to early-stage mesothelioma patients with good functional status. Treating symptoms and relieving the patient from their pleural effusion is necessary. A single treatment has not shown an improvement in survival. Combination therapy is recommended with other treatments, including chemotherapy and radiotherapy.

### **Chemotherapy**

#### [Chemo-head-wrap](#)

For some mesothelioma patients, chemotherapy is the best option. The first chemotherapy choice in unresectable mesothelioma is cisplatin with pemetrexed. Carboplatin is used to substitute cisplatin in elderly patients.<br>