



Butterfly Effects: a Tremor as the Proximate Cause of Empyema

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Introduction

The classic complications associated with cataract surgery are ocular and infrequent. Here we describe a severe pulmonary complication attributed to a specific patient preoperative risk factor: severe essential tremor requiring the administration of deep sedation and bag-mask ventilation, with a resultant MRSA empyema as a complication.

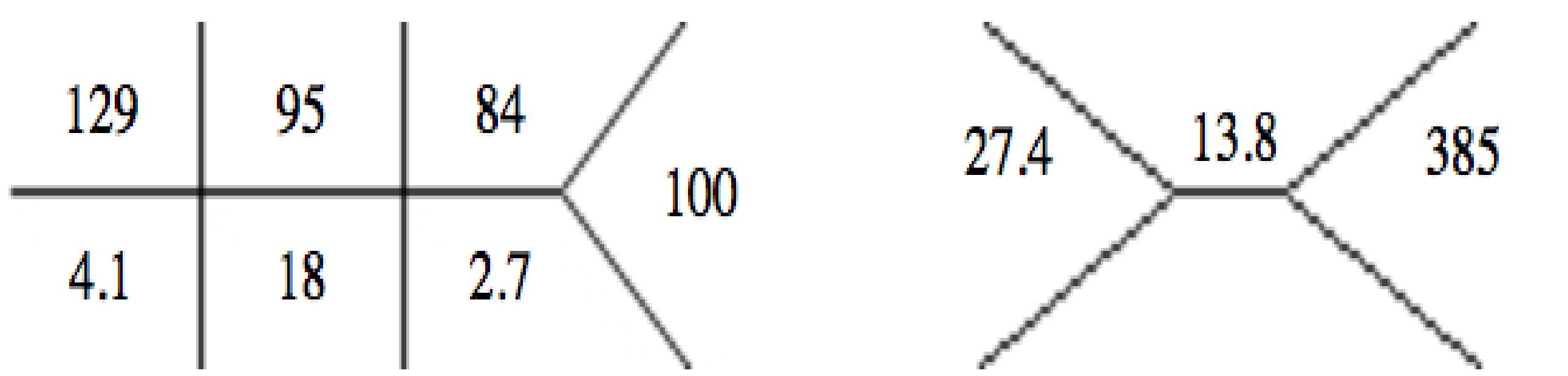
Case presentation

An 89-year-old woman with hypertension and essential tremor on propranolol underwent right cataract extraction.

Three weeks post-operatively, she presented with one week of generalized weakness, lethargy, and right-sided pleuritic chest pain. Initial outpatient evaluation prompted a CXR showing a pleural-based, mass-like opacity along the right anterior chest wall and small left pleural effusion.

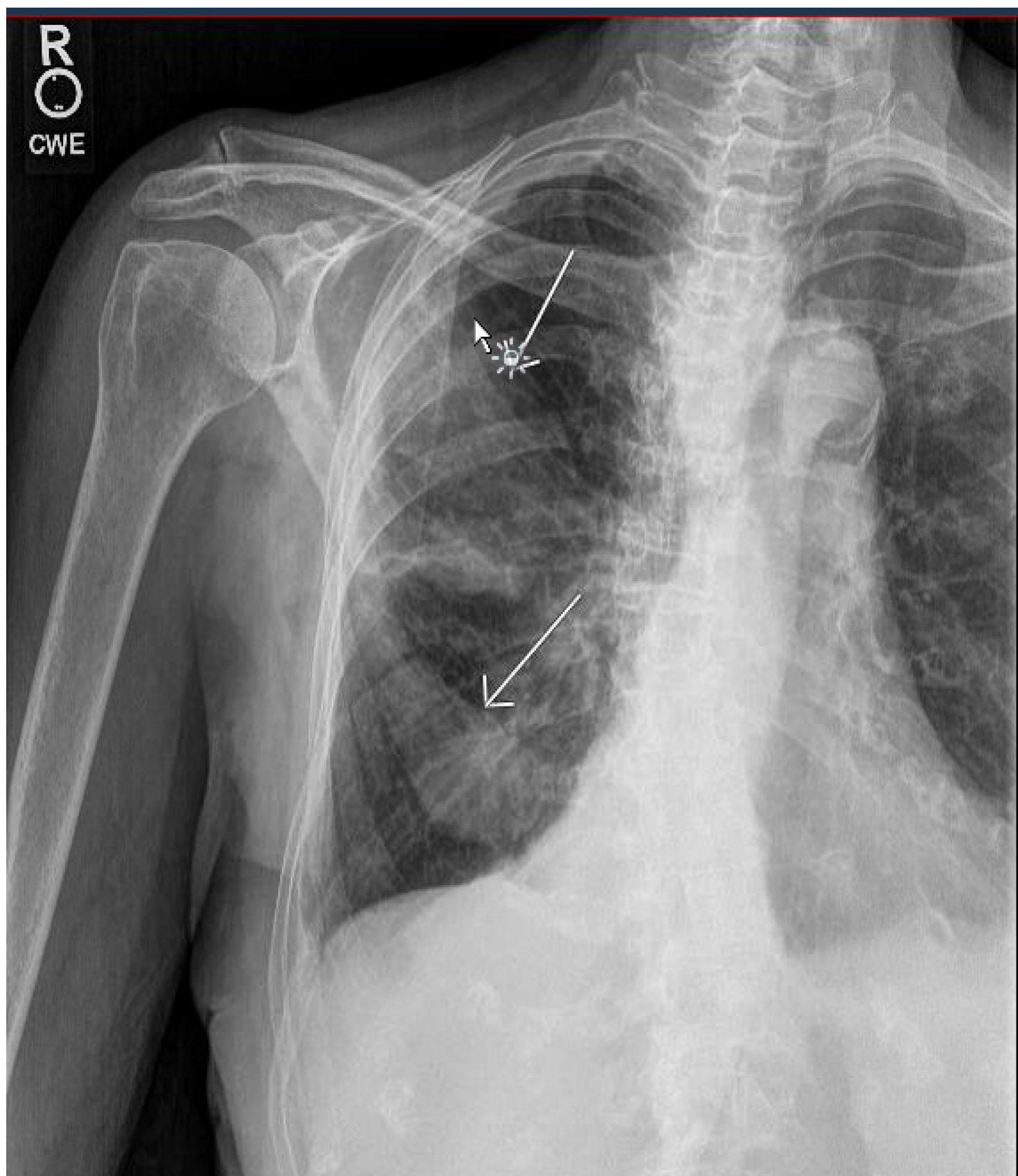
Given concern for malignancy and AKI, she was referred to the ED on POD28:

VS: HR 150bpm, BP 91/65mmHg, RR 22/min, O₂ 95% RA
EKG: Atrial fibrillation RVR
Notable exam findings:
CV: Irregular rhythm, tachycardic, no murmurs
Chest: R sided crackles to mid-lung
Neuro: course tremor head and torso, voice and (B) hands, no focal deficits or ataxia

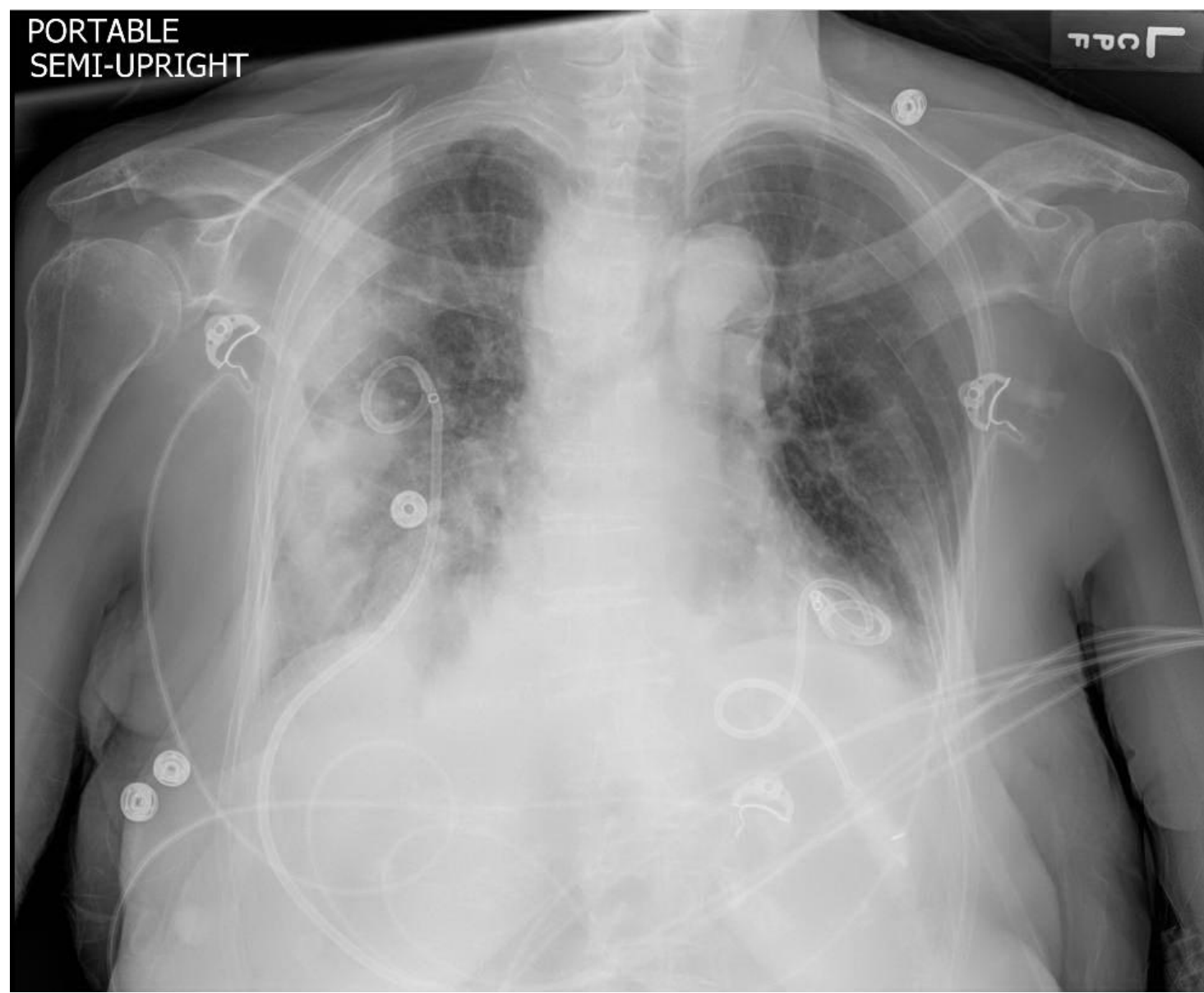


Ca²⁺: 8.1
Lactate: 0.8
Trop: < 0.02
AST: 90
ALT 73
AlkPhos: 143
TB: 0.5
Alb: 2.2
ESR: 29
CRP: 49
Blood cultures: negative
ECHO: no vegetations

Clinical Course



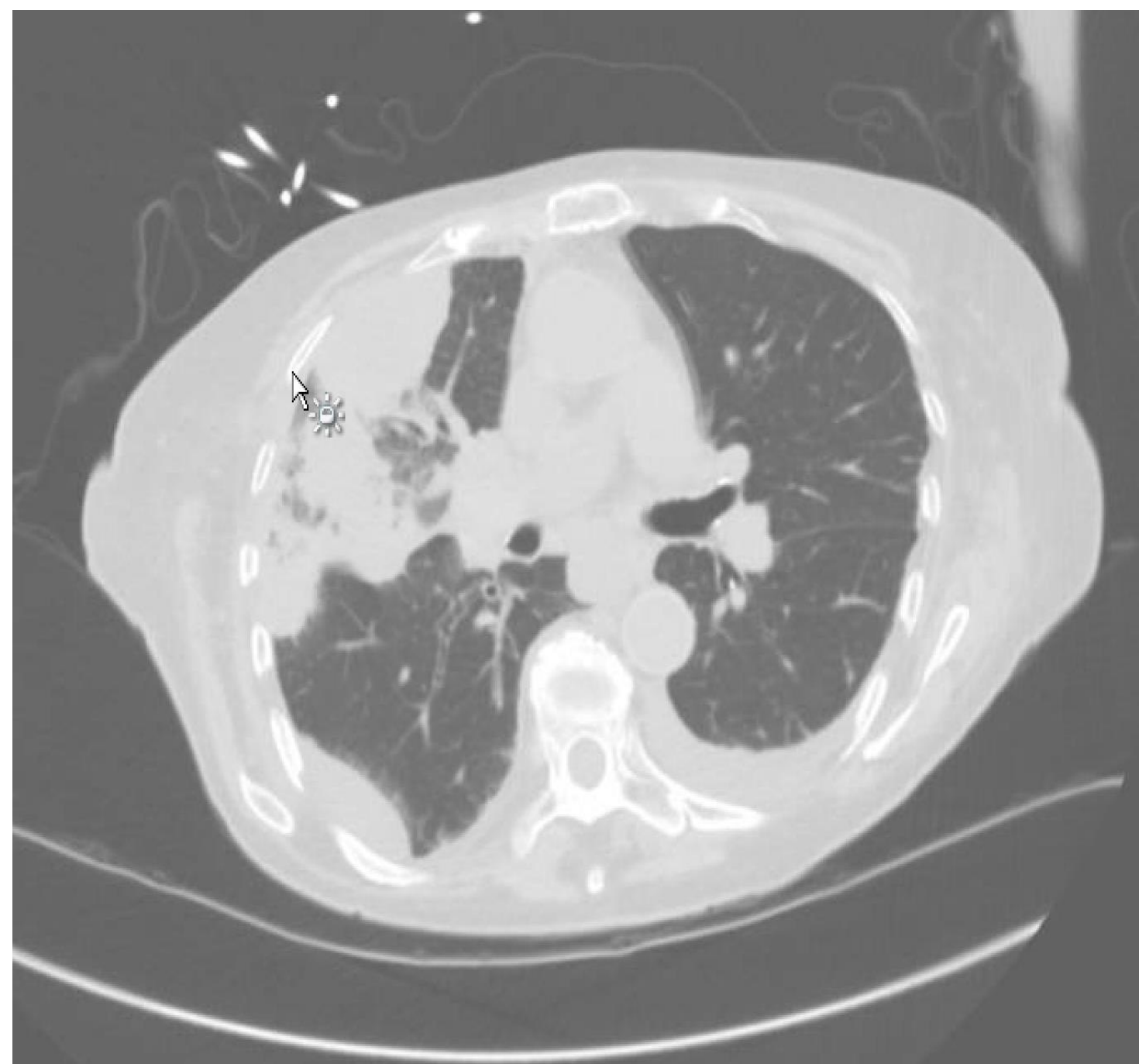
Original chest X-ray HD0



CXR HD2 s/p (B) pigtail chest tubes. Decreased pleural fluid (B). Multiple loculated areas of pleural fluid remain on the right.



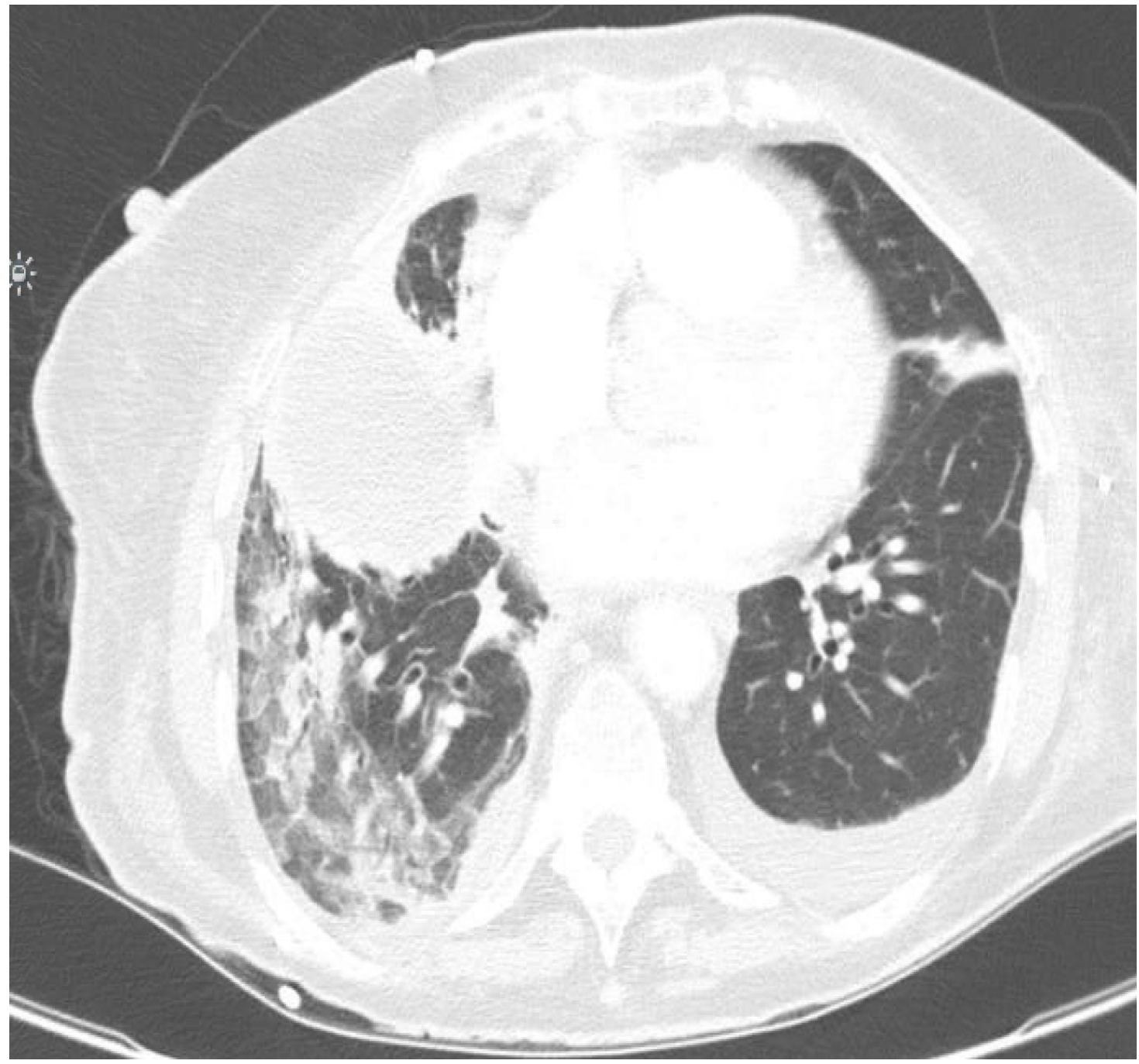
CXR HD13 s/p removal of L chest tube, now s/p 3 R sided chest tubes seen in PA and lateral views



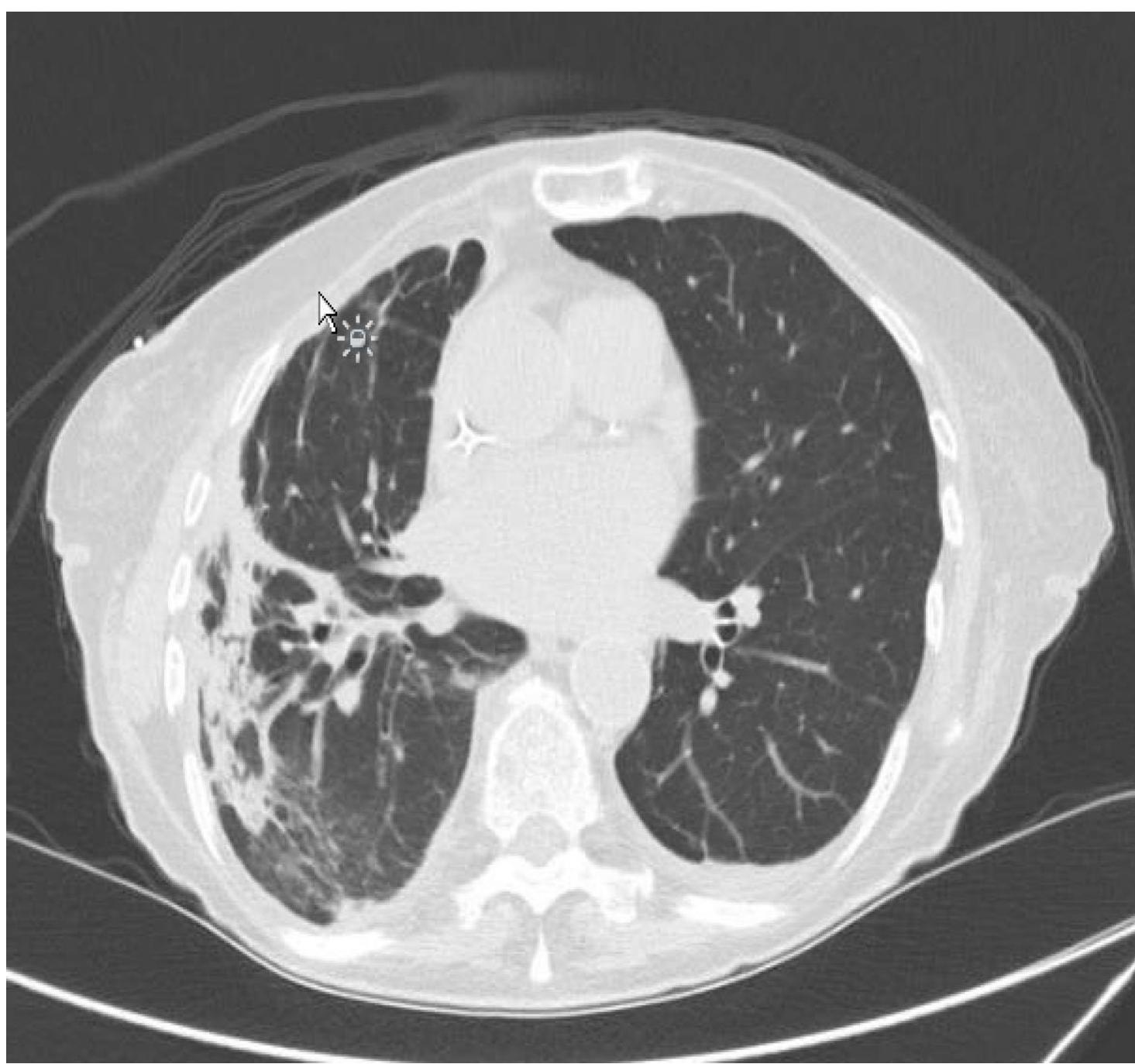
CT HD1 to evaluate suspected mass shows an empyema. Pleural fluid: WBC 16,402 (100% PMNs); RBC 26,000; protein 4.5; LDH 9777 Gram stain: moderate GPCs Culture: MRSA



CT HD6 shows expansion of empyema. Chest tube #3 placed (2nd on R)



CT HD 11 shows persistent loculation. Chest tube #4 placed (3rd on R).



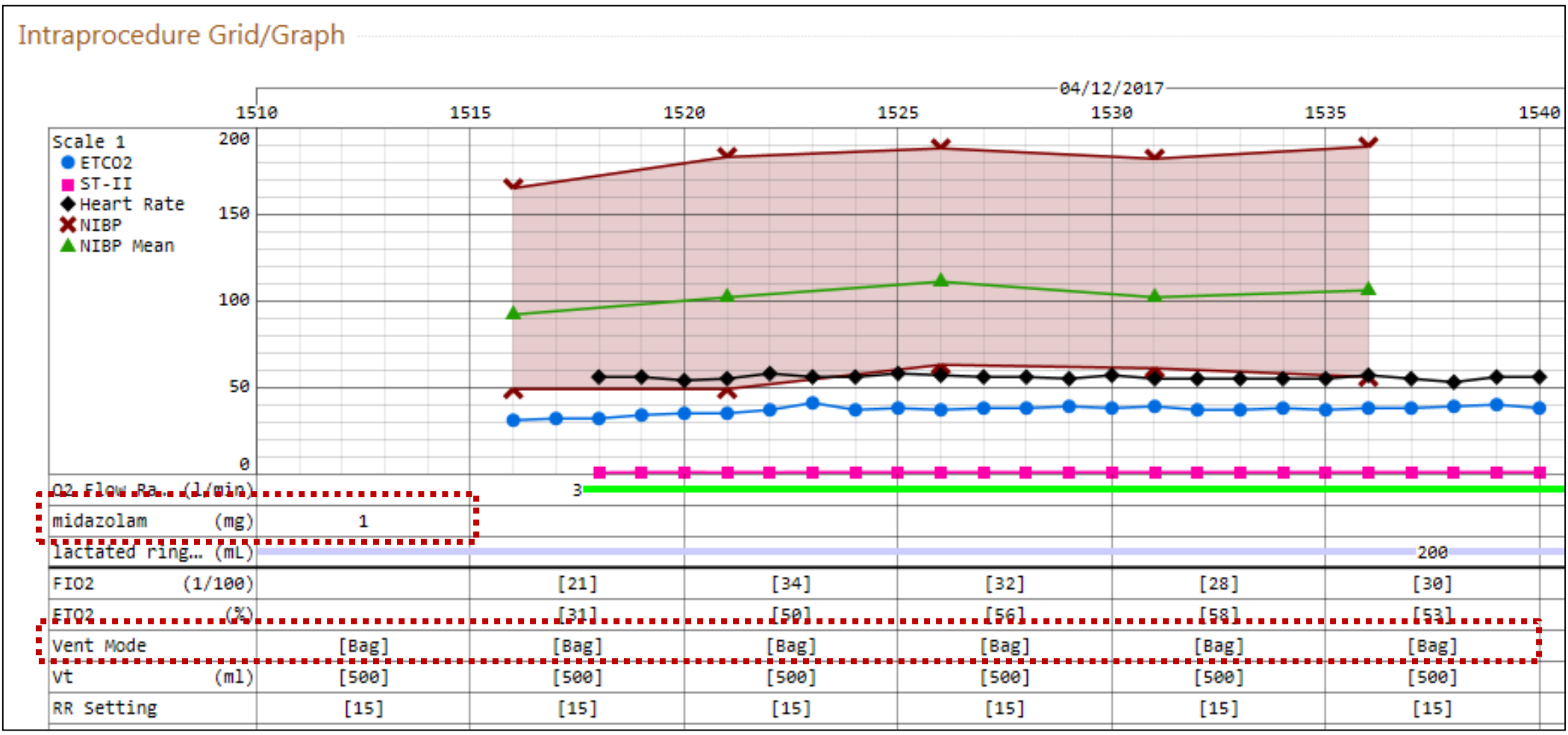
2 months post-discharge: -near resolution

Learning Points

Here we describe a case of an MRSA empyema requiring 4 chest tubes as a post-op complication of cataract surgery. Cataract surgery in many ways epitomizes the “low-risk” surgical procedure, and it has been debated whether pre-op evaluation is necessary. One recent trial showed a post-op pneumonia rate of 0.05%, nearly twenty-fold lower than the rate in general, non-thoracic surgery^{1,2}.

In this case we identified a proximal risk factor—essential tremor—that necessitated a higher risk sedation plan, which ultimately led to severe complications. While a large trial recently showed no difference in outcomes with pre-op assessment in cataract surgery, this case is an example of the granularity that often gets smoothed over in large trial data³. Even in low-risk cases where a battery of routine pre-op testing may not be warranted, there is still a role for individualized perioperative risk assessment. This case also highlights that patients who require systemic anesthesia for minor procedures should be evaluated differently when presenting with new post-operative complaints.

Review of Patient Risk Factors:



Monitored anesthesia care (MAC) with midazolam and bag mask ventilation in addition to local anesthetics

Conclusion & Teaching Points:

- Consider clinical events within 30 days of surgery to be post-operative complications
- Unique patient risk factors may make minor surgeries more risky
- Consider the sedation method, not just the procedure name when evaluating post-op patients.

References:
1. Fleisher LA. "Preoperative Consultation Before Cataract Surgery: Are We Choosing Wisely or Is This Simply Low-Value Care?" *JAMA Intern Med.* 2014;174(3):389–390.
2. McAlister, Finlay A., et al. "Incidence of and risk factors for pulmonary complications after nonthoracic surgery." *American journal of respiratory and critical care medicine* 171.5 (2005): 514-517.
3. Schein, Oliver D., et al. "The value of routine preoperative medical testing before cataract surgery." *New England Journal of Medicine* 342.3 (2000): 168-175.