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# Diffuse Lung Disease

**SESSION TITLE:** Diffuse Lung Disease
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## MINUTE PULMONARY MENINGOTHELIAL-LIKE NODULES ASSOCIATED WITH CONGESTIVE HEART FAILURE

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**INTRODUCTION:** Minute pulmonary meningothelial-like nodules (MPMNs) are a distinguished entity of pulmonary nodules described as numerous, small and bilateral with a characteristic resemblance to meningiomas.

**CASE PRESENTATION:** We present a 55-year-old African American female with past medical history of diastolic congestive heart failure (CHF), diabetes mellitus, chronic hypertension, and tobacco use disorder, who presented initially with increased productive cough with clear secretions, chest congestion and intermittent chest pain for few months. Pertinent findings on exam include decreased breath sounds at lung bases bilaterally with unremarkable laboratory tests. Pulmonary function tests favored a restrictive pattern with TLC of 3.61 L and a DLCO of 68% predicted with normal FEV1/FVC ratio. Computed tomography (CT) chest described innumerable bilateral small pulmonary nodules. Bronchoscopy with bronchoalveolar lavage was non-diagnostic. A video-assisted thoracoscopic surgical excision was completed. Pathology report confirmed meningothelial-like micronodules in the parenchyma, surrounding venules. They ranged in size from less than 0.1 cm to 0.7 cm and were reactive, related to parenchymal damage likely secondary to CHF. No evidence of malignancy was found. Microscopically, described as multiple whirled stellate nodules composed of monotonous proliferation of spindle cells with clear intranuclear pseudo-inclusions. Cells were positive for vimentin, progesterone receptor, and epithelial membrane antigen (EMA). Tuberculosis and fungal infections were excluded. Patient was started on aggressive CHF management with follow up CT in 3 months for monitoring progression.

**DISCUSSION:** MPMNs are a rare entity of pulmonary lesions which was first described in 1960 by Korn et al on autopsy. Resembling meningiomas in character, MPMNs are considered reactive in nature but can also be malignant. They have been suggested to be the precursor lesions of primary pulmonary meningiomas. The incidence of MPMNs varies from 0.3% to 9.5% at autopsy or surgical specimens. It is more common in the 6th decade, favoring females. Associated with chronic lung disease, such as chronic thromboembolism (42 %), bronchiolitis-associated interstitial lung disease (26%), pulmonary adenocarcinoma (10%), and cardiac causes such as CHF, like in our patient. One case reported an association with breast cancer. No reports are found in pediatric lungs which might exclude a congenital origin.MPMNs are asymptomatic. They appear grossly as small persistent attenuated ground glass opacities bilaterally on chest CT. They range in size from 100 micrometer to 3 millimeter. Nodules larger than 1 cm are suggestive of malignancy. The gold standard for diagnosis is biopsy. Microscopically, they are described as nests of epitheliod cells arranged in “Zellballen” pattern around venules in the parenchyma. Immunohistologic profile is known to be positive for EMA, vimentin, progesterone receptor which suggests a role for sex-steroid hormones in their growth control, and recently CD56 similar to meningiomas. Conservative management of possible underlying cause is usually preferred but curative surgical excision is warranted in certain cases. Differential diagnosis includes miliary TB, metastatic carcinoma, pulmonary meningioma, pulmonary carcinoid tumors and rarely metastasis of primary intracranial malignant meningioma.

**CONCLUSIONS:** MPMNs are small, numerous, bilateral pulmonary nodules that are likely reactive to other chronic conditions but can be associated with malignancy. Therefore, maintaining a high level of suspicion for this distinguished entity is important.

**Reference #1:** Lee SK, Kim GJ, Kim YJ, Leem AY et al, Minute Pulmonary Meningothelial-Like Nodules Simulating Hematogenous Lung Metastasis: A Case Report ,Tuberc Respir Dis (Seoul). 2013 Aug; Published online 2013 Aug 30

**Reference #2:** Mukhopadhyay S1, El-Zammar OA, Katzenstein AL, Pulmonary meningothelial-like nodules: new insights into a common but poorly understood entity. Am J Surg Pathol. 2009 Apr.

**Reference #3:** Korn D, Bensch K, Liebow A, Castleman B, Multiple Minute Pulmonary Tumors Resembling Chemodectomas, Am J Pathol. 1960 Dec.

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