CLINICAL VIGNETTE

Past Medical History is Not a Diagnosis
Typical Pulmonary Carcinoid Presenting as Persistent Infiltrate

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Case

The patient is a 61-year-old male who was admitted by the hospitalist service at an outside facility for chronic back pain, nausea and vomiting. He had two prior hospitalizations for similar complaints within the past month and underwent extensive gastrointestinal evaluation, including normal upper and lower endoscopic examination, as well as normal CT imaging of the abdomen and pelvis. Chest radiograph obtained on admission revealed a right lower lobe infiltrate, and the patient was started on antibiotics for treatment of aspiration pneumonia.

The patient denied any pulmonary complaints. Specifically, he denied any history of cough, sputum production, dyspnea, or pleuritic chest pain. He had recently stopped smoking with a 30 pack/year history of use and did not take any bronchodilator medications. There was no history of recent travel or pet exposure.

Significant past medical history was notable for motor vehicle accident 30 months prior to this admission that caused significant orthopedic injuries, including compression fractures of the lumbar vertebrae. The patient has a history of Type II diabetes mellitus complicated by peripheral neuropathy and had a left second phalangeal foot amputation due to osteomyelitis related to trauma. Major sequela of this injury was chronic pain syndrome requiring long acting opiates supervised by pain management. The patient had a previous history of alcohol abuse. He suffered a hip fracture 21 months prior that required surgery. Chest radiograph taken at that time revealed a right lower lobe infiltrate, and a presumptive diagnosis of aspiration pneumonia was made. The patient denied any pulmonary specific symptoms at that time. Antibiotics were given during the acute hospitalization and continued upon transfer to skilled nursing facility. He was discharged on completion of physical therapy.

The patient was seen several times as an outpatient over the intervening 21 months by his primary care physician. He had no pulmonary complaints and no follow up chest radiographs were obtained until he presented with an acute flare of low back pain four weeks prior to his current hospitalization. Although he was asymptomatic, he was noted to have a right lower lobe infiltrate and was diagnosed with healthcare facility associated pneumonia, most likely secondary to recurrent aspiration. Treatment included antibiotics and the patient was discharged. He then presented back to the emergency department at the time of his present hospitalization.

Physical examination on admission revealed that the patient as afebrile with normal blood pressure, heart rate and in no respiratory distress. Pulse oximetry on room air was normal at 98%. Pertinent physical examination revealed clear breath sounds bilaterally with equivocal egophony at the right base. Cardiac and abdominal examinations were unremarkable.

Laboratory data revealed WBC 6.1 with normal differential. Hgb 13.9 g/dl, platelets 191K/ul. Electrolytes and liver panel were normal. Random blood glucose 169 mg/dl Hgb A1c 7%. Procalcitonin was normal.

Plain chest radiograph on admission revealed right lower lobe infiltrate with volume loss. CT scan of the chest (Figure 1) revealed right lower lobe consolidation. Selected images revealed a 2 cm endobronchial lesion in the right lower lobe bronchus (Figure 2). In comparison to previous CT scan obtained 21 months prior, there was increased size of consolidation.

The patient underwent fiberoptic bronchoscopy which revealed a smooth mass obscuring the right lower lobe orifice (Figure 3). Bronchial biopsy was diagnostic for typical carcinoid. The patient is currently awaiting resectional surgery.

Discussion

Typical pulmonary carcinoid, or lung neuroendocrine tumors are rare neoplasms, accounting for 1-2% of all lung neoplasms in adults.[1] Typical carcinoids are slow growing, have approximately four times the incidence of atypical carcinoids, which have a higher rate of growth and possible development of metastatic disease.[2] Small cell carcinoma of the lung represents the most malignant of the lung neuroendocrine tumors.[3]

There are no known environmental or carcinogens known to increase the risk of typical and atypical lung neuroendocrine tumors. There is no clear association between smoking as a causative factor.[4] Most carcinoids have no inherited predisposing factors. They are infrequently found in families with multiple endocrine neoplasia type 1.[5]

The most common symptoms in a patient with lung neuroendocrine tumors are due to their higher incidence of central location.[6] Cough, wheezing or recurrent pneumonias due to bronchial obstruction are often treated with multiple courses of antibiotics like our patient, or with oral corticosteroids and bronchodilators, which frequently causes a significant delay in diagnosis.[7] However, up to 25% of patients are asymptomatic at time of diagnosis.[8]

Due to the findings that about 75% of lung neuroendocrine tumors are centrally located, bronchoscopy with biopsy with extremely useful in making a diagnosis.[8] Cytology of sputum and bronchial brushings are lower yield due to the intact bronchial mucosa overlying the neuroendocrine tumor.[9] Bronchial biopsies were previously associated with significant bleeding in older studies,[10] but more recent data suggest the incidence is much lower.[11]

Surgery offers the highest chance of cure. For typical carcinoid, lung sparing techniques such as sleeve resection are considered safe and appropriate.[12] For atypical or poorly differentiated tumors formal lobectomy or pneumonectomy is recommended.[13]

Our patient illustrates the need for thorough and consistent physician handoff during the multiple care site transitions in today's health care system.[14] Inadequate review of prior hospitalizations and radiographic studies, with multiple hospitalists involved in serial admissions with protocol driven therapy caused significant delay in diagnosis and appropriate therapy. Lack of face to face verbal communication from hospitalist to primary care in follow up to ensure radiographic resolution of the patient's infiltrate was also a factor.[15]

Figures

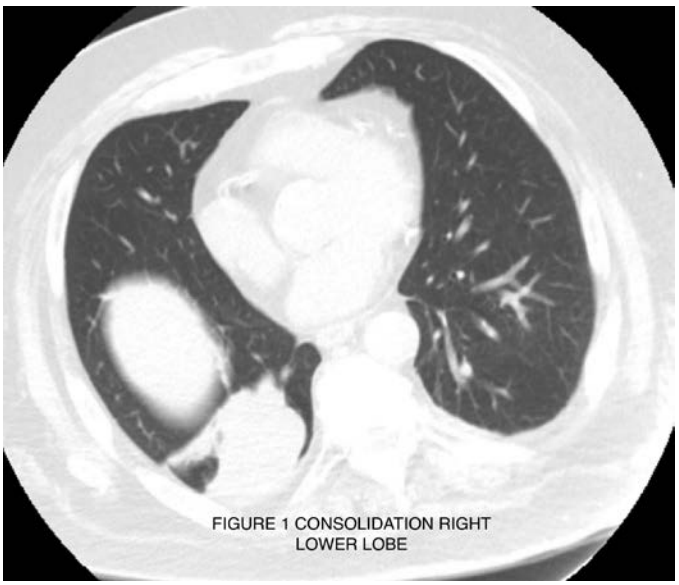
FIGURE 1 CONSOLIDATION RIGHT LOWER LOBE

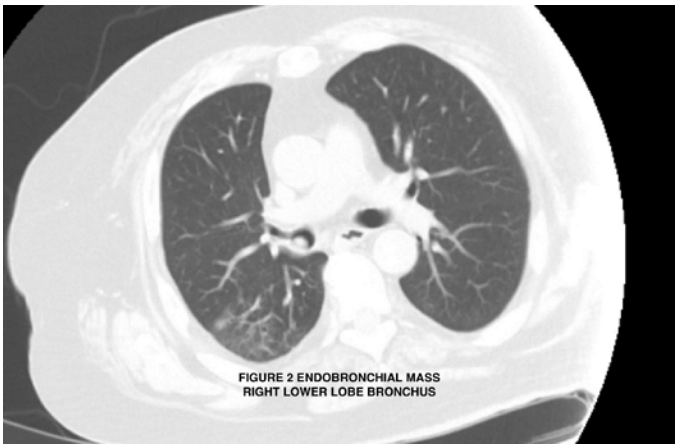
FIGURE 2 ENDOBRONCHIAL MASS RIGHT LOWER LOBE BRONCHUS

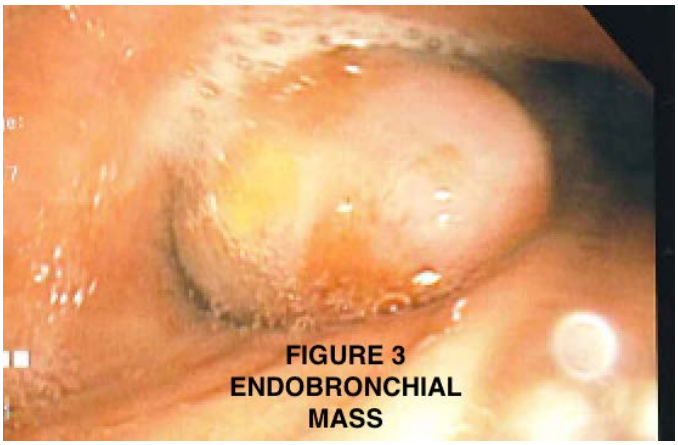
FIGURE 3 ENDOBRONCHIAL MASS

REFERENCES

1. **Hauso O, Gustafsson BI, Kidd M, Waldum HL, Drozdov I, Chan AK, Modlin IM**. Neuroendocrine tumor epidemiology: contrasting Norway and North America. *Cancer*. 2008 Nov 15;113(10):2655-64. doi: 10.1002/cncr.23883. PubMed PMID: 18853416.
2. **Fink G, Krelbaum T, Yellin A, Bendayan D, Saute M, Glazer M, Kramer MR**. Pulmonary carcinoid: presentation, diagnosis, and outcome in 142 cases in Israel and review of 640 cases from the literature. *Chest*. 2001 Jun;119(6):1647-51. Review. PubMed PMID: 11399686.
3. **Warren WH, Gould VE, Faber LP, Kittle CF, Memoli VA**. Neuroendocrine neoplasms of the bronchopulmonary tract. A classification of the spectrum of carcinoid to small cell carcinoma and intervening variants. *J Thorac Cardiovasc Surg*. 1985 Jun;89(6):819-25. PubMed PMID: 2582209.
4. **Froudarakis M, Fournel P, Burgard G, Bouros D, Boucheron S, Siafakas NM, Emonot A**. Bronchial carcinoids. A review of 22 cases. *Oncology*. 1996 Mar-Apr;53(2):153-8. PubMed PMID: 8604242.
5. **Oliveira AM, Tazelaar HD, Wentzlaff KA, Kosugi NS, Hai N, Benson A, Miller DL, Yang P**. Familial pulmonary carcinoid tumors. *Cancer*. 2001 Jun 1;91(11):2104-9. PubMed PMID: 11391591.

6. **Chong S, Lee KS, Chung MJ, Han J, Kwon OJ, Kim TS**. Neuroendocrine tumors of the lung: clinical, pathologic, and imaging findings. *Radiographics*. 2006 Jan-Feb;26(1):41-57; discussion 57-8. Review. PubMed PMID: 16418242.
7. **Nessi R, Basso Ricci P, Basso Ricci S, Bosco M, Blanc M, Uslenghi C**. Bronchial carcinoid tumors: radiologic observations in 49 cases. *J Thorac Imaging*. 1991 Apr;6(2):47-53. PubMed PMID: 1649924.
8. **Hemminki K, Li X**. Incidence trends and risk factors of carcinoid tumors: a nationwide epidemiologic study from Sweden. *Cancer*. 2001 Oct 15;92(8):2204-10. PubMed PMID: 11596039.
9. **Aron M, Kapila K, Verma K**. Carcinoid tumors of the lung: a diagnostic challenge in bronchial washings. *Diagn Cytopathol*. 2004 Jan;30(1):62-6. PubMed PMID: 14696148.
10. **Todd TR, Cooper JD, Weissberg D, Delarue NC, Pearson FG**. Bronchial carcinoid tumors: twenty years' experience. *J Thorac Cardiovasc Surg*. 1980 Apr;79(4):532-6. PubMed PMID: 7359932.
11. **Kurul IC, Topçu S, Taştepe I, Yazici U, Altinok T, Cetin G**. Surgery in bronchial carcinoids: experience with 83 patients. *Eur J Cardiothorac Surg*. 2002 May;21(5):883-7. PubMed PMID: 12062280.
12. **Terzi A, Lonardoni A, Feil B, Spilimbergo I, Falezza G, Calabrò F**. Bronchoplastic procedures for central carcinoid tumors: clinical experience. *Eur J Cardiothorac Surg*. 2004 Dec;26(6):1196-9. PubMed PMID: 15541984.
13. **Morandi U, Casali C, Rossi G**. Bronchial typical carcinoid tumors. *Semin Thorac Cardiovasc Surg*. 2006 Fall;18(3):191-8. Review. PubMed PMID: 17185178.
14. **Cook RI, Render M, Woods DD**. Gaps in the continuity of care and progress on patient safety. *BMJ*. 2000 Mar 18;320(7237):791-4. PubMed PMID: 10720370; PubMed Central PMCID: PMC1117777.
15. **Cohen MD, Hilligoss B, Kajdacsy-Balla Amaral AC**. A handoff is not a telegram: an understanding of the patient is co-constructed. *Crit Care*. 2012 Feb 8;16(1):303. doi: 10.1186/cc10536. Review. PubMed PMID: 22316097; PubMed Central PMCID: PMC3396216.

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