CLINICAL VIGNETTE

Solitary Fibrous Tumor of the Lung

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Case Presentation

A 27-year-old female presented to urgent care with left sided chest pain. She described the pain as a dull chest pain that became a sharp pain if she inhaled forcefully. She had normal exercise tolerance, but since the pain persisted for several days, she went to urgent care. Chest X-ray demonstrating a left anterior lower lung ovoid mass. CT performed the same day demonstrated a 4.0 x 3.4 cm spherical mass within the left lower lung. A few days after her urgent care visit, her chest pain resolved. She was referred to pulmonary for further evaluation of her left lung mass. She denied any tobacco use and had a maternal grandmother who died at age 80 of unspecified lung cancer. Her medical history and physical exam were otherwise unremarkable. Review of a prior chest X-ray for a cough two years ago, identified a 2cm left anterior lower lung nodule in the same location as her current mass, which was not been previously noted. Given interval growth of the tumor she underwent CT guided biopsy of the mass. Pathology was consistent with a solitary fibrous tumor. VATS resection of the mass noted the mass had adhesions to both the upper and lower lobes, making it difficult to discern the lobe of origin. She underwent en bloc wedge resections of both the left upper and left lower lobes with the solitary fibrous tumor. Pathology demonstrated a 5.9cm solitary fibrous tumor with degenerative changes, no tumor necrosis, with clear surgical margins. The mitotic rate was < 1 per 2mm^2. Her post-operative course was uncomplicated and she has not had recurrence of cough or chest pain since tumor resection.

Discussion

Solitary fibrous tumor of the lung is a rare mesenchymal spindle cell tumor with an incidence of <3 per 100,000 hospital patients.[1] It occurs with equal frequency in males and females and predominantly occurs in patients in their 60's and 70's. Patients are often asymptomatic, though some can present with symptoms due to tumor compression, such as cough, chest pain, and dyspnea.[2] Paraneoplastic syndromes can be present in patients with larger tumors. The most common paraneoplastic syndrome is hypertrophic pulmonary osteoarthropathy, which consists of bilateral pain, stiffness, and swelling of the joints, ankle edema, and pain along the long bones due to periosteal elevation.[3] Approximately 80% of solitary fibrous tumors are benign.[4] Of the 10-20% that have malignant features, tumor recurrence is typically local.[2] Complete surgical resection is the first line treatment for solitary fibrous tumors.[2] For patients with hypertrophic pulmonary osteoarthropy, symptoms typically resolve within hours to days of tumor removal.[3] Risk factors that increase risk of tumor metastasis include older patient age, larger tumors, increased mitotic activity, and presence of tumor necrosis. A risk-stratification model proposed by Demicco et al uses age (<55 or >=55), tumor size (<5cm, 5cm to ≤10cm, 10cm to <15cm, and ≥15cm), and mitotic figures (0, 1-3, or ≥4) to stratify patients into low, moderate, or high risk for aggressive disease.[5] Our patient falls into the low risk category. Tumor recurrence has been reported as long as 17 years after initial resection.[3] Given the long timeline for potential recurrence, post-surgical monitoring with CT chest is recommended every 6 months for 2 years after resection and then annually for 15 to 20 years post-resection.[2]

REFERENCES

1. **Ichiki Y, Kakizoe K, Hamatsu T, Matsuyama A, Suehiro T, Tanaka F, Hisaoka M, Sugimachi K**. Solitary fibrous tumor of the lung: a case report. *Surg Case Rep*. 2017 Dec;3(1):10. doi: 10.1186/s40792-016-0286-7. Epub 2017 Jan 7. PMID: 28063145; PMCID: PMC5218951.
2. **Xiao P, Sun L, Zhong D, Lian L, Xu D**. Giant solitary fibrous tumor of the lung: A case report. *Thorac Cancer*. 2014 May;5(3):261-4. doi: 10.1111/1759-7714.12069. Epub 2014 Apr 22. PMID: 26767010; PMCID: PMC4704305.
3. **Robinson LA**. Solitary fibrous tumor of the pleura. *Cancer Control*. 2006 Oct;13(4):264-9. doi: 10.1177/ 107327480601300403. PMID: 17075563.
4. **Peng L, Shang QW, Chen J, Wang Y**. Solitary fibrous tumor hanging on the lung: An unusual cause of the chest pain. *Asian J Surg*. 2023 Feb;46(2):1069-1070. doi: 10.1016/j.asjsur.2022.07.132. Epub 2022 Aug 17. PMID: 35987990.
5. **Demicco EG, Park MS, Araujo DM, Fox PS, Bassett RL, Pollock RE, Lazar AJ, Wang WL**. Solitary fibrous tumor: a clinicopathological study of 110 cases and proposed risk assessment model. *Mod Pathol*. 2012 Sep;25(9):1298-306. doi: 10.1038/modpathol.2012.83. Epub 2012 May 11. PMID: 22575866.