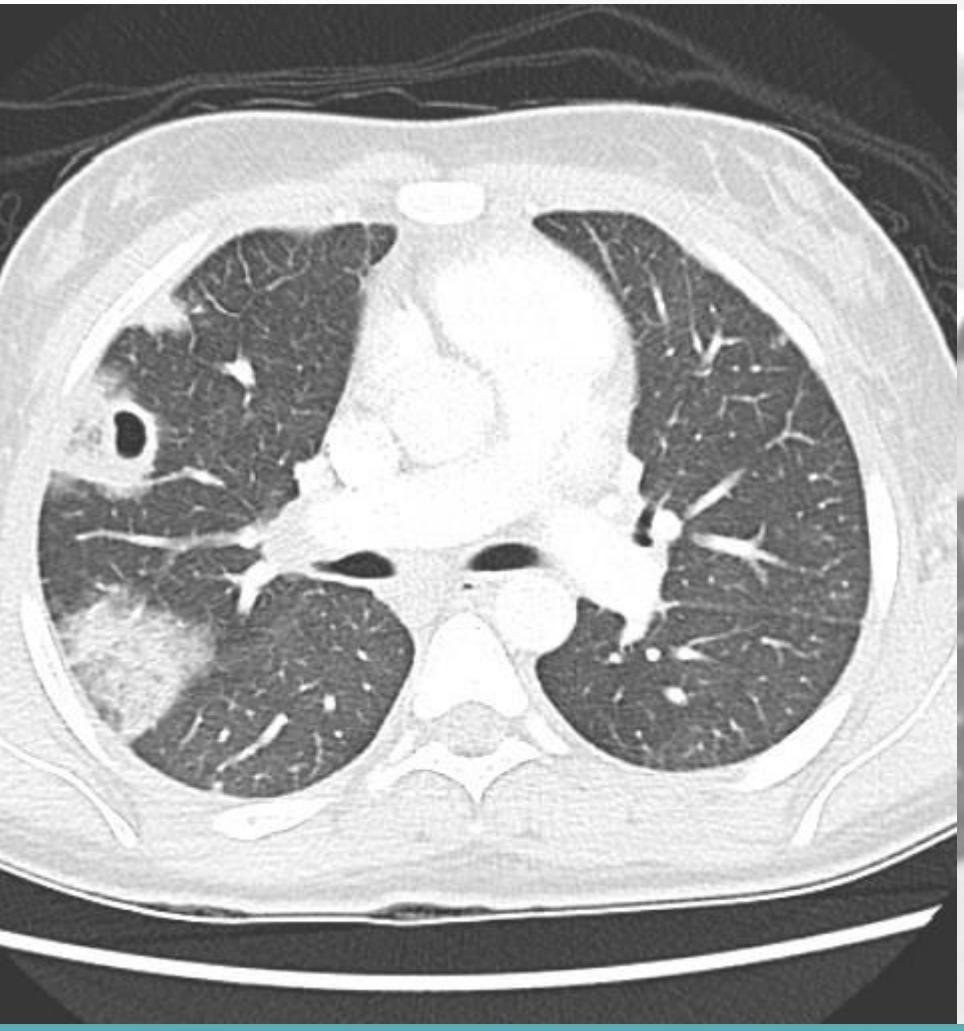
CAIR Case of the Month

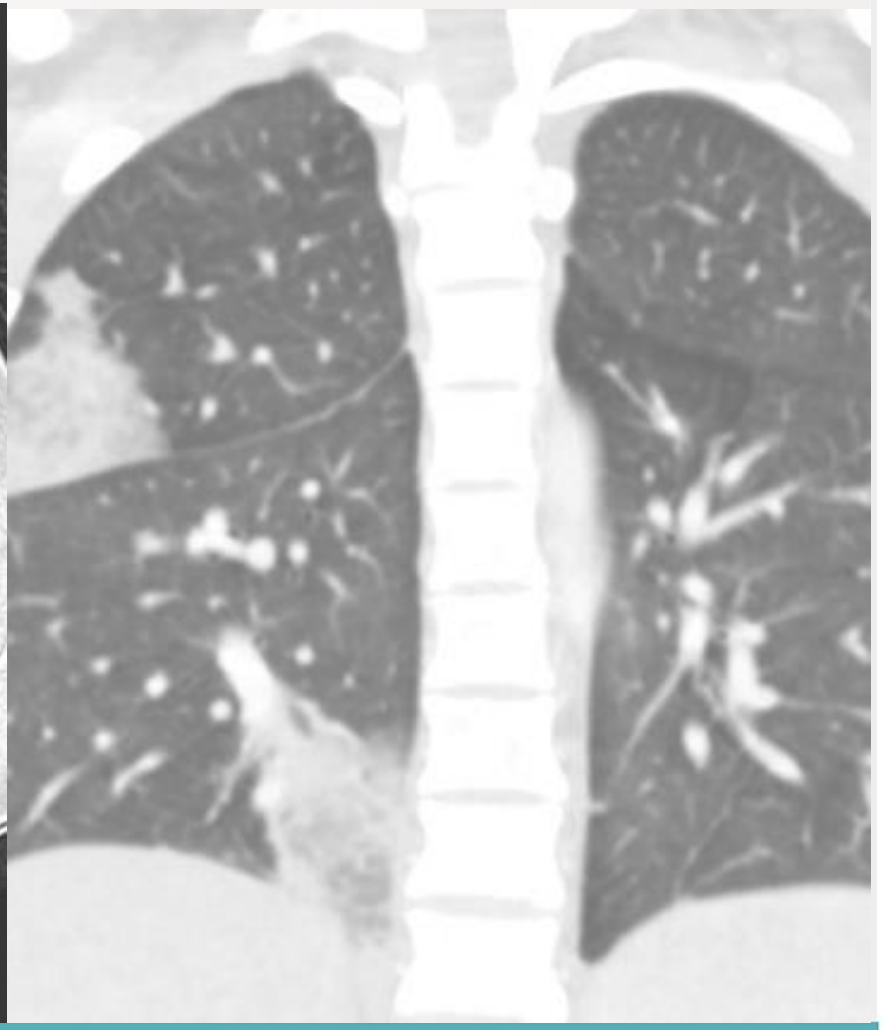
Case Courtesy of Drs. S. Neufeld and S. Sookhoo
University of Manitoba

Case

- 24 year old female with history of granulomatosis with polyangiitis (GPA – formerly Wegener's granulomatosis)
  - Renal biopsy confirmed
- Worsening shortness of breath, fevers, hemoptysis
- CT chest ordered in Emergency Department to reassess disease and rule out infection

Prior (2016)

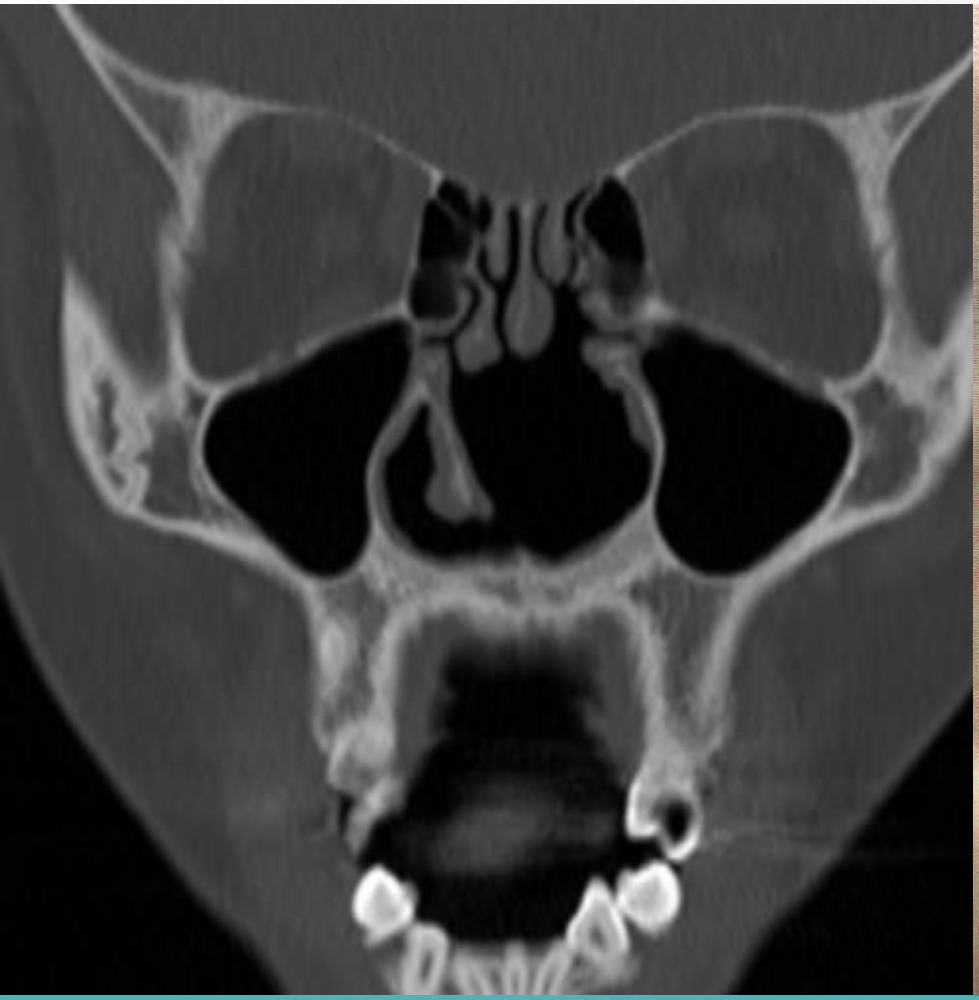


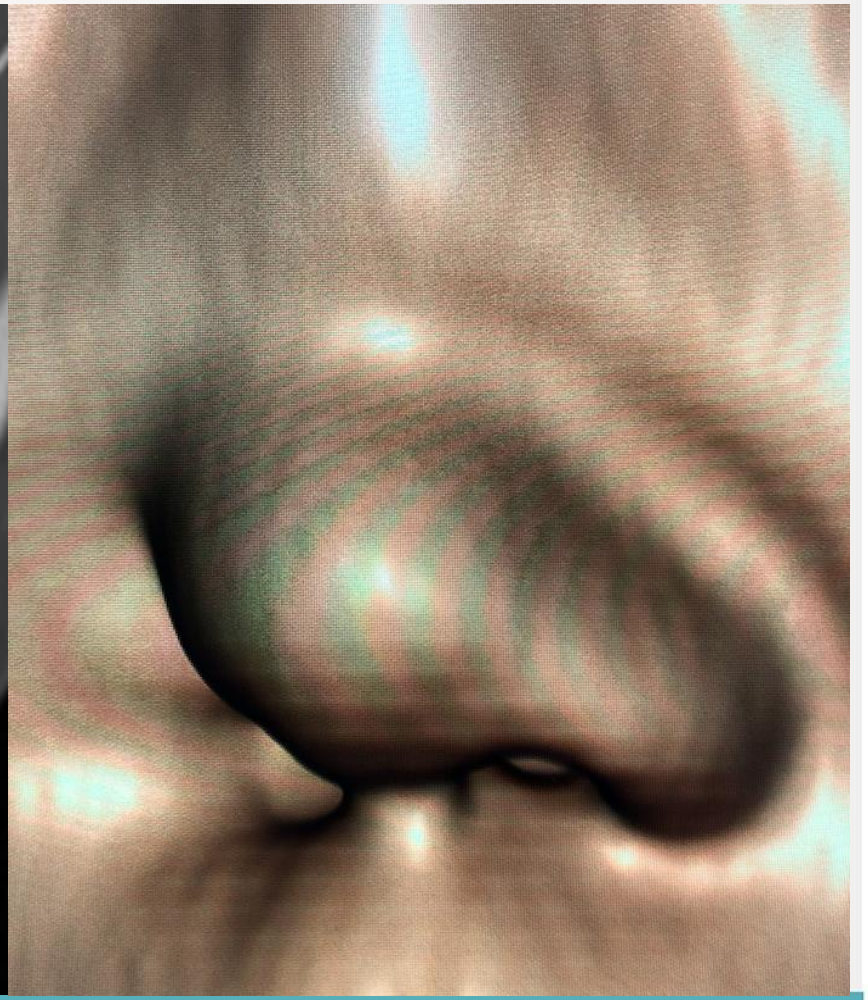


Prior Chest CT Findings

- Multiple ill defined nodules
  - **Cavitation**
  - **Ground glass halos**
- Impression
  - **Granulomatosis with polyangitiis**

Priors (2014)





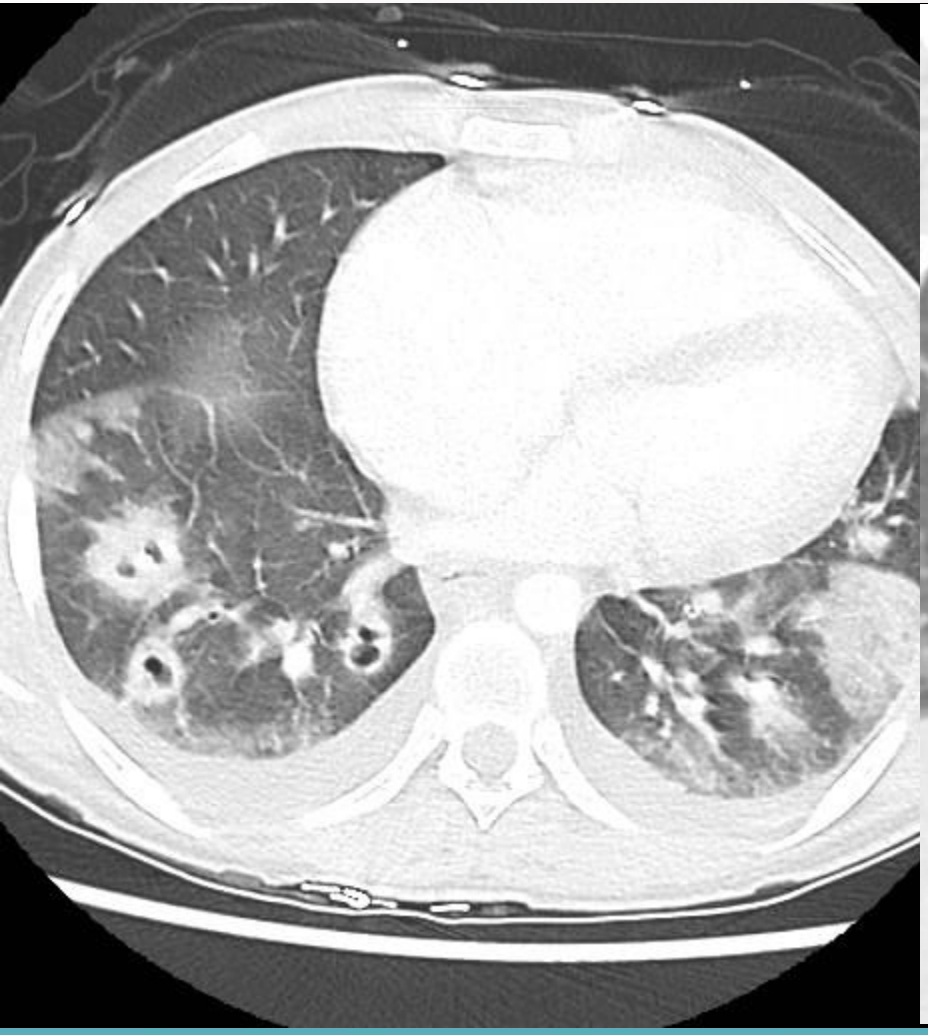
Prior Sinus CT Findings

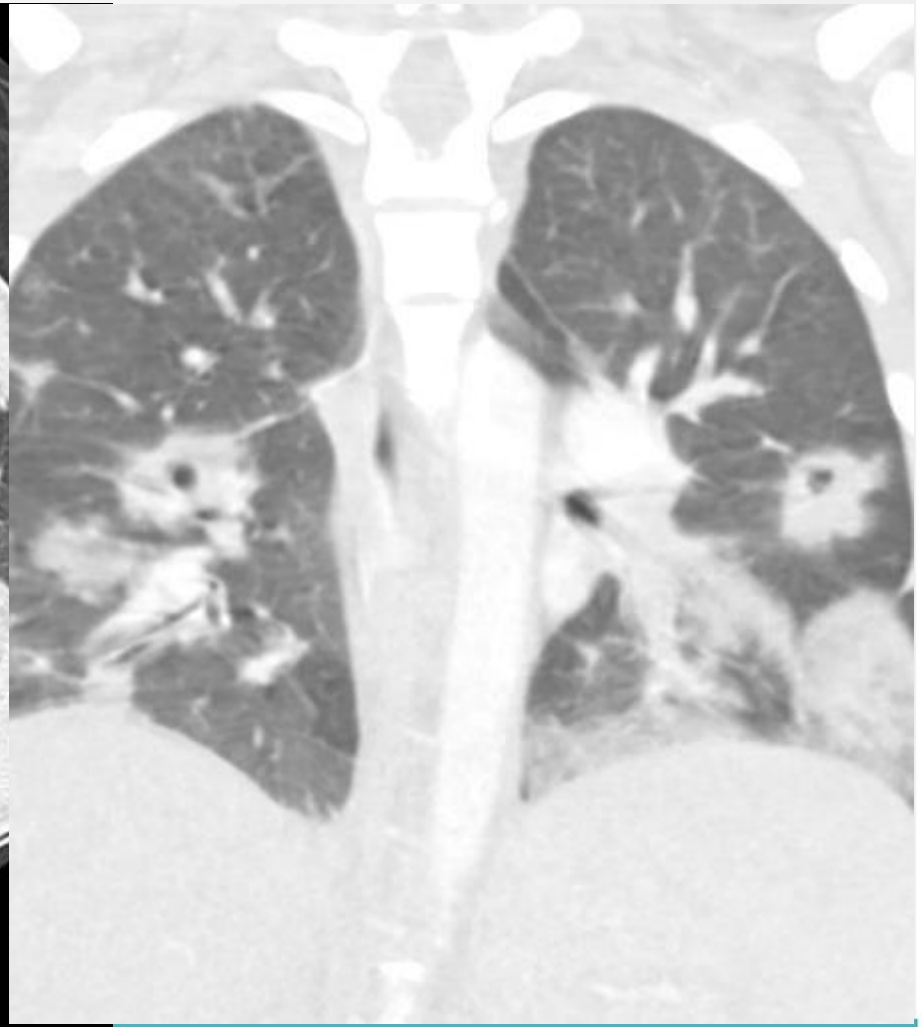
- Saddle nose deformity
  - **inferior/middle turbinates not identified**
  - **Septal perforation**
- Impression:

  Thought to be granulomatosis with polyangiitis but biopsy showed no GPA

  Differential includes chronic Percocet inhalation

Admission





Current Chest CT Findings

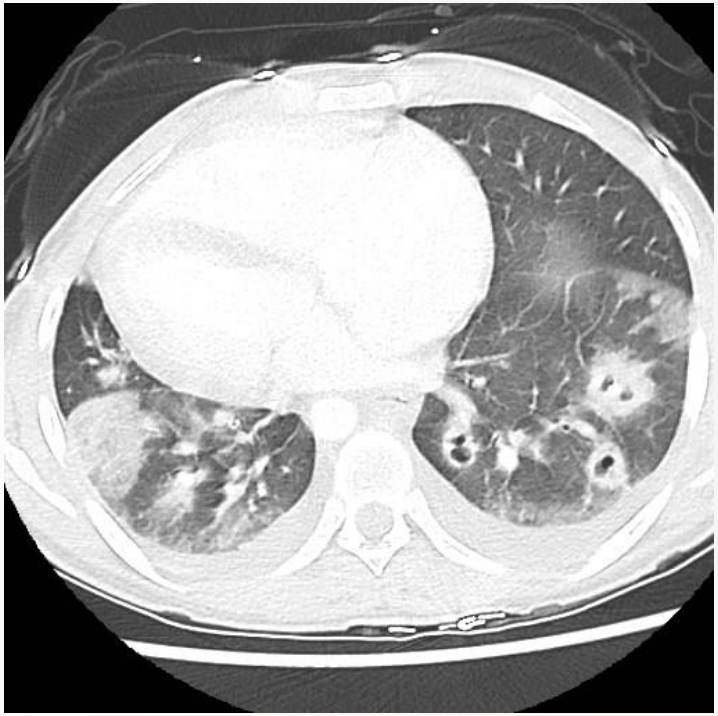
- Multiple ill-defined nodules with cavitation
- Ground glass 'halos' and 'reverse halos"
- Impression

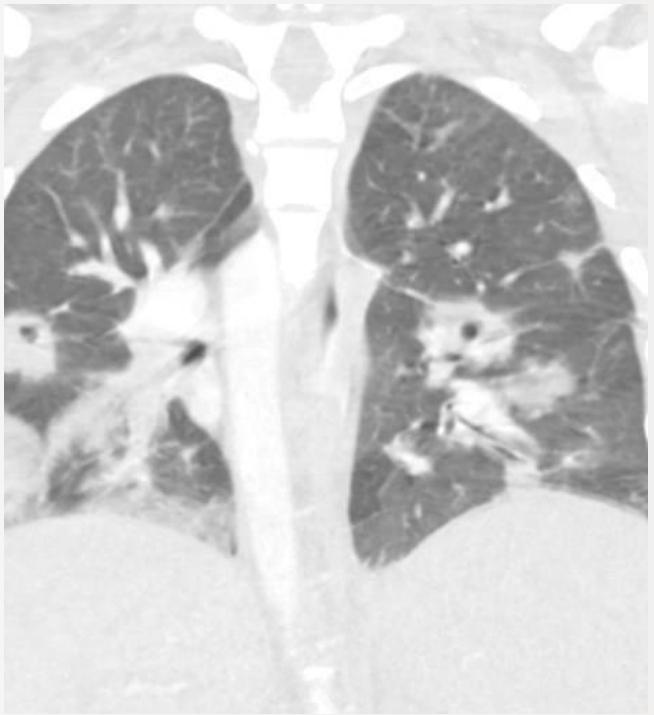
  Granulomatosis with polyangitiis

Course in Hospital

- Blood Cultures:
  - Streptococcus agalctiae
  - Enterococcus faecalis
  - Candida albicans
  - Acinetobacter
  - Lactobacillus
- Treatment:
  - Ceftriaxone
  - Ampicillin
  - Micafungin
- Echocardiogram:
  - Tricuspid regurgitation
  - 10 mm x 40 mm tricuspid valve vegetation
  - Severe right ventricular enlargement
  - Increased right sided pressure

Second Look

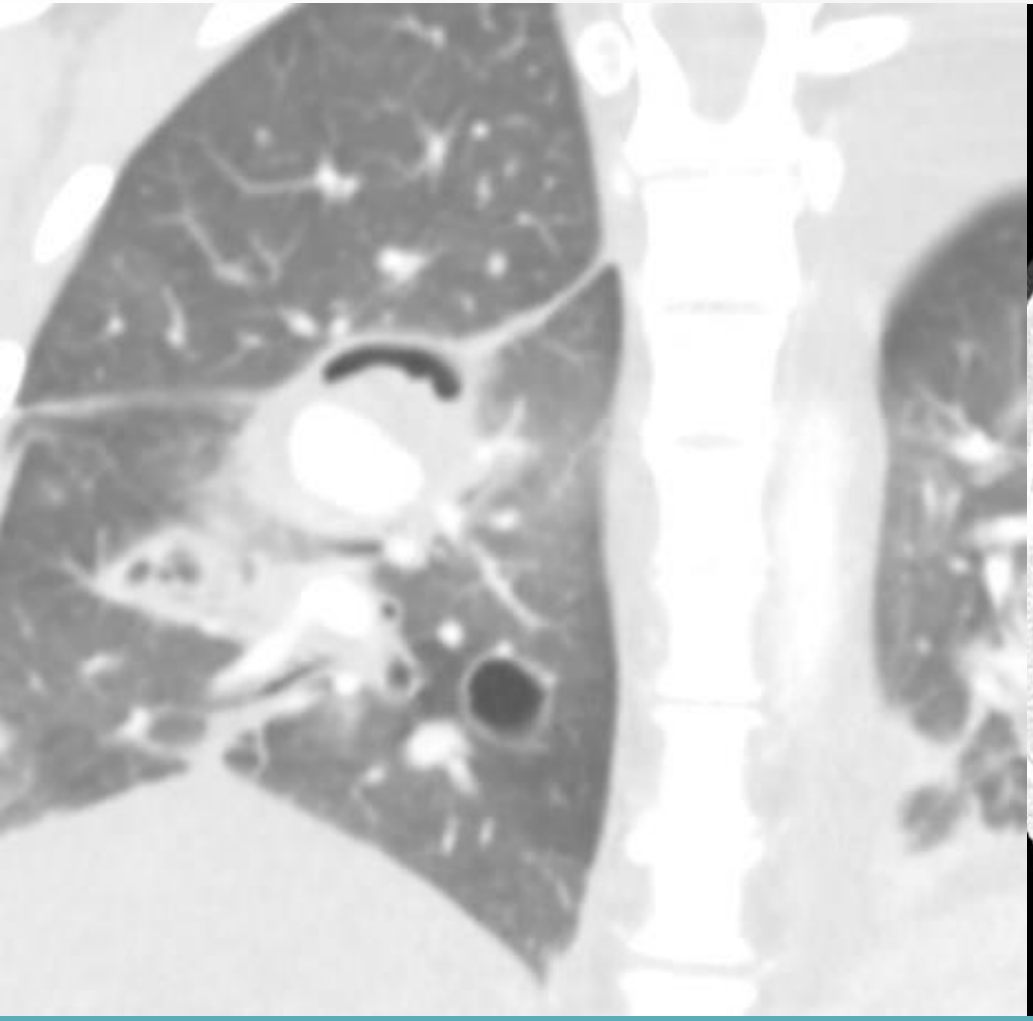


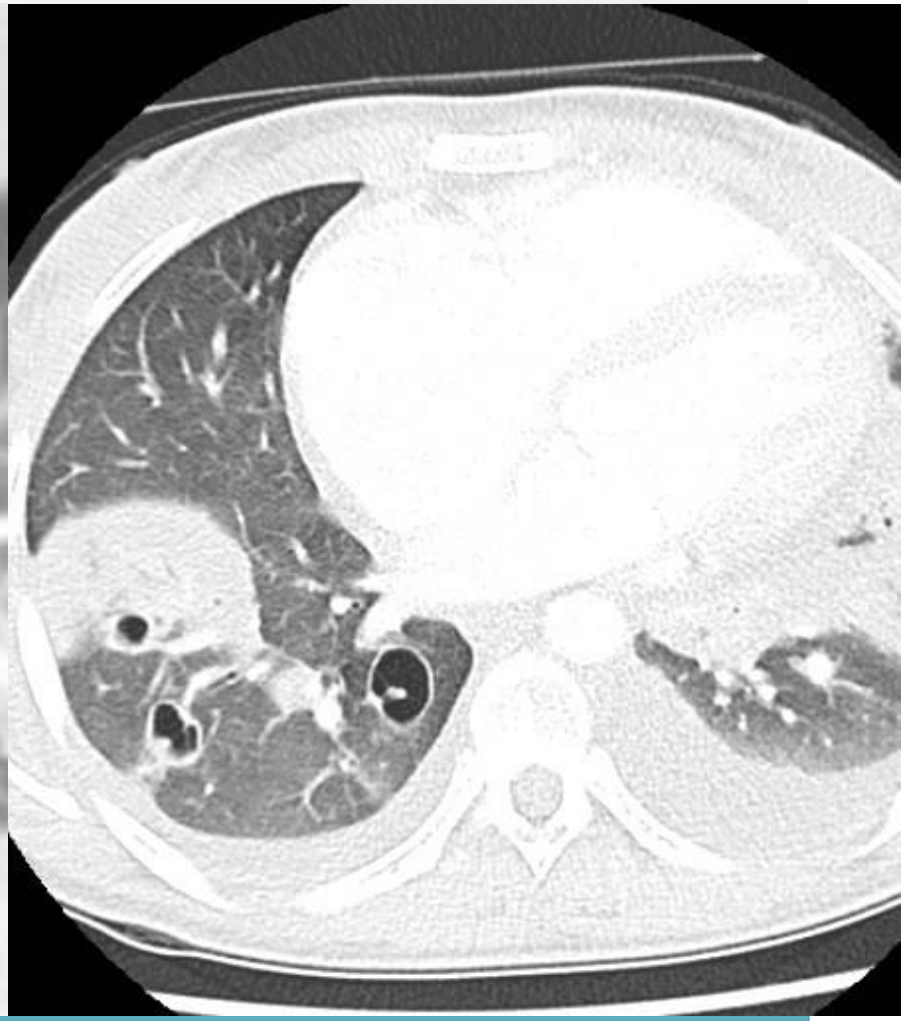


With the additional information the diagnosis is less clear

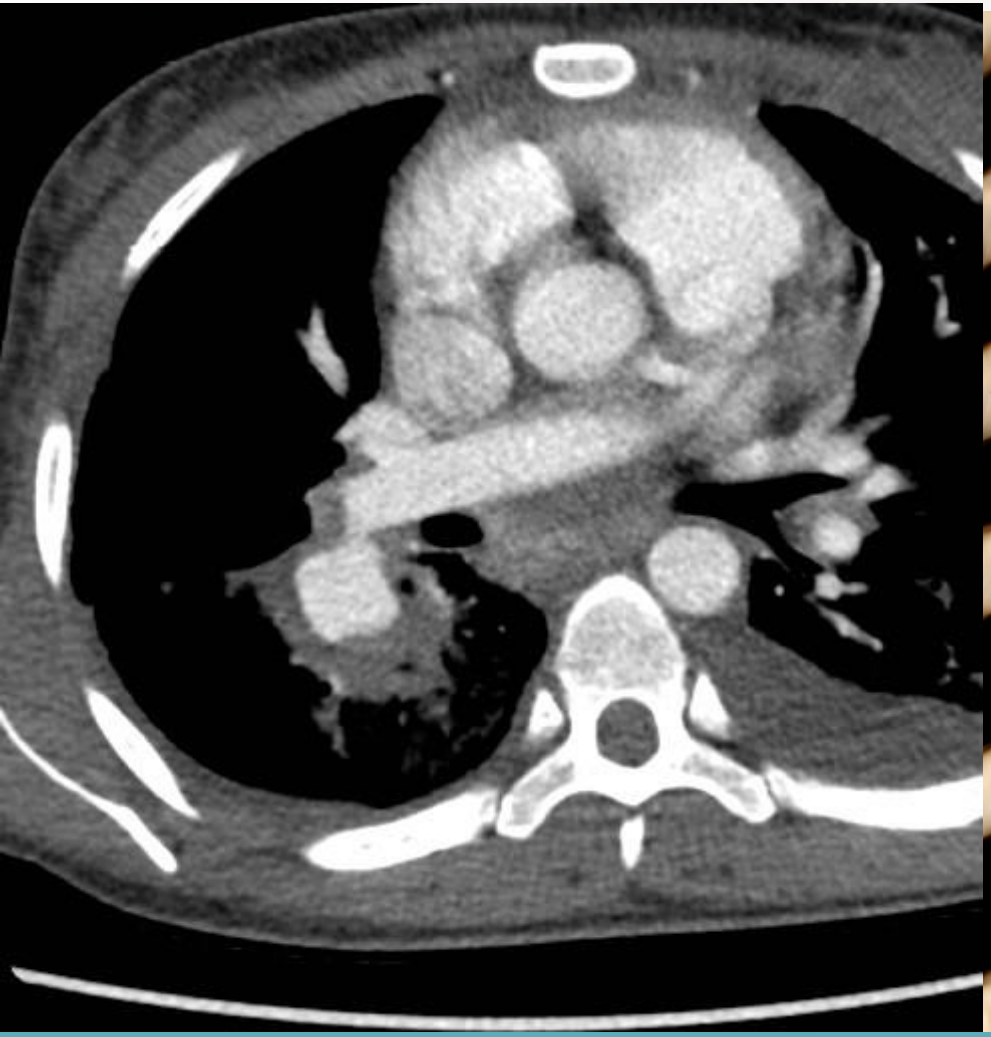
- **Granulomatosis with Polyangitiis**
- **Septic Emboli**

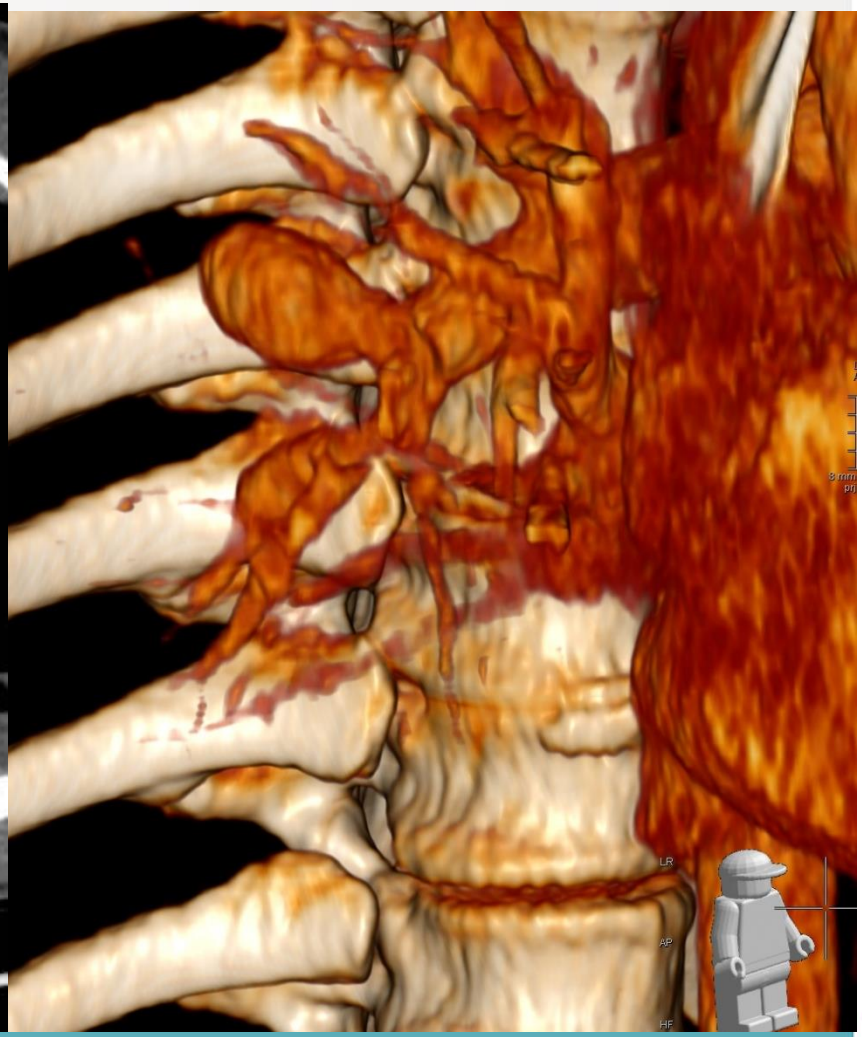
Repeat CT (1/2)





Repeat CT (2/2)





Repeat CT Findings

- 2.4 cm pseudoaneurysm adjacent to worsening cavitation
- Bilateral cavitary nodules
  - **Increased slightly in size**
  - **No new lesions**
- Progresssive consolidation
- Multiple pulmonary emboli
- Impression:

  New pseudoaneurysm

Pulmonary Artery Pseudoaneurysms

- Rare
- Diagnosed incidentally or following rupture
  - Massive hemoptysis with high mortality
- Management
  - Typically endovascular
  - Surgical management rarely indicated
- Etiology:
  - Post-Traumatic
  - Infectious
  - Vasculitis (Bechet's)
  - Congenital

Pathogenesis of Mycotic Pseudoaneurysm

- Contiguous involvement from adjacent sepsis
  - Rasmussen (TB)
- Hematogenous spread
  - Micro-emboli into vasa-vasorum
- Infection of pre-existing intimal defect
- Direct inoculation at time of vascular trauma

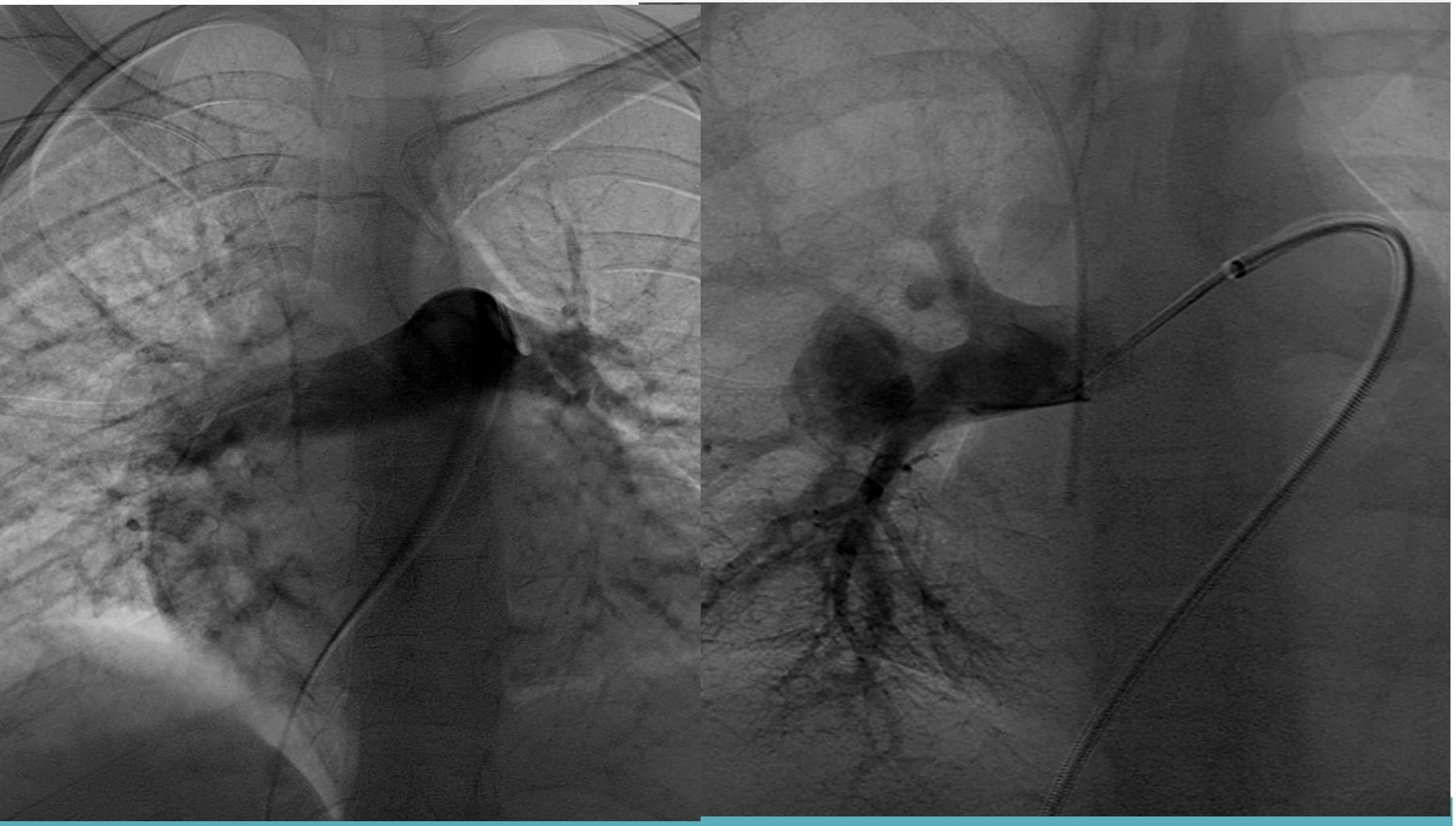
Treatment

- Ongoing antibiotic treatment
- Embolization of mycotic pseudoaneurysm
  - Urgent given the rapid expansion over only 10 days
  - Cardiac anesthesia present during procedure
- Tricuspid valve replacement
  - lobectomy to be performed during cardiac OR if embolization unsuccessful

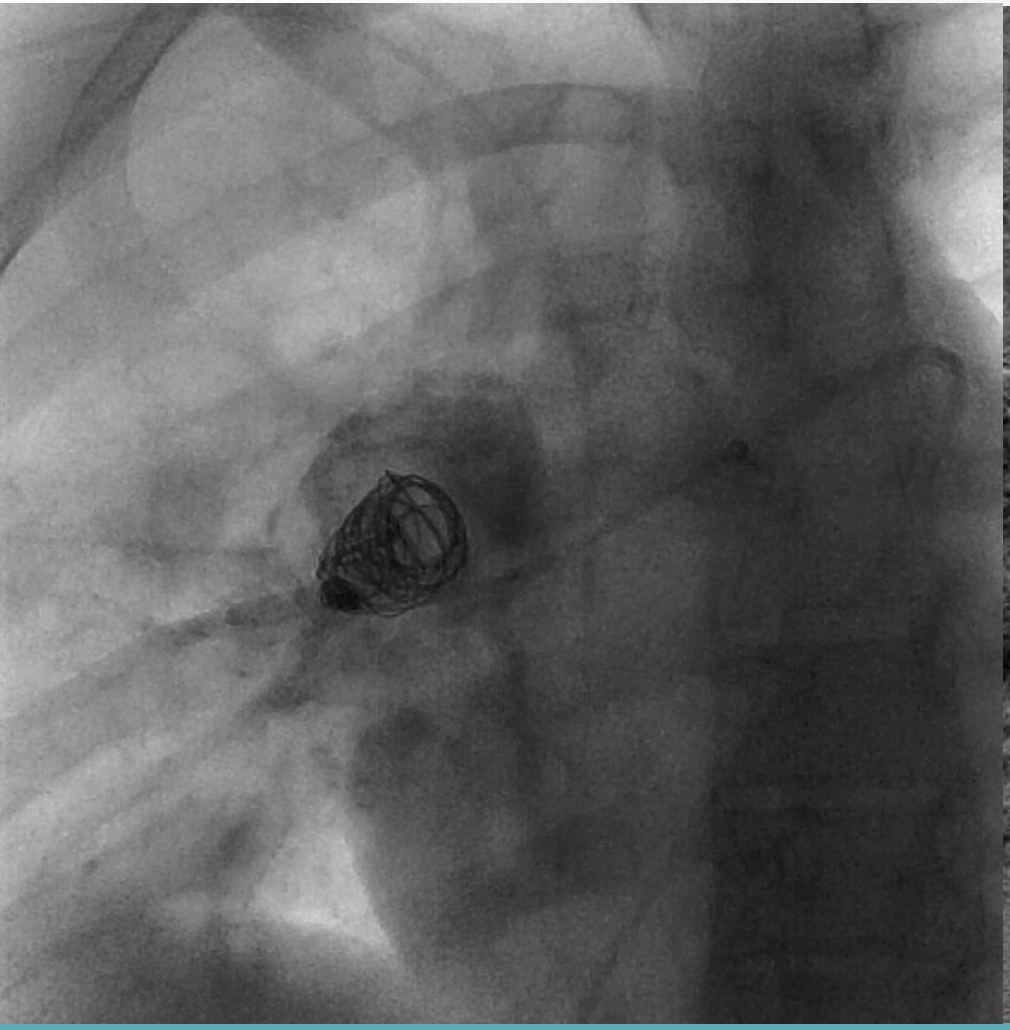
Procedure

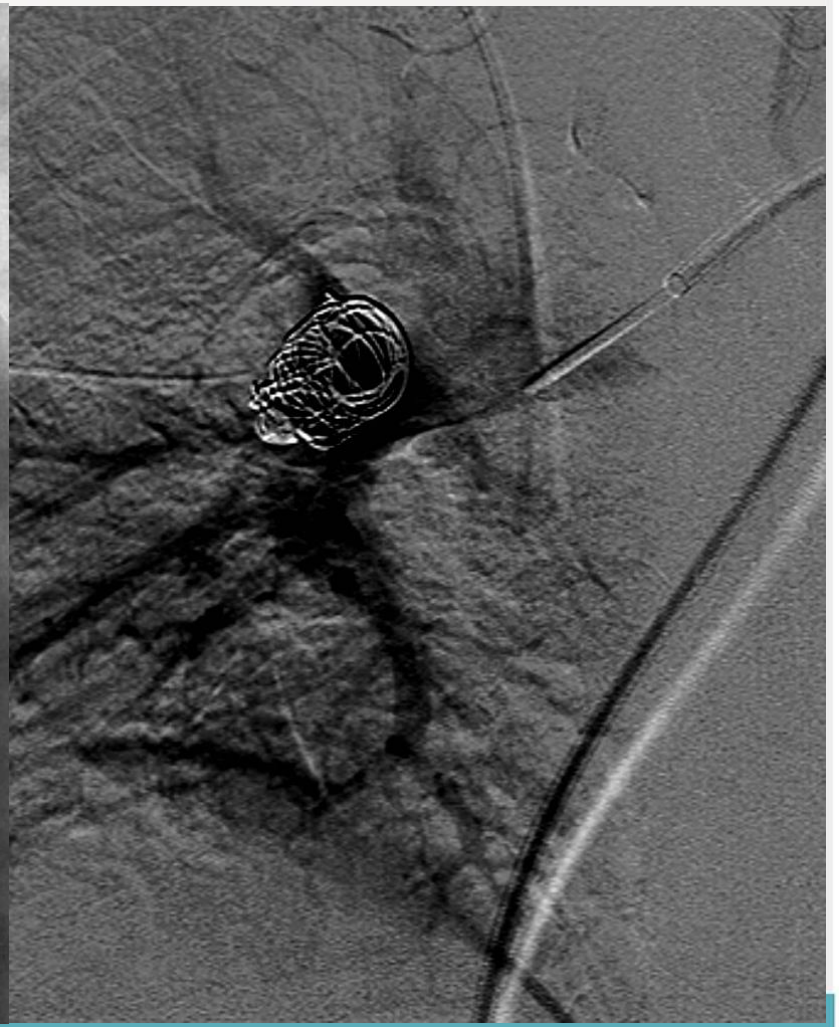
- Right femoral access
- APC catheter advanced into main PA
- Pulmonary angiogram performed
- APC catheter advanced
- 7-French sheath advanced into right main PA

Embolization



Completion Angiogram





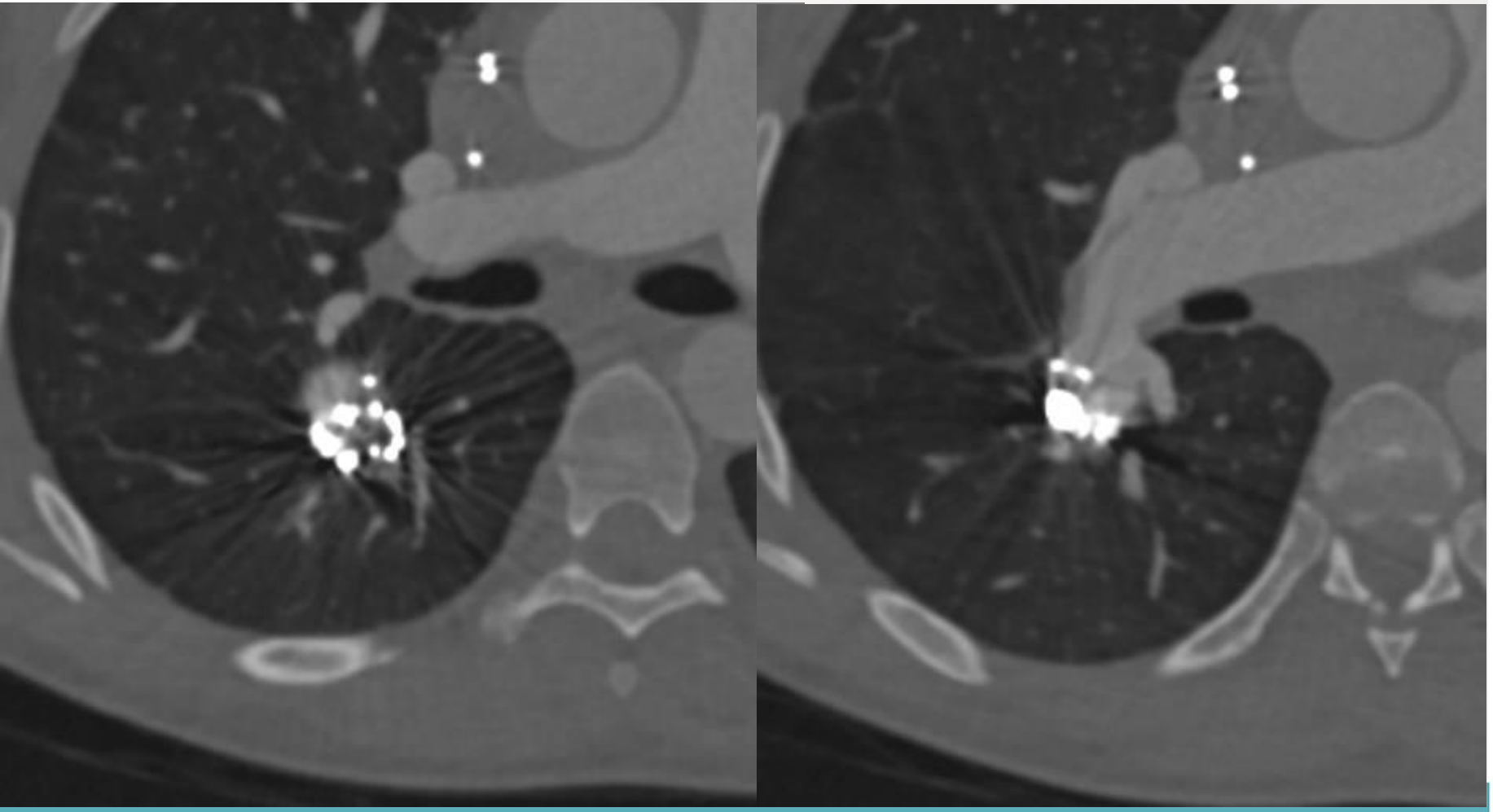
Procedural Details

- Microcatheter advanced into aneurysm sac
- 5 micro coils were successfully deployed
- The 6th coil plugged in the catheter, necessitating catheter removal
- Access to the aneurysm sac could not be re-established
- Completion angiogram demonstrated aneurysm exclusion

Course in Hospital

- Successful tricuspid valve replacement the following day
  - Follow up echo showed no vegetation or complication
- Ongoing antibiotics
- Left against medical advice approximately 10 days post-operatively

Follow-up CT



Follow-up CT Findings

- Small amount of filling in residual aneurysm neck
- Stable size
- Assessment somewhat limited due to steak artifact

Summary:

- Granulomatosis with polyangiitis
  - Diagnostic challenge
  - Multi-systemic disease of medium-sized vessels
    - Upper respiratory tract / pulmonary / renal
- Pulmonary artery pseudoaneurysms
  - Rare
  - Infectious / traumatic / vasculitic / congenital
- Endovascular management is mainstay

References:

- Ananthakrishnan, L., Sharma, N., & Kanne, J. P. (2009). Wegener's Granulomatosis in the Chest: High-Resolution CT Findings. *American Journal of Roentgenology*, *192*(3), 676–682. http://doi.org/10.2214/AJR.08.1837
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