Image description

Nodular thickening of the right pleura associated with pleural effusion, right basal pneumonia and chest wall invasion.

Diagnosis:

Malignant Pleural Mesothelioma (MPM) (biopsy proven)

Brief overview of the disease

Malignant pleural mesothelioma is an uncommon neoplasm that arises from the pleura or, rarely, the pericardium or peritoneum.

Patients frequently present with dyspnea, chest pain, cough, and weight loss. The tumor can invade both visceral and parietal pleura and frequently extends to adjacent structures. The prognosis is poor, with a median survival time of 12 months after diagnosis.

Plain films: The initial chest X-ray generally reveals diffuse nodular pleural thickening, unilateral volume loss of the lung (sometimes visibly encased), and often a large unilateral pleural effusion.

A CT scan is the primary imaging modality used for the evaluation of MPM. Key CT findings suggest that MPM includes unilateral pleural effusion, nodular pleural thickening and interlobar fissure thickening.

Pleural thickening (90%)
Thickening of the interlobar fissure (85%)
Pleural effusion (hemorrhagic) (75%)
Contraction of affected hemithorax (40%)
Calcified pleural plaques (20%)

MPM is locally aggressive, with frequent invasion of the chest wall, mediastinum, and diaphragm. Chest wall involvement may manifest as obliteration of extrapleural fat planes, invasion of intercostal muscles, displacement of ribs, or bone destruction.

Direct extension of the tumor into vascular structures and mediastinal organs including the heart, esophagus, and trachea may occur.

Transdiaphragmatic extension of MPM is suggested by a soft-tissue mass that encases the hemidiaphragm.

Pulmonary metastases of MPM manifesting as nodules and masses and, rarely, diffuse miliary nodules may be identified at CT.

Metastasis to the hilar and mediastinal lymph nodes is present at autopsy in approximately 40%–45% of patients with MPM.

In patients with potentially resectable disease, MR imaging can provide additional staging information.

Radiologic studies play an important role in the evaluation of MPM. CT is the most widely used initial imaging modality for the diagnosis and staging of MPM. MR imaging and, more recently, PET have proved helpful in further delineating the extent of disease, especially in surgical candidates. Each imaging modality has its advantages and limitations, but in combination they are crucial in determining the most appropriate treatment options for patients with MPM.

Distinguishing malignant mesothelioma from metastatic adenocarcinoma can be difficult and usually requires a large tissue biopsy on which immunohistochemistry and electron microscopy can be performed. In the past, closed pleural needle biopsy has given poor yields, due to the small amount of tissue obtained, and the patient has subsequently been subjected to a diagnostic thoracotomy. In recent years, the availability of more accurate histopathologic tests has enabled pathologists to achieve diagnosis more easily on samples obtained by needle biopsy. Many feel that percutaneous biopsy is a safe and effective manner of diagnosing malignant mesothelioma of the pleura.

Malignant mesothelioma is typically refractory to treatment and is for the most part a lethal disease.

The management of diffuse malignant mesothelioma remains controversial. Treatment appears to prolong survival which ranges from only 6 to 12 months with supportive care alone. Surgical resection, either with extrapleural pneumonectomy or by pleurectomy/decortication, remains the mainstay of treatment because of the relative ineffectiveness of radiation and chemotherapy.

Surgical resection alone, however, is inadequate, so most current treatment regimens combine operation with radiation and/or chemotherapy. Therapeutic results remain poor, and cure is rare. Local treatments such as surgery or radiation therapy are technically difficult because of the extent of disease. Malignant mesothelioma continues to be a chemotherapy resistant tumor. Even with aggressive multimodality treatment, the median survival currently ranges from 18 to 24 months.

■ REFERENCES:

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Answer to the Quiz

Which choice best correlates with the findings?
Acute infections or inflammatory process.
Chronic infections or inflammatory process.
Old trauma.
X *Malignancy.*
Congenital anomaly.

Please respond to the following with TRUE or FALSE regarding the salient finding.
T *Nodular pleural thickening*
T *Right pleural effusion*
T *Chest wall invasion*
F *Mediastinal lymphadenopathy*
F *Lytic lesions of the spine*

Which choice most likely corresponds with the radiographic abnormalities?
Bronchogenic carcinoma
Pulmonary metastases
X *Mesothelioma*
Chronic obstructive pulmonary disease (COPD)