Abstract Form

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Project Title:	Empyema necessitans: differentiating a rare infection from malignancy

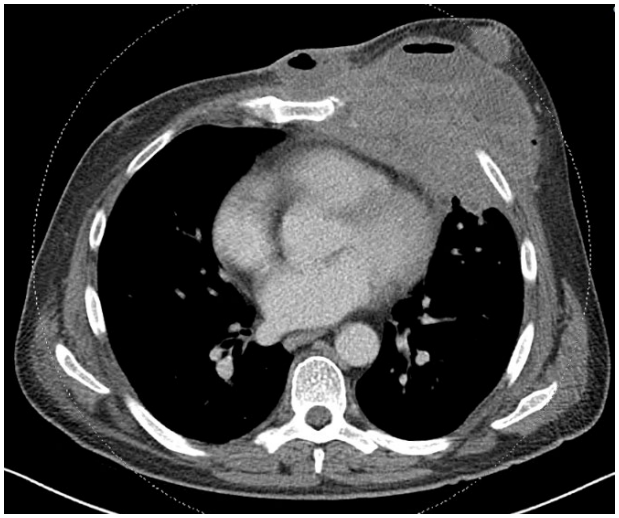
Research Category (please check one):

☐	**Original Research**	☒	**Clinical Vignette**	☐	**Quality Improvement**	☐	**Medical Education Innovation**

Abstract

Introduction: Empyema necessitans (EN) is a rare infectious syndrome frequently arising from empyema due to chronic pulmonary infection and is most often caused by *Mycobacterium tuberculosis, Actinomyces* spp, and *Nocardia*. Given its chronic nature and propensity to cross anatomic planes, it can be challenging to distinguish from malignancy. We describe here a case of EN in a patient who was initially admitted for malignancy work-up.

Case Report: A 54-year-old man with a medical history notable only for 30 pack-years of tobacco use presented to clinic with subacute progression of a year-long cough and with a new, fluctuant chest wall mass for 3 weeks. He had previously attempted to pierce the mass himself, and it continued to drain purulent fluid at the time of presentation. He endorsed one year of hot flashes, drenching night sweats, weight loss, and dyspnea on exertion. Other than smoking, a thorough social history was unremarkable. Vitals were normal, and a soft 15 x 10 cm upper left chest wall mass was noted on exam with a smaller 2x3 cm area of tender erythema. A CT chest with contrast was obtained and is shown on the right. Other sections also revealed left upper lobe necrotic consolidation, mediastinal lymphadenopathy, and hepatic and splenic hypodensities. He was thus admitted to medicine for urgent malignancy work-up.



On admission, labs were most notable for a neutrophilic leukocytosis of 15.9 k/mm^3. Pulmonology, infectious diseases, cardiothoracic surgery, and interventional radiology were consulted. While malignancy could not be excluded, EN was thought most likely given the CT scan appearance and apparent association of the pleural density with the fluctuant mass on exam. Empiric vancomycin and ampicillin-sulbactam were initiated to cover *Staph. aureus*, typical pathogens of community-acquired pneumonia, and anaerobes. A chest tube with drain was placed. Extensive microbiological work-up was notable only for *Actinomyces meyeri* in the culture of the purulent pleural fluid. He was subsequently switched to high-dose IV penicillin G and underwent I&D with placement of three Penrose drains. After he was stable and clinically improved, he was discharged home with IV penicillin G. CT scan at 6 weeks post-discharge showed mild ongoing soft-tissue inflammation despite near total drainage of the fluid collection, so he was continued on high-dose PO penicillin VK for another 6 months with sequential removal of the Penrose drains. He had residual lung scarring. However, his infection itself fully resolved, and he was symptom-free by follow-up 6 months after completing antibiotics.

Discussion: Pulmonary actinomycosis is a relatively rare infection that can present as a chronic pneumonia, often mimicking tuberculosis or lung cancer. As in this case, it is most commonly associated with middle-aged men who smoke. In this patient, adjacent pulmonary consolidation, coupled with focal empyema and a predominantly fluid-filled chest wall mass distinguished EN from a superinfected malignancy. *Actinomyces* remains one of the most common causes of EN and, given its well-known ability to form sinus tracts that traverse fascial tissue planes, it should be strongly considered in those with this diagnosis.