

# **Rapidly Progressive Acute Respiratory Failure as Initial Presentation of Idiopathic Pulmonary Fibrosis (IPF)**

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**2<sup>nd</sup> Annual Research Day**  
**UAB Huntsville Regional campus**  
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# Case

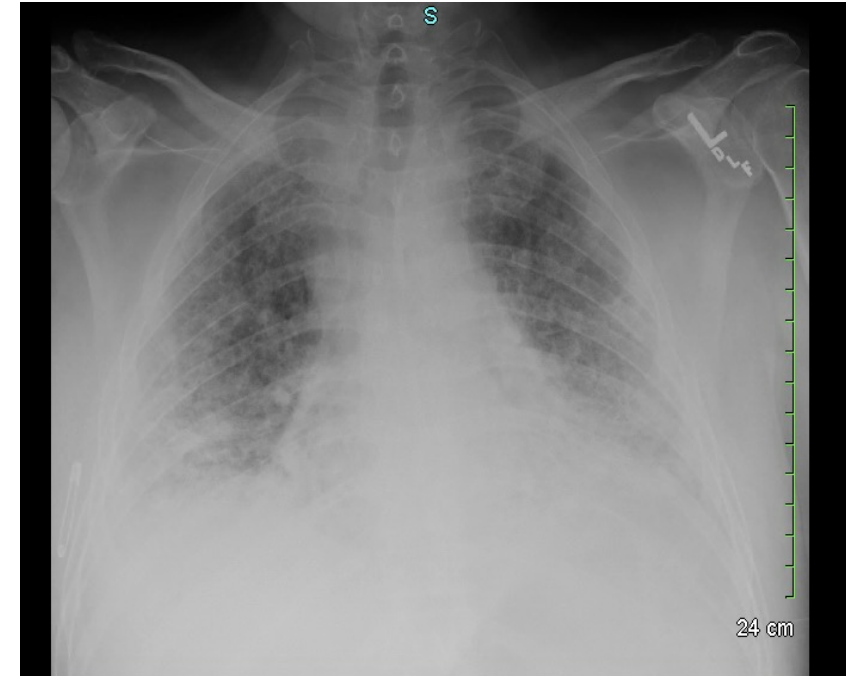
- A 49-year-old male presented to the hospital with a chief complaint of non-productive cough, shortness of breath, fever, and chest pain for one-week duration
- PMH: DM type-2 uncontrolled, recent foot infection treated with four weeks of intravenous daptomycin
- Social history: heavy machine operator in a coal mine
- Upon arrival to the hospital, O2 saturation was 85% on room air, which improved with 4 L of oxygen through nasal cannula
- Physical examination of the lungs revealed bilateral coarse crackles
- Chest X-ray obtained four weeks prior to admission was normal

# Imaging

- Chest X – ray showed nodular-appearing airspace disease bilaterally



4- weeks before admission



on admission

# Hospital course

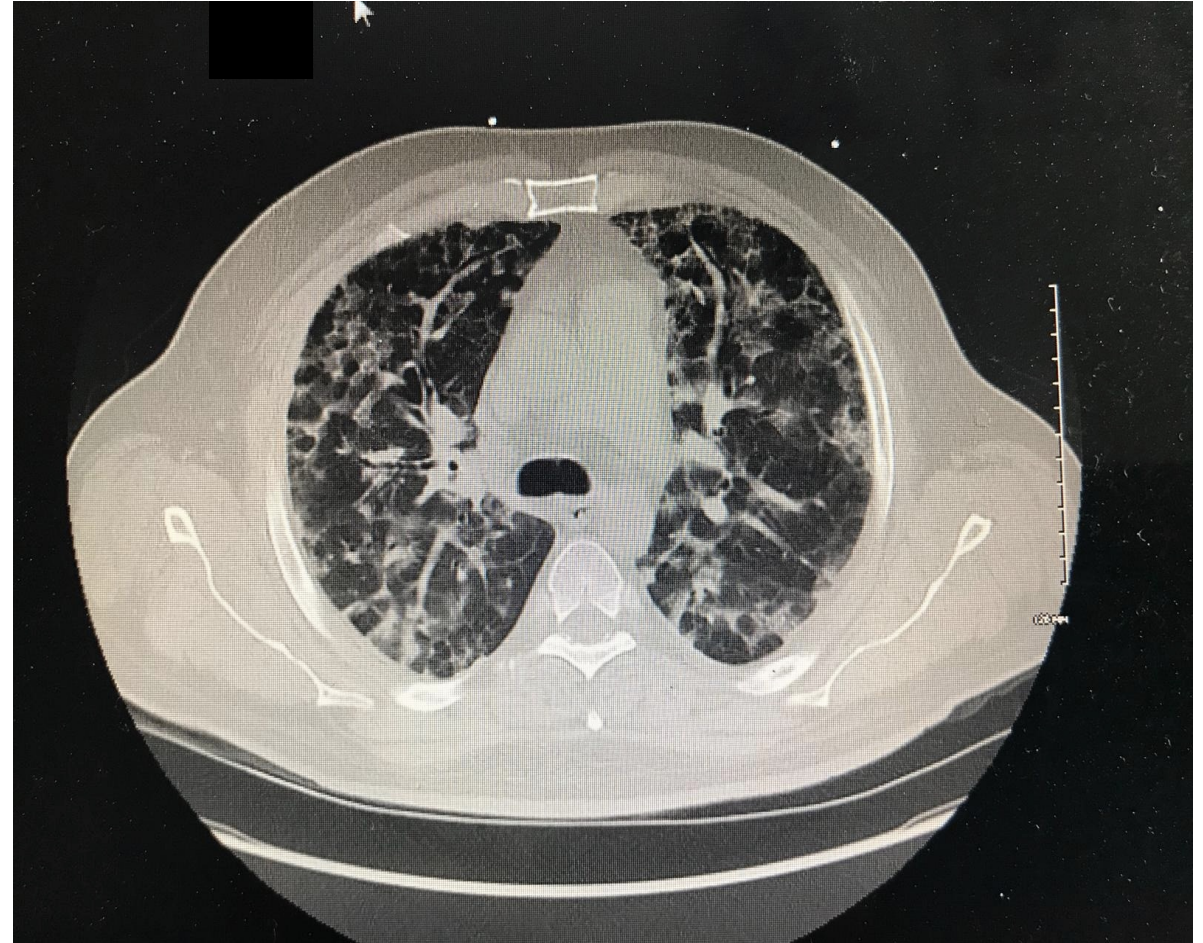
- CT chest without contrast showed ground glass opacities, areas of consolidation and interlobular septal thickening in both lungs

- Vancomycin and cefepime started for possible pneumonia

- CBC
- |       |      |     |
|-------|------|-----|
| 10.22 | 11.4 | 217 |
| 33.1  |      |     |

*N- 79.0; L- 11.0; M- 3.5; E- 5.5; AEC -562 cells/microL*

- Sputum culture and gram stain, respiratory diathrex panel, mycoplasma serology, urine legionella and pneumococcal antigen were normal





# Hospital course

- Echo: ejection fraction of 45% with mild global hypokinesis
- There was no clinical improvement and oxygen requirement increased
- Given the patient's recent exposure to daptomycin and peripheral eosinophilia, intravenous solumedrol started for possible Daptomycin Induced Eosinophilic Pneumonia
- Day 7 : he became hypoxic and was placed on BIPAP. Patient underwent open lung biopsy
- Day 7: he was intubated, and antibiotic was switched to Zyvox, meropenem, Levaquin and voriconazole
- Lung biopsy: IPF
- The antibiotics were discontinued
- There was no clinical improvement
- Family decided on comfort care and passionate extubation, per patient's wishes

# Discussion

- IPF is a chronic, progressive fibrotic disorder of the lungs that typically affects adults over age 40
- Pathogenesis is complex and likely involves cycles of epithelial cell injury and dysregulated repair
- Most patients present with a gradual onset (often >6 months) of exertional dyspnea and/or a nonproductive cough
- Fatigue, fever, myalgias, and arthralgias are rarely reported
- Physical examination bibasilar crackles are usually audible, but may be absent or heard unilaterally early in the disease
- Diagnosis : clinical, laboratory, radiologic, and pathologic data
- High-resolution CAT scan: new bilateral reticular and ground glass opacification associated with architectural distortions including honeycomb changes and traction bronchiectasis on a background of findings consistent with usual interstitial pneumonia

# Discussion (contd.)

- Management of IPF generally includes:
  - a combination of supportive care,
  - use of selected medications (eg, pirfenidone, nintedanib),
  - referral for lung transplant evaluation,
  - and treatment of comorbidities.
- Systemic glucocorticoid is indicated only during acute exacerbation of IPF and is no longer part of the routine maintenance care for patients with IPF as there is no demonstrated efficacy and they may be potentially harmful.

# Conclusion

- Natural history is often insidious decline in lung function with progression to respiratory failure and death over approximately four years
- Less than 5% of patients have no presenting symptoms when IPF diagnosed
- Patient presented with acute respiratory failure without chronic symptoms or radiological hallmark of IPF. Patient didn't have the usual risk factors like family history and smoking
- The prognosis is usually years but in this case progression of the disease is very rapid and the patient died in few weeks

# Thank you





# A curious case of eosinophilia

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# Objectives

- ▶ Recognize rare presentations of eosinophilia
- ▶ Differentiate infectious, immunological and hematological causes of eosinophilia



# CASE PRESENTATION

# History

- ▶ 62 year old female who migrated from India presents to the emergency room
- ▶ Symptoms:
  - ▶ chest pain, nausea, headache and back pain with dialysis
  - ▶ significant weight loss in 6 months



# History

- ▶ Medical History:

- ▶ End stage renal disease – dialysis for the last 2 years
- ▶ Asthma
- ▶ Hypertension
- ▶ Non obstructive coronary artery disease

- ▶ Surgical History:

- ▶ Hernia repair
- ▶ Cholecystectomy
- ▶ Multiple sinus surgeries
- ▶ Arterio-venous fistula creation with recent revision



# Vitals and exam

## Vitals

- ▶ **SpO2:** 100% on room air
- ▶ **Afebrile**
- ▶ **Respiratory rate:** 13
- ▶ **Heart rate:** 55
- ▶ **Blood pressure:** 120/53

## Exam

- ▶ **General:** No acute distress, alert and oriented thin female
- ▶ **Respiratory:** Clear to auscultation with no increased work of breathing
- ▶ **Cardiovascular:** S1 and S2 present, regular rate and rhythm with no murmurs
- ▶ **Abdomen:** Distended, non tender
- ▶ **Skin and extremities:** trace pitting edema. No rashes or lymphadenopathy

# Labs



134	94	31	92
5.3	29	5.9	8.0

- ▶ **Absolute eosinophil count:**  $37.21 \times 10^3$  uL (ref:  $0.0-0.5 \times 10^3$  uL)
- ▶ **Band Neutrophils:** 0.0%
- ▶ **Cardiac enzymes trended** → unremarkable
- ▶ **C reactive protein:** 1.4 mg/dL (ref :  $<0.5$ mg/dL)



# Hematological work up

- ▶ **Peripheral smear:** Marked absolute eosinophilia with occasional ovalocytes and polychromasia. Normal platelets.
- ▶ **Flow cytometry:** No increase in CD3 or CD 4 subsets and nor monotypic B-Cell or abnormal T-Cell population
- ▶ **CT chest, abdomen and pelvis without contrast:** Moderate ascites with small bilateral pleural and pericardial effusions

# Hematological work up

- ▶ **Bone marrow biopsy** - leukocytosis with absolute eosinophilia and neutrophilia, lacking blasts or signs of malignancy.
- ▶ **IgE level**- 15 940 IU/ml (reference < 100 IU/ml).

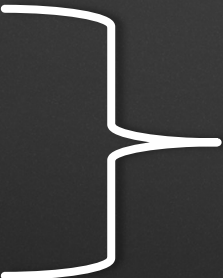


# Infectious work up:

- ▶ **Blood cultures x 2 sets:** negative
- ▶ **Stool cultures:** negative
- ▶ **Ova & parasite screen:** negative
- ▶ **Strongyloides panel:** negative
- ▶ **Filarial panel:** negative




# Course

- ▶ Trial of oral steroids
  - ▶ Continued dialysis with repeated episodes of chest pain
  - ▶ Cardiac work up:
    - ▶ chemical stress test
    - ▶ nuclear imaging
    - ▶ CTA coronaries
    - ▶ cardiac catheterization
- 
- Mild nonobstructive  
coronary artery disease

# Discussion

- ▶ What caused it?
- ▶ Differentials for eosinophilia
- ▶ Differentials for chest pain





“The good physician treats the **disease**; the great physician treats the **patient** who has the **disease**.” - Sir William Osler

# Course

- ▶ Discussion revealed change in dialyzer membrane
  - ▶ polyarylethersulfone membrane → Polysulfone membrane.
- ▶ Dialyzer membrane changed with immediate cessation of symptoms during dialysis.
- ▶ Leukocytosis and eosinophilia improved with oral steroids
- ▶ She was discharged with an oral prednisone taper and a polysulfone allergy was recorded as per of her medical history.



# Labs

Day of hospitalization	WBC x 10 <sup>3</sup> uL	Absolute eosinophil count x 10 <sup>3</sup> uL
Day 1	43.78	37.21
Day 3 (initiation of prednisone)	49.45	43.27
Day 9 (prior to discharge)	8.45	0.07



# TEACHING POINTS

# Teaching points

- ▶ Eosinophilia is defined as an absolute eosinophil count  $> 0.5 \times 10^9/L$ .
- ▶ Categorized as:
  - ▶ primary (clonal)
  - ▶ secondary (reactive)
  - ▶ idiopathic.
- ▶ Cause of secondary eosinophilia:
  - ▶ Infectious
  - ▶ Allergic
  - ▶ drug reactions
  - ▶ Malignancies



# Teaching points

- ▶ Polysulfone dialyzer membranes have been associated with hemodialysis associated eosinophilia
- ▶ Membranes consisting of **polyarylethersulfone**, **polyvinylpyrrolidone**, **Polyamide** have been known reduce inflammatory signs in allergic reactions.
- ▶ Response with change in membrane indicated an immune mediated allergic reaction to the Polysulfone membrane causing her eosinophilia.

# References

1. Butt NM, Lambert J, Ali S, et al. Guideline for the investigation and management of eosinophilia. *British journal of haematology*. 2017;176(4):553-572.
2. Roufousse F, Weller PF. Practical approach to the patient with hypereosinophilia. *Journal of Allergy and Clinical Immunology*. 2010;126(1):39-44.
3. Li Z, Ma L, Zhao S. Effect of polyflux membranes on the improvement of hemodialysis-associated eosinophilia: a case series. *Ren Fail*. 2016;38(1):65-69.

# Headache: Not just a migraine or tension headache

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Sujatha Baddam MD, Sanjay Muttineni MD, Anjaneyulu Alapati MD



# Background

- Vertebral artery dissection is an important DD in any patient presents with headache with or without neurological symptoms in setting of recent neck manipulation or trauma
- Clinical outcomes following dissection are variable, ranging from no residual deficits to death.
- We are presenting a case of bilateral vertebral artery dissection without any infarcts after chiropractor neck manipulation

## Learning Objectives:

- To learn about secondary causes of headache
- To recognize vertebral artery dissection as a cause of headache after spinal manipulation to prevent fatal complications

## History of Present Illness

- 30 year-old female presented to ED with complaints of headache with nausea.
- Hurt her neck approximately 2 weeks prior to arrival
- Started having neck pain since then.
- Went to chiropractor and neck manipulation was done.
- Developed headache shortly after neck manipulation and continued to have neck pain.



## History of present Illness

- Evaluated by PCP, was sent home with pain medications and muscle relaxant
- Presented to our ED for further evaluation of occipital headache.
- No dizziness, vomiting, vision problems or any focal deficits were reported.

## Past Medical History

- No significant past medical history

## Home Medications

- Norco 5 PO Q 6 hours as needed for pain
- Flexeril 5mg PO TID

## Social History

- Lives with husband and two children
- Denies any alcohol, tobacco use, or illicit drug use

## Family history

- No h/o connective tissue disease in family, or any strokes

# Physical Examination

- Vitals were stable
- General: Well nourished, well developed, not in apparent distress
- HEENT: PERRL and EOM intact. Visual fields are intact. Neck flexion is limited secondary to pain
- Neurological examination: No focal neurological deficits, cranial nerves II-XII are Intact
- Rest of the exam was benign



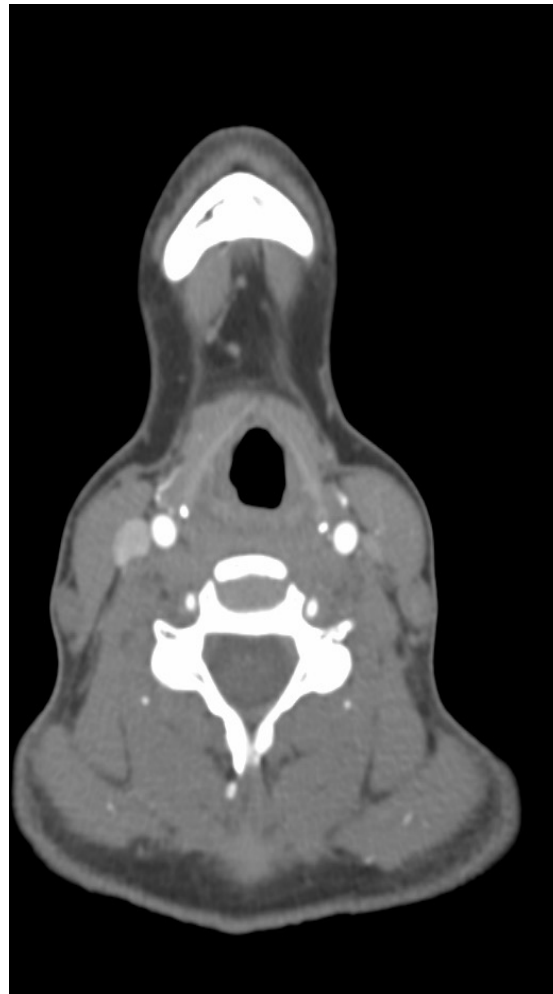
# Differential Diagnosis

- Tension Headache
- Muscle spasm
- Migraine headache
- Occipital neuralgia
- Cervical artery dissection

## Work up

- Normal complete blood count
- Normal comprehensive metabolic panel
- Erythrocyte sedimentation rate: 8
- ANA screen was negative
- CT Angiogram (CTA) head and neck with contrast showed bilateral vertebral artery stenosis suggestive of dissection

# CT angio head and neck





# Hospital Course

- Started on heparin drip for anticoagulation.
- Neurology and Intervention Radiology has been consulted
- Recommended conservative management with anticoagulation.
- Discharged on Coumadin
- Repeat CTA head and neck after 6 months showed interval healing of previously noted dissections

# Discussion

## Primary headache

- Migraine headache
- Tension headache
- Cluster headache
- Paroxysmal hemicrania

## Secondary causes of headache

- Thunderclap headache (SAH, Reversible vasoconstriction syndrome, Thrombosis of intracranial veins and sinuses, and dissection of cervical vessels)
- Idiopathic intracranial hypertension
- Intracranial hypotension
- Medication induced headache
- Temporal arteritis
- Mass lesions
- CNS infections



# Vertebral artery dissection

- Dissection occurs when structural integrity of the arterial wall is compromised, allowing blood to collect between layers as an intramural hematoma.
- Incidence 0.97 per 100,000

## Etiology

- Major head and neck trauma
- As a result of trivial or minor trauma
- Spontaneous dissection (Connective tissue diseases)
- Polygenetic factors

# Clinical features

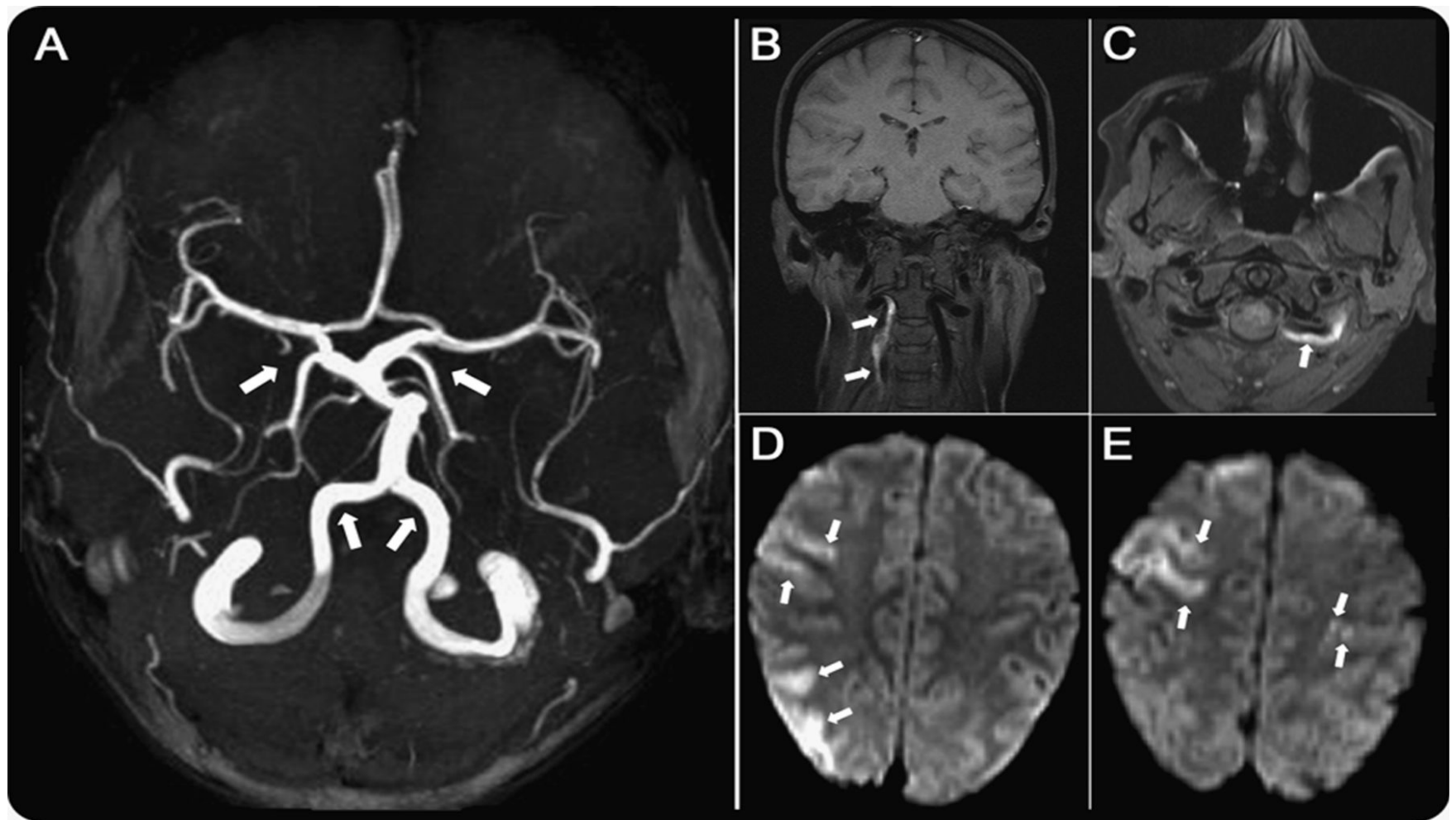
- Headache (2/3 patients)
- Neck pain
- Neurological features related to ischemic events within territory of affected artery
- Presents with ataxia, vertigo, nausea, vomiting and brain stem findings
- Pulsatile tinnitus and audible bruits can be present

# DIAGNOSIS

- Vascular imaging
- Brain MRI with MRA or Cranial CT with CTA
- Conventional angiography ( If CTA and MRA negative)
- Findings- string sign, tapered stenosis or occlusion, flame-shaped occlusion, intimal flap, dissecting aneurysm, distal pouch, and underlying arteriopathy



# Images



# Management

- No evidence supports the superiority of anticoagulation over antiplatelet therapy in prevention of stroke after vertebral artery dissections,
- Initially managed with heparin followed by anti-coagulant or anti platelet therapy.
- There are no concrete data regarding optimal duration of antithrombotic therapy.
- The time course of healing of the vessel wall or resolution of vascular abnormalities may be used to guide duration of initial treatment.

# Management

- Most arterial abnormalities stabilize in appearance or resolve by three months, and vessels that fail to reconstitute a normal lumen by six months are highly unlikely to recover at later time points.
- Endovascular techniques or surgical repair have been used to treat dissection, mainly for patients who have recurrent ischemia despite antithrombotic therapy.



# References

1. Jones J, Jones C, Nugent K. Vertebral artery dissection after a chiropractor neck manipulation. *Proc Bayl Univ Med Cent* 2015; 28 (1) 88-90
2. Albuquerque FC, Hu YC, Dashti SR, Abla AA, Clark JC, Alkire B, Theodore N, McDougall CG. Craniocervical arterial dissections as sequelae of chiropractic manipulation: patterns of injury and management. *J Neurosurg.* 2011;115(6):1197–1205.
3. Haldeman S, Kohlbeck FJ, McGregor M. Unpredictability of cerebrovascular ischemia associated with cervical spine manipulation therapy: a review of sixty-four cases after cervical spine manipulation. *Spine (Phila Pa 1976)* 2002;27(1):49–55.
4. Kai Y, Nishi T, Watanabe M, Morioka M, Hirano T, Yano S, Ohmori Y, Kawano T, Hamada J, Kuratsu J. Strategy for treating unruptured vertebral artery dissecting aneurysms. *Neurosurgery.* 2011;69(5):1085–1091.
5. Saeed AB, Shuaib A, Al-Sulaiti G, Emery D. Vertebral artery dissection: warning symptoms, clinical features and prognosis in 26 patients. *Can J Neurol Sci.* 2000;27(4):292–296.
6. Arauz A, Ruiz A, Pacheco G, Rojas P, Rodríguez-Armida M, Cantú C, Murillo-Bonilla L, Ruiz-Sandoval JL, Barinagarrementeria F. Aspirin versus anticoagulation in intra- and extracranial vertebral artery dissection. *Eur J Neurol.* 2013;20(1):167–172.
7. Rothwell DM, Bondy SJ, Williams JI. Chiropractic manipulation and stroke: a population-based case-control study. *Stroke* 2001; 32 (5) 1054-1060
8. Savitz SI, Caplan LR. Vertebrobasilar disease. *N Engl J Med.* 2005;352(25):2618–2626

**THANK YOU.  
I HAVE SUCCESSFULLY  
REACHED THE LAST SLIDE OF  
THIS PRESENTATION**



**QUESTIONS / COMMENTS**

# INFLUENZA 2017-2018

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# BACKGROUND

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## 2017-2018 Influenza season – high severity season across all age groups per CDC

Season	Child	Adults	Older Adults	Overall
<b>2003-04</b>	<b>Very High</b>	Moderate	<b>High</b>	<b>High</b>
2004-05	Low	Moderate	Moderate	Moderate
2005-06	Low	Low	Low	Low
2006-07	Low	Low	Low	Low
2007-08	Moderate	Moderate	Moderate	Moderate
2008-09	Low	Low	Low	Low
<b>2009-10</b>	<b>Very High</b>	Moderate	Low	Moderate
2010-11	Moderate	Moderate	Moderate	Moderate
2011-12	Low	Low	Low	Low
2012-13	Moderate	Moderate	High	Moderate
2013-14	Moderate	Moderate	Moderate	Moderate
<b>2014-15</b>	Moderate	Moderate	<b>High</b>	<b>High</b>
2015-16	Low	Moderate	Low	Moderate
2016-17	Moderate	Moderate	Moderate	Moderate
<b>2017-18</b>	<b>High</b>	<b>High</b>	<b>High</b>	<b>High</b>

# the burden of flu disease 2017 - 2018

The estimated number of flu **illnesses** during the 2017-2018 season:

**49** million

More than the combined populations of Texas and Florida



The estimated number of flu **hospitalizations** during the 2017-2018 season:

**960,000**

More than the number of staffed hospital beds in the U.S.



The estimated number of flu **deaths** during the 2017-2018 season:

**79,000**

More than the average number of people who attend the Super Bowl each year



DATA: Influenza Division program impact report 2017-2018, <https://www.cdc.gov/flu/about/burden/index.html>



get **vaccinated**  
[www.cdc.gov/flu](https://www.cdc.gov/flu)

- Nationally, mortality attributed to P&I exceeded **10.0%** for four consecutive weeks, peaking at 10.8% during the week ending January 20, 2018.
- Overall vaccine effectiveness - **40%**. 25% against A(H3N2), 65% against A(H1N1) and 49% against influenza B viruses

# OBJECTIVES

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- Evaluate the Epidemiology, Clinical Manifestations and Outcomes of the 2017-2018 Influenza Season among adult hospitalized patients
- Evaluate association between vaccination status and Influenza type
- Explore correlations with severity of flu
- Evaluate the role of TEM – PCR in the detection of flu and co-detection of other respiratory pathogens

# DEFINITIONS

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- “Severe Flu” – any patient from the sample under study who required intubation/ventilator support, pressor, NPPV, ICU stay, or expired
- Living in “Facility” – Nursing Home, Assisted Living or Group Home

# METHODS

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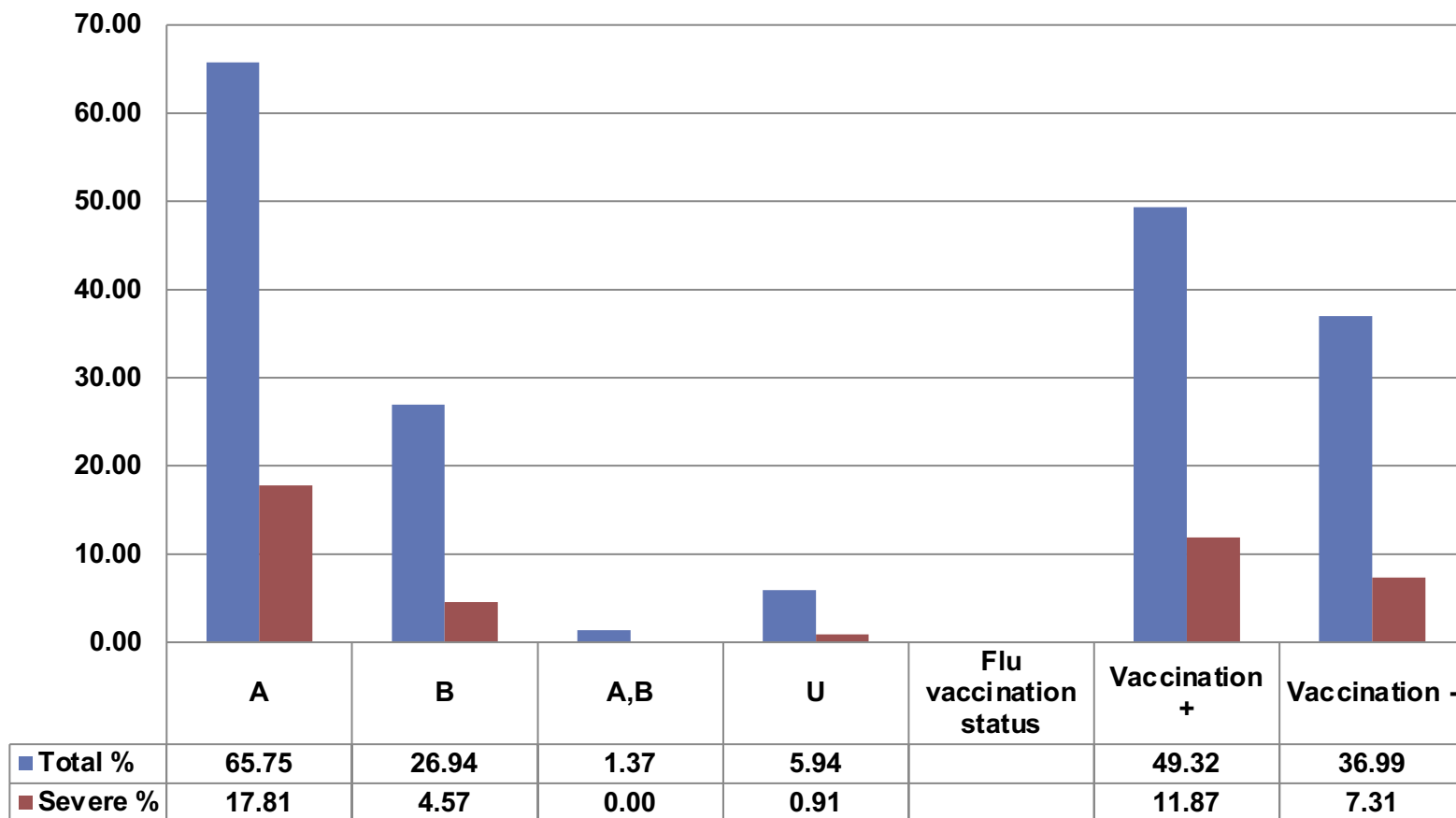


- Study Design: Cross – Sectional Study by Retrospective Chart Review
- Participants: Adult patients admitted to Huntsville Hospital Main, Alabama with diagnoses of Influenza between September 1, 2017 and April 1, 2018 - **220** (Confirmed with either Rapid Flu Test RIDT and/or TEM-PCR) **51/220 severe**
- Analysis
  - Comparative prevalence data of variables for Total Influenza patients versus “Severe Influenza”
  - Univariate Analysis with relative risk for analyzing association/ strength of association
  - Comparative prevalence data of morbidity outcomes between those with influenza only and those with co-detected organisms

# RESULTS

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# Flu type and Vaccination status

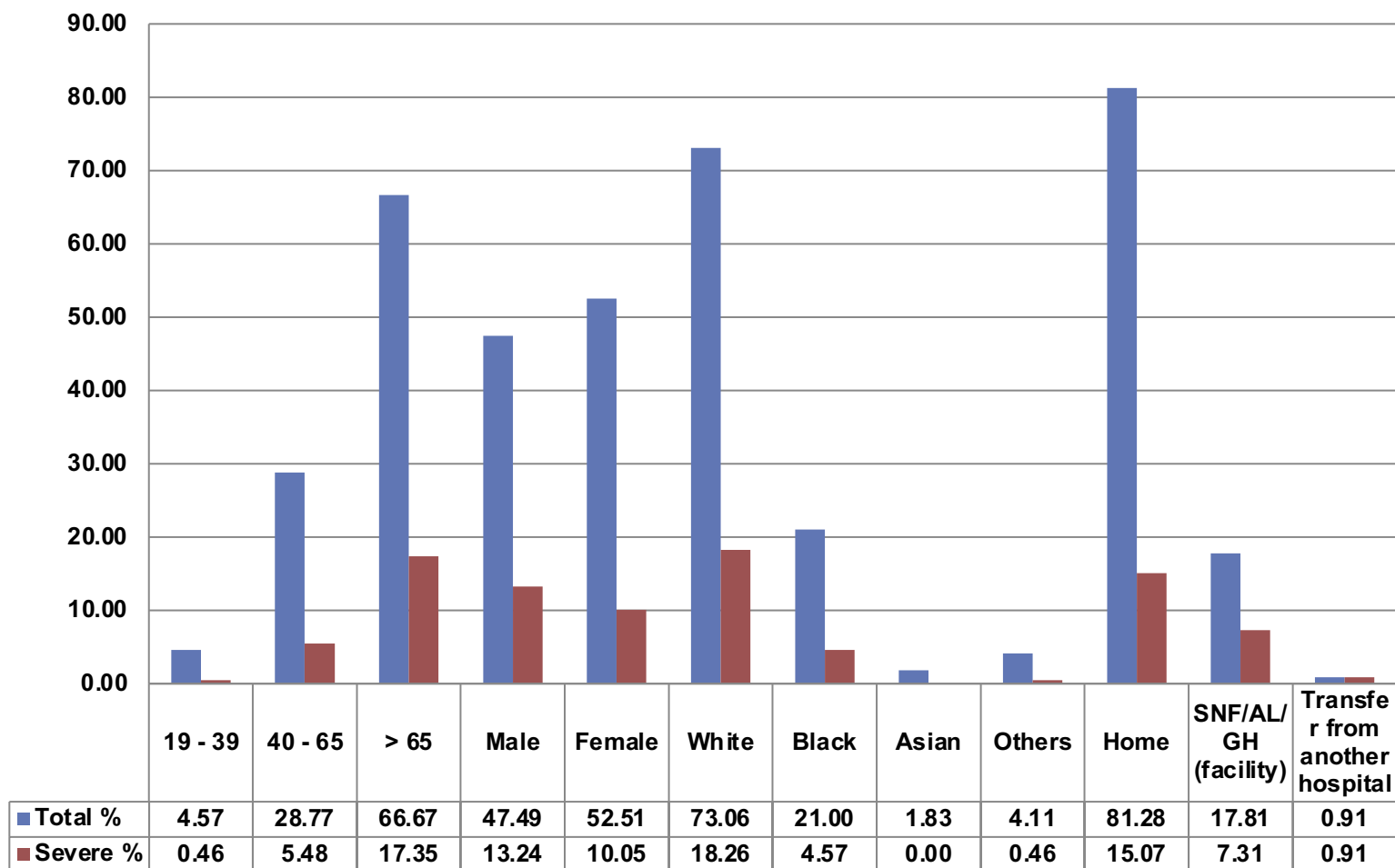


# Flu type and Vaccination status

Variable	RR(CI)	P Value
Flu type (A/B) and severity	1.59 (0.855 – 2.98)	0.1400
Vaccination status and Flu type	1.31 (0.85 – 2.01)	0.2110
Vaccination status and severity	1.21 (0.70 – 2.12)	0.4825



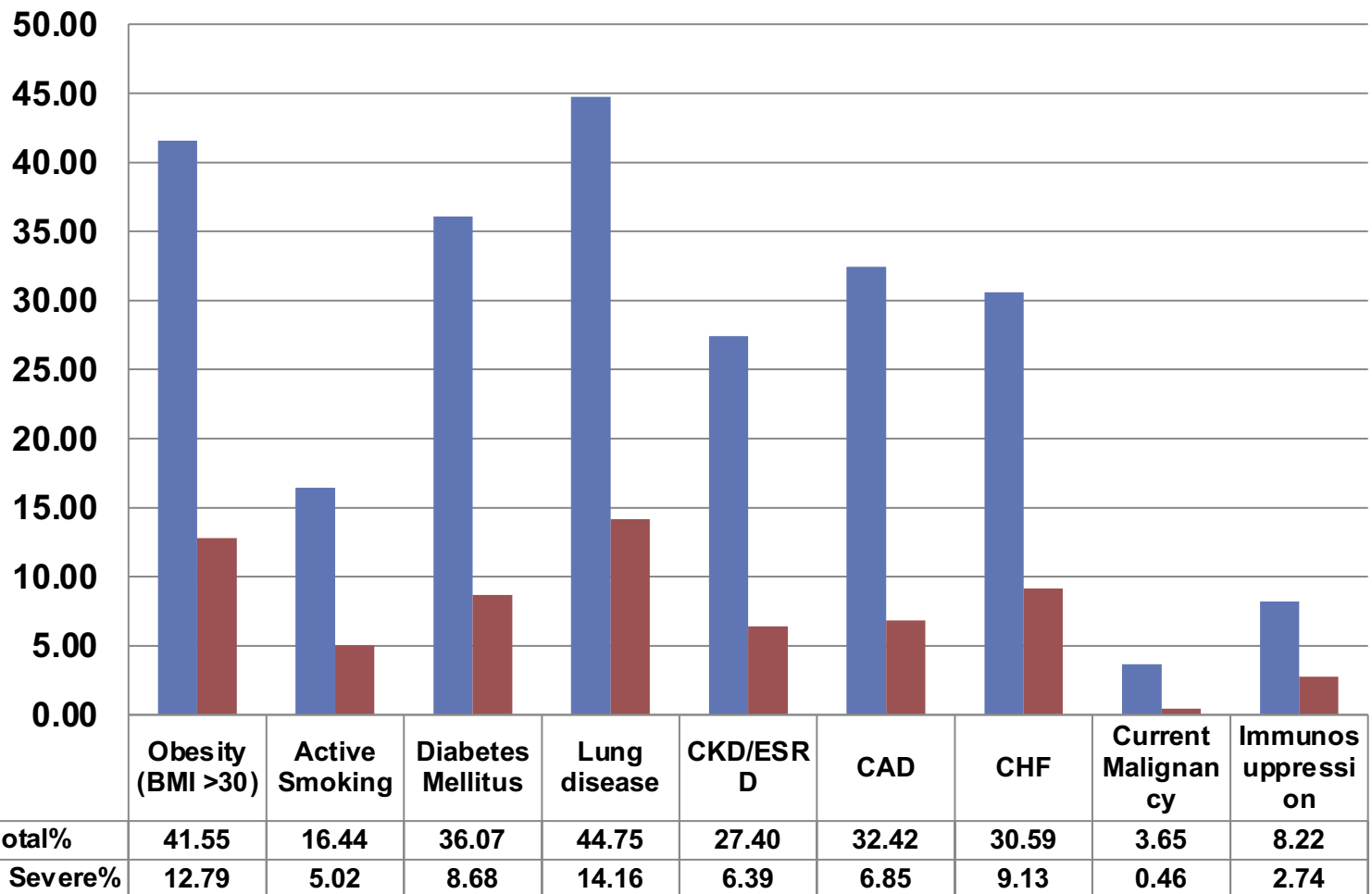
# Demographics



# Demographics

Variable	RR (CI)	P value
Age > 65 and severity	1.46 (0.83 – 2.56)	0.1869
Arrival from facility and severity	<b>2.21 (1.36- 3.56)</b>	<b>0.0014</b>
Arrival from facility, (age adjusted) and severity	<b>1.90 (1.11 – 3.25)</b>	<b>0.0184</b>

# Comorbidities



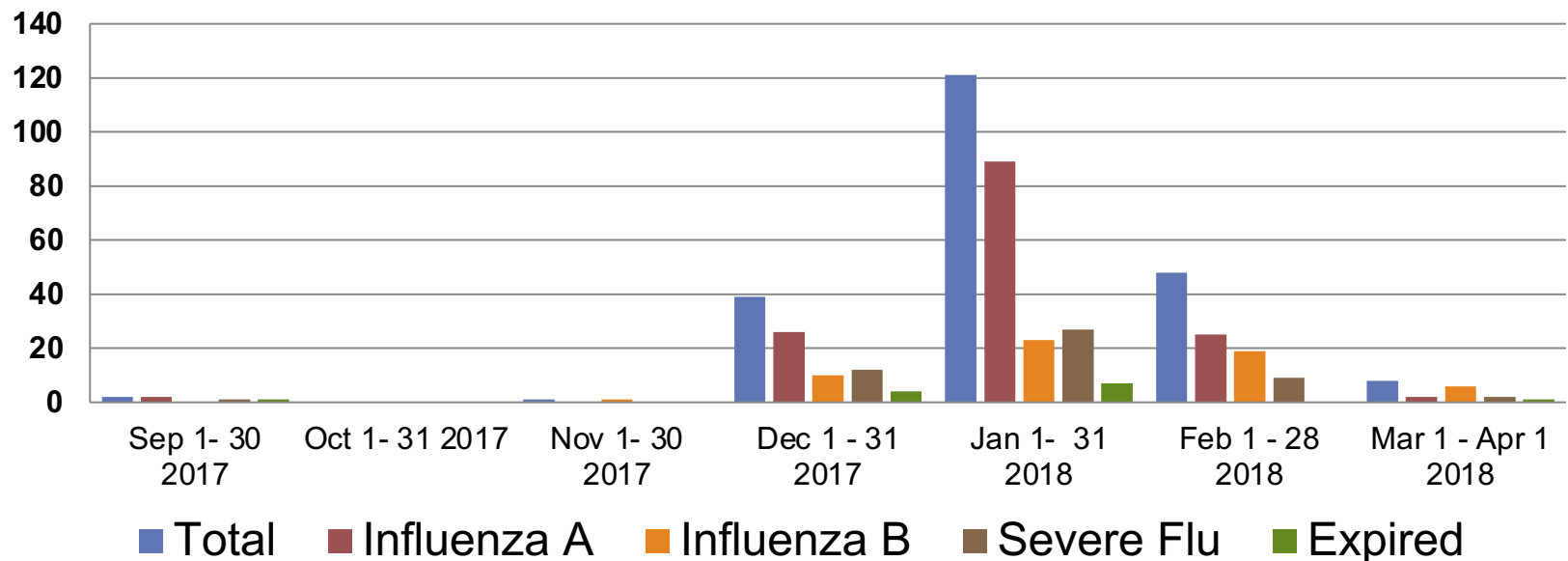
# Comorbidities

Variable	RR (CI)	P value
Active Smoking and severity	1.40 (0.79 – 2.47)	0.2410
Lung disease and severity	<b>1.91 (1.17 – 3.14)</b>	<b>0.0102</b>
Obesity and severity	<b>1.66 (1.0258 – 2.6826)</b>	<b>0.0390</b>

# Time Line

Peak hospitalization period January - Total admissions (122 / 56.48%), Flu A (89/61.80%), Flu B (23/ 38.98%) and Severe influenza (9/5.2%)

## Time line of Influenza September 1 2017 - April 1 2018





# Presenting Symptoms and Management Data

Symptoms	%
Respiratory (cough and SOB)	79.45%
Constitutional (fever, myalgia, chills)	53.42%
Gastrointestinal (nausea, vomiting, diarrhea, abdominal pain)	15.98%
Altered mental status	13%

- Total patients treated with oseltamivir - 91.78%
- 96. 21% received it within 48 hours of influenza detection
- **Treatment with oseltamivir and severity – RR 0.6343 (0.32 – 1.27), p= 0.1981**

# Morbidity data

- Severe Flu - 51 patients (23.38%) - 25 required intubation and ventilator support, 10 required pressor, 28 required NPPV, 34 had ICU stay, 13 expired.
- Discharge Disposition - 50 % discharged to short term rehabilitation, originally arrived from home, potentially acting as a morbidity indicator.

# Mortality data

- 13 expired - 10 were elderly and 3 were middle aged
- Case fatality rate - 5.90 %
- Fatality rate was slightly higher among elderly 6.89 %

Variable	Relative Risk	P value
> 65 compared to middle age	2.1379 (95% CI 0.48 – 9.47)	p- 0.3172
From facility versus home	4.56 (95% CI 1.55 – 13.40)	p 0.0057
From facility – age adjusted	3.26 (95% CI 1.00 – 10.6)	p- 0.0491

# Microbiological data

Microbiological Data	Total patients N (%)	Severe Flu N (%)
Positive Rapid Flu	151 (71.69)	13 (5.94)
Positive Flu PCR	70 (31.96)	7 (3.20)

**Sensitivity of Rapid Flu Test = 38 %** (8 / 8 +13)

70/220 patients had positive flu in TEM - PCR

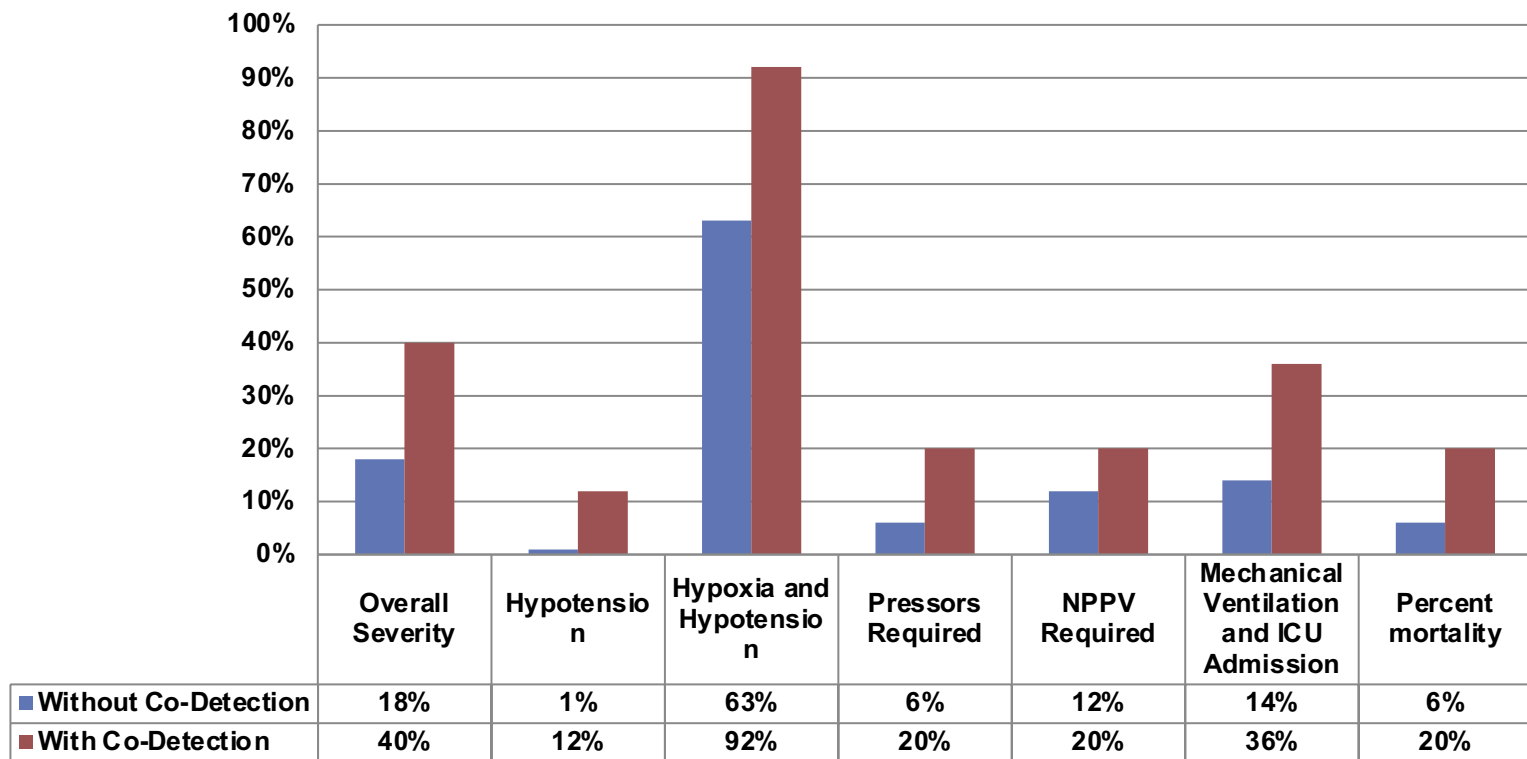
Variable	Co-detection group (25)	Influenza only group
Male gender	68%	63%
Caucasian Race	88%	65%
Mean age	63	67
BMI	29	28
Smokers	<b>32%</b>	21%
Vaccinated	56%	52%
T2DM	16%	<b>53%</b>
COPD	<b>24%</b>	19%
CKD	20%	<b>30%</b>
CHF	20%	<b>37%</b>



Variable	Co-detection group (25)	Influenza only group
H3N2	68%	58%
H1N1	8%	16%
B	25%	23%

- In the co-detection group, only 24% of sputum cultures were positive with 100% concordance with PCR
- Most common organisms -MRSA , H.influenzae, P.aeruginosa, S.Pneumoniae

# Co-detection and severity data



- Co-detected resp pathogen and severe flu -**2.65 (1.60 – 4.38) p 0.0001**
- Average hospital stay was **11 vs 8 days**

# CONCLUSION

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- **Elderly** were more affected, Peak in **January**
- Significant proportion had **severe flu – 23.29%**
- Similar efficacy of vaccination for all flu types
- Severe flu had significant association with **arrival from facility, lung disease, obesity and co-detection of respiratory pathogen**
- No significant association with Age, Flu type, vaccination status, smoking status and treatment status
- Fatality rate was 5.90% with significant correlation with arrival from facility
- **TEM- PCR** in hospitalized patients – improved influenza detection, co-detection of pathogens, morbidity and mortality predictor

# THANK YOU

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Questions?

# Streptococcal Bacteremia in a Large Tertiary Center

April 9, 2019

**Aristotle Asis, MD PGY3 UAB Huntsville IM**

**Ali Hassoun, MD, FIDSA, FACP**

**Esmeralda Gutierrez-Asis, MD**



# Background

- *Streptococcus pneumoniae* remains an important cause of bacteremia in the United States with high morbidity and mortality despite readily available treatment and vaccines.
- Pneumococcal bacteremia confirm by isolation from a normally sterile site (blood).
- Immunocompetent and Immunosuppressed patients
- 2° Complications, arthritis, meningitis, endocarditis, skin, joints, bones
- Incidence affected by geography, time, prevalence, age, comorbidities, antibiotics susceptibility and vaccination status

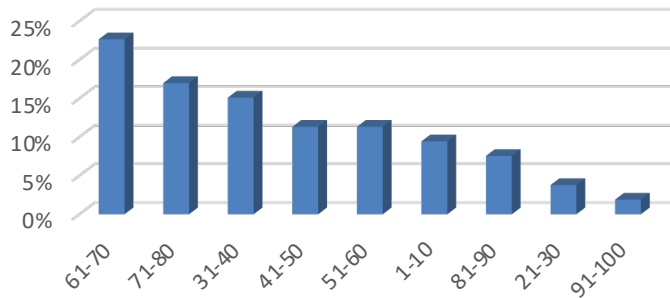
# Methods

- Retrospective EMR chart review of patients admitted with pneumococcal bacteremia over the last 2 winter seasons (2016 vs 2017) was done.
- Demographics
  - Age, Sex, BMI, Race, comorbidities,
- Clinical Data
  - Chief complaint, CXR/chest CT findings, smoking, flu vax status, Abx use,
  - Steroid use, chemotherapy, immunosuppressants, mortality, readmission
  - Hospital and ICU stay, ventilator/pressor needs, co-infection
- laboratory data
  - Flu test, cultures, sputum Cx, diatherix, sensitivities

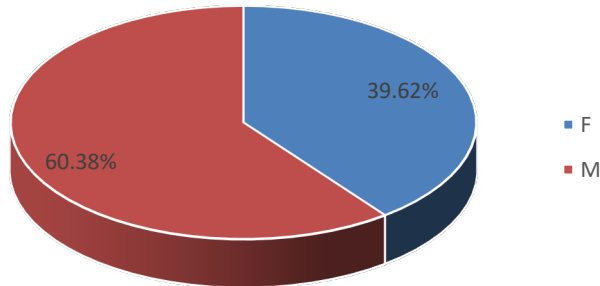
# Results

- 53 patients enrolled. (20 vs 33)

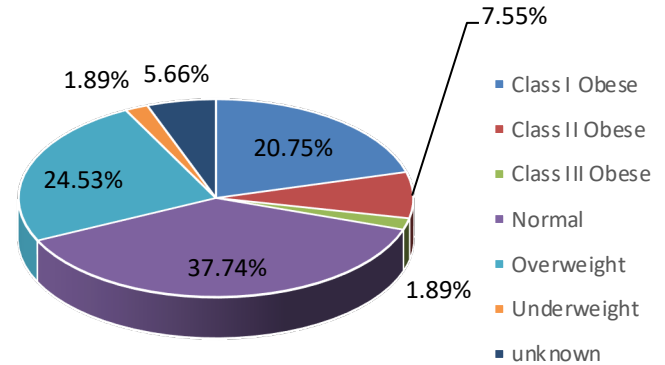
Age Groups



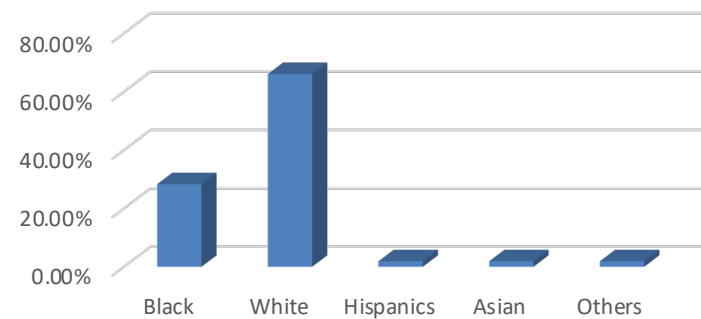
Gender



BMI



Race

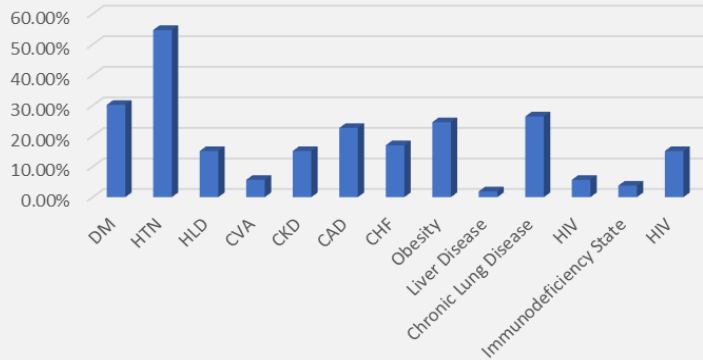


# Results

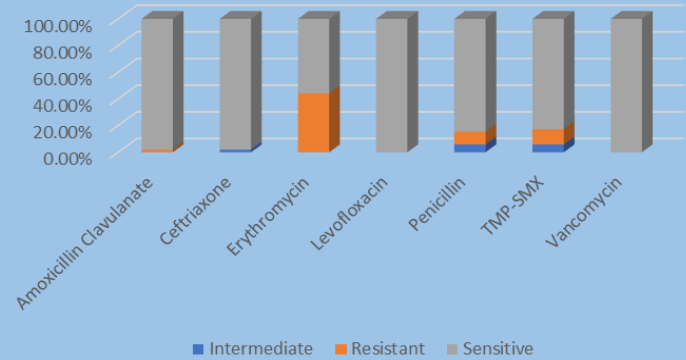
- Mean BMI 27, mean age 55, mean HOS 7.8 days
- >40% ICU stay
- MC presentation dyspnea (30%) and fever (18%)
- 80% patients w/ smoking history (55%) had PNA
- PCN resistance 9%
- Only 2% pts w/ PNA had +PNA sputum Cx
- Only 62% had +serum PNA antigen
- + co-detection of bacterial/viral targets in sputum using PCR did not correlate with mortality and hospital stay but needed more ICU stay, vasopressor use and mechanical ventilation
- 43% empiric tx per IDSA recommendation

# Results

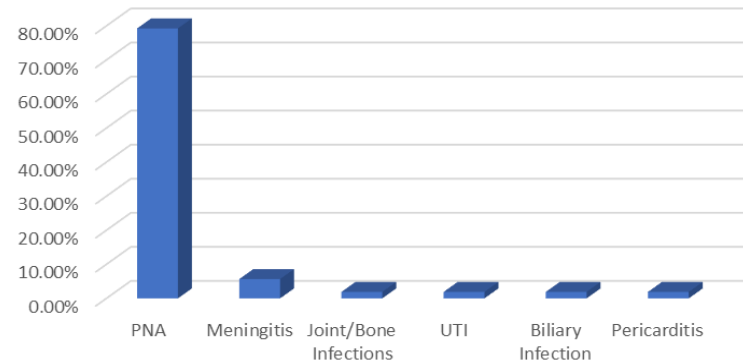
Comorbidities



Sensitivity and Resistance



Source of Infection



# Results

	2016 Winter	2017 Winter
Erythromycin Resistance(44%)	30%	52%
TMP-SMX Resistance	10%	12%
Mortality	15%	5%
Hospital Stay	9 days	7 days
NPPV Use	5%	6%
Mechanical Ventilation	15%	18%
Vasopressor	5%	21%



# Results

- + co-detection of bacterial/viral targets in sputum using PCR did not correlate with mortality and hospital stay but needed more ICU stay, vasopressor use and mechanical ventilation
- 43% empiric tx per IDSA recommendation
- Overall 6-month mortality and re-admission rate was 9% and 2% respectively
- Mortality was higher in overweight patients (60% vs 20%), non-smokers (40% vs 20%), coronary artery disease (40%) and congestive heart failure (40%).

# Conclusions

- We observed less mortality and hospital stay but more use of NPPV, mechanical ventilation and vasopressor during winter 2017 which had widespread influenza-like activity and incidence of bacteremia.

QUESTIONS?

Thank You!

THE



END

# Streptococcal Bacteremia in a Large Tertiary Center

April 9, 2019

**Aristotle Asis, MD PGY3 UAB Huntsville IM**

**Ali Hassoun, MD, FIDSA, FACP**

**Esmeralda Gutierrez-Asis, MD**



# Mycotic Aneurysm

JOSE CAVO MD, JESSE FAULK MD, ARISTOTLE ASIS MD, FARRAH IBRAHIM, MD





# Learning Objectives:

- ▶ To learn early recognition of mycotic aneurysm.
- ▶ To learn treatment of mycotic aneurysms.

# History of Present Illness

- ▶ 61 year-old Caucasian male presented with one week AMS after being found lying on his porch confused, very weak, and disoriented.
- ▶ Pt is an alcoholic who reported a fall 3 weeks prior at home ground level, sustained periorbital hematoma and hit right flank. No LOC, no reported bladder or bowel incontinence, or seizure-like activity.
- ▶ Went to an Urgent Care Facility, got tapered steroids and muscle relaxants.
- ▶ Fell again at work a week prior, with witnessed seizure activity, LOC and confusion.
- ▶ Went to ED, treated with Ativan, IV fluids for alcohol seizures and discharged.
- ▶ Refrained from alcohol, worsening confusion, disorientation, unsteady gait and had multiple falls.

## Past Medical History

- ▶ Asthma, COPD, OSA, Throat Cancer 1994 S/P surgical excision, BPH, Hypercholesterolemia, OA left Knee, C2-C4 stenosis, Chronic Alcoholism

## Past Surgical History

- ▶ Shoulder Arthroscopy, Carpal tunnel release, Gastric bypass, Lumbar laminectomy, C2-4 Laminectomy and fusion

## Social history

- ▶ Married, lives in Albertville with wife
- ▶ Delivers papers
- ▶ Chronic alcoholism 12 beers/day
- ▶ 45 pack/yr, current smoker



## Family History

- ▶ No premature cardiac death, CAD, Stroke, Cancer, Connective tissue disorders

## Medications

- ▶ Combivent 1 puff QID      - Vitamin B12 100mcg Daily
- ▶ Flexeril 5mg TID      - Neurontin 300mg TID
- ▶ Relafen      - Prilosec 20mg Daily
- ▶ Albuterol inhaler prn      - Zoloft 50mg Daily
- ▶ Flomax 0.4mg Daily      - Vitamin D & E supplement
- ▶ Medrol dose pak

## Allergies

- ▶ Sulfa and Penicillin - rash

# Review of Systems

- ▶ Decreased appetite, 20lb unintentional weight loss in 2 months
- ▶ **Positive** for depression, anxiety, weakness, fatigue, dizziness, bilateral decreased hearing, shortness of breath, wheezing, dysphagia, polydipsia, hallucinations, headaches, memory deficits
- ▶ **Negative** for dysuria, hesitancy, urgency and abdominal pain

# Physical Examination

## ▶ Vitals:

- ▶ Temperature 98.9
- ▶ Heart rate 113
- ▶ Respiratory rate 20
- ▶ Blood pressure 145/75
- ▶ Oxygen saturation 92% on 2 L by nasal cannula
- ▶ Weight 45.8 Kg



# Physical Examination

- ▶ GEN: ill-appearing male, cachectic
- ▶ HEENT: normocephalic, intact hearing, dry oral mucosa, supple neck
- ▶ CV: sinus tachycardia, S1 S2, no MRG or JVD
- ▶ PULM: increased work of breathing, bilateral diminished breath sounds in bases and rhonchi
- ▶ GI/Rectal: soft, NT, ND, NABS, normal rectal tone, +FOBT
- ▶ EXT: no edema, clubbing or cyanosis; 2+ pulses throughout
- ▶ NEURO: drowsy, oriented to person, follows simple commands inconsistently, had conjugate gaze, dysarthria, no facial asymmetry, generalized motor weakness, weak grip on left, normal reflexes
- ▶ MS: normal tone and bulk, no tremors

# Admission Labs

130	87	15	129
3.1	26	0.7	

10.6	12.2	303
35.0		

Ca	8.7	AST	48
Prot	7.3	ALT	34
Alb	3.3	AP	201
TB		1.8	

PT	15.7	INR 1.2
PTT	36.1	

- Mg 1.7
- Phos 2.0
- Lipase 44
- ESR >80
- CRP 8.7
- Ethyl Alcohol <10
- CPK 95
- CK-MB 1.5
- Trop T 14
- UDS Negative

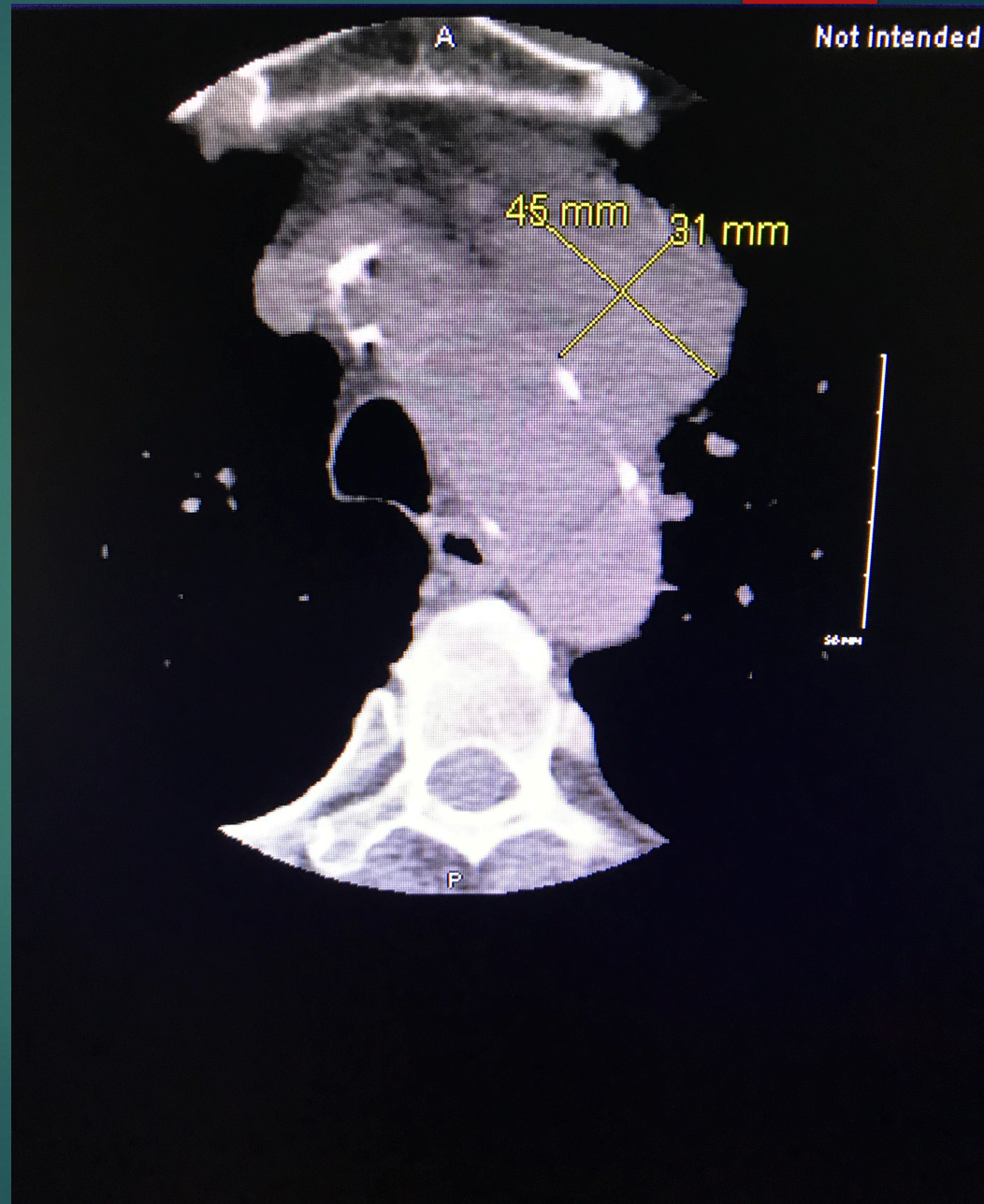
Urinalysis	
Color	Yellow
Clarity	Cloudy
Glucose	Normal N
Bilirubin	Small A
Ketones	15A
Spec Gravity	1.013N
Blood	Moderate A
pH	6.0N
Total Protein	Small A
Urobilinogen	8H
Nitrites	Negative N
Leukocytes	Large A
Epithelial Cells	Normal N
WBC's	35H
RBC's	11H
Bacteria	Large A
Hyaline Casts	46H

# Admission Diagnostics

- ▶ Portable CXR : No acute cardiopulmonary process
- ▶ EKG: Sinus tachycardia
- ▶ CT Head and C-spine w/o contrast: No acute abnormality. Soft tissue mass identified in the prevascular space, incompletely visualized within the visualized chest. Further evaluation with a CT of the chest is recommended.



# Admission Diagnostics



# Assessment and Plan, Differential Diagnosis

## ▶ Encephalopathy

- ▶ Malignancy vs Infectious vs Polypharmacy vs Metabolic vs Stroke vs Seizures
- ▶ Plan: Vit D 25, B12, TSH, Blood Cx, Ammonia, Viral Hep Panel, Brain MR, EEG; started folate and thiamine

## ▶ Prevascular Soft Tissue Mass on Chest CT Chest CT

- ▶ Thought to be underlying malignancy
- ▶ Plan: monitor for now and follow up after acute illness

## ▶ Abnormal UA

- ▶ Rocephin in ER + Cefepime

## ▶ Conjugated Hyperbilirubinemia

- ▶ Malignancy vs choledocholithiasis
- ▶ Plan: Abdominal US ordered

## ▶ H/O Seizures/Alcohol Abuse

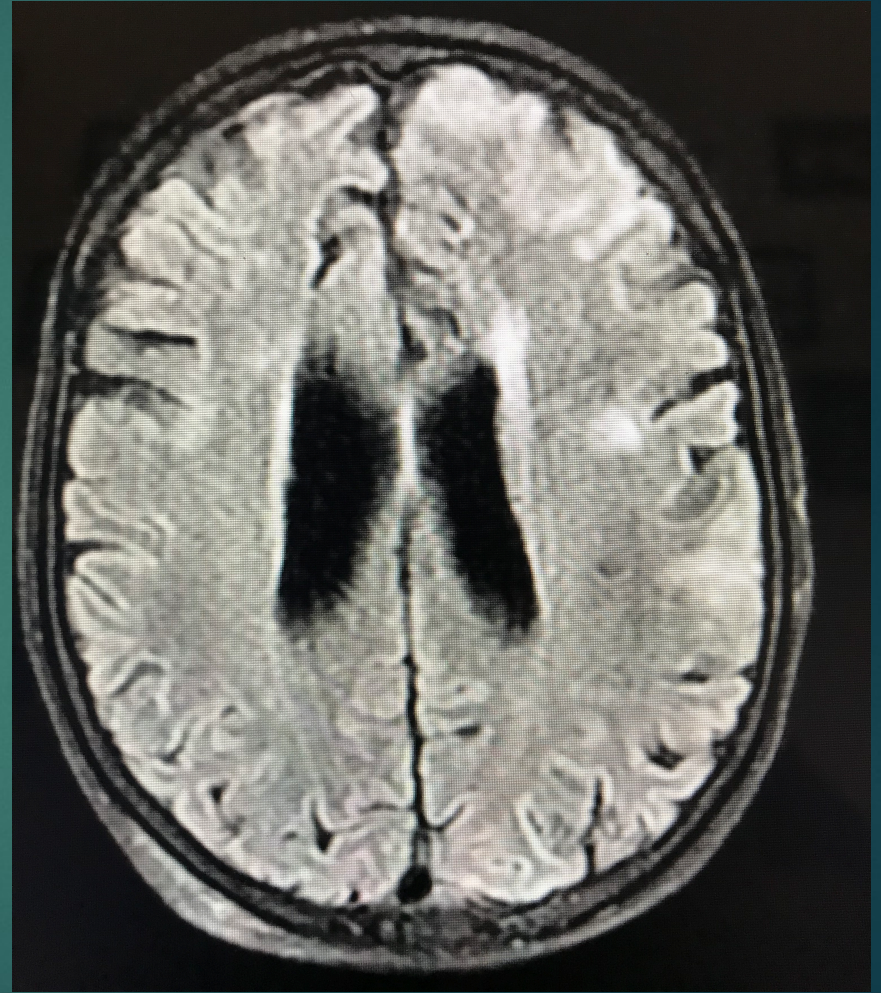
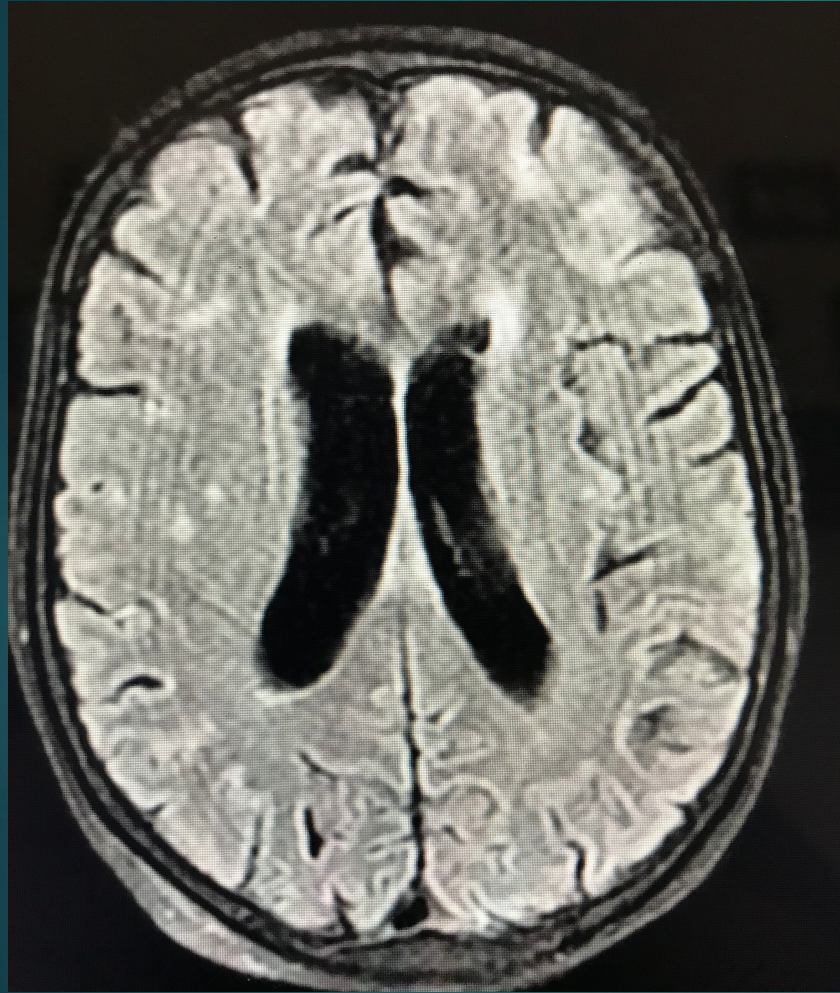
- ▶ Plan: seizure precautions, prn Ativan



# Hospital Course, Day 1

- ▶ Patient HR increased to ~140
- ▶ O2 requirement increased to 4
- ▶ Ammonia, B12, A1c normal
- ▶ HAV IgM +
- ▶ Brain MR - multiple foci of diffusion restriction/small infarcts within the superior, posterior frontal parietal regions bilaterally.
- ▶ Neurology and IR consulted
- ▶ Stroke protocol initiated
- ▶ LP ordered

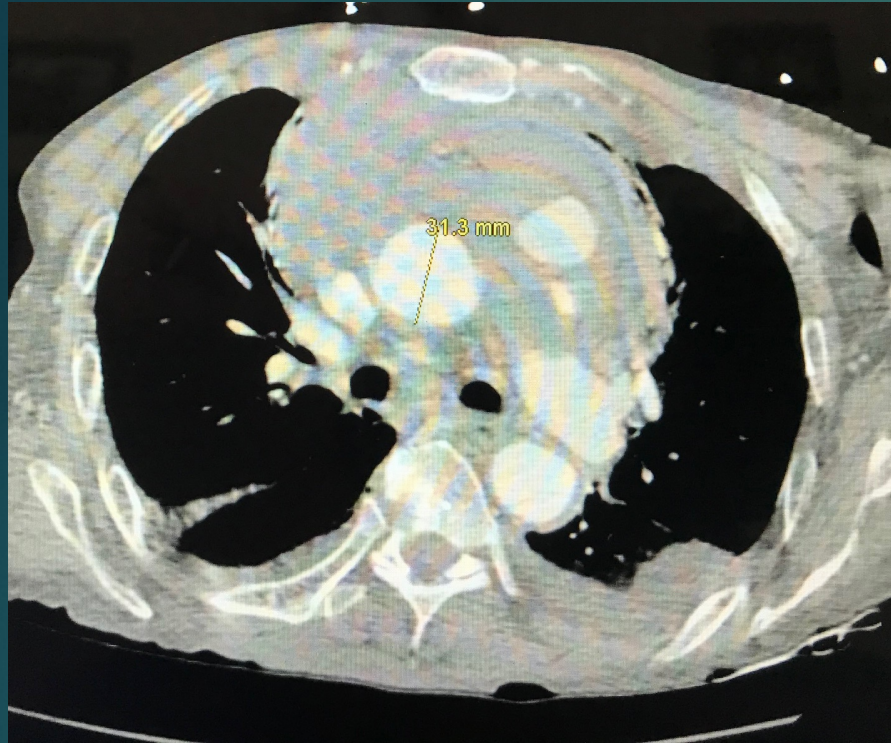






# Hospital Course, Day 1

- ▶ Abdominal US: Hepatomegaly w/ diffuse fatty infiltration of the liver. GB sludge
- ▶ Chest CT w/ Contrast: Thoracic aortic rupture at the isthmus with active extravasation and large mediastinal hematoma as well as hemopericardium. May represent a ruptured diverticular aneurysm. Small bilateral bland density pleural effusions. Subacute to remote anterior L rib fractures. No acute fracture is identified given sensitivity limitations d/t pt motion.
- ▶ Held aspirin and dvt ppx
- ▶ STAT transfer to ICU and CT surgery consult for endovascular repair with left subclavian artery stent





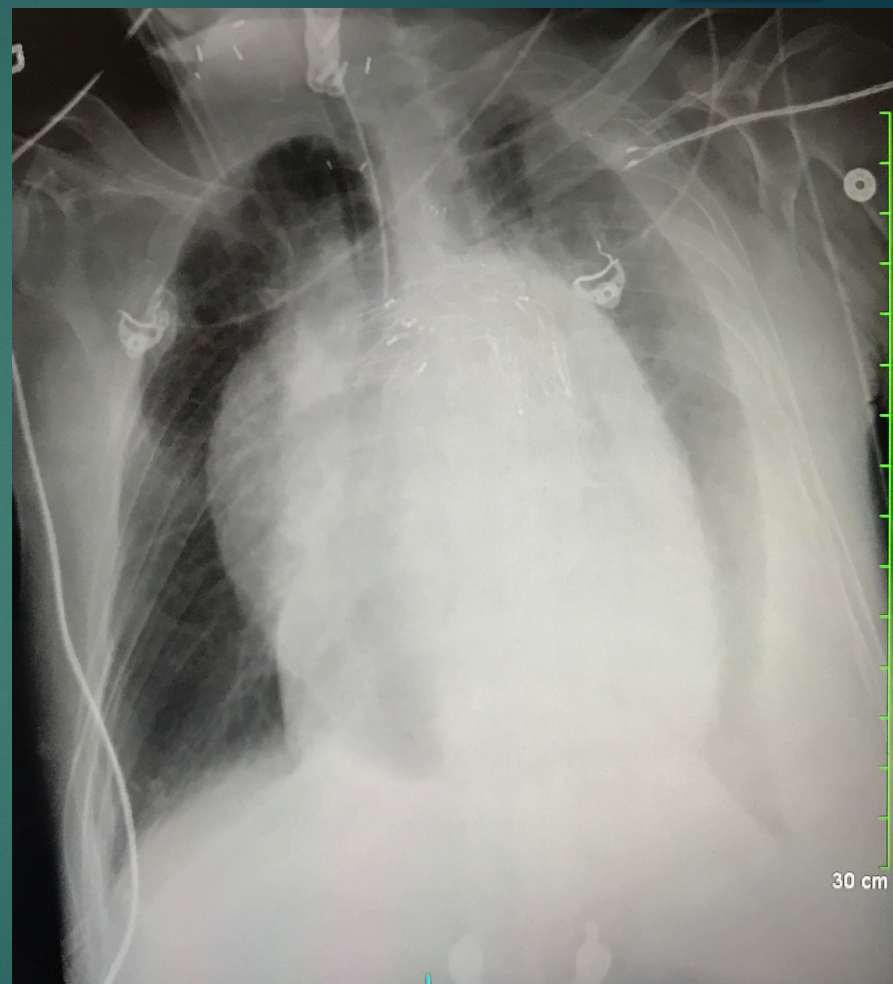
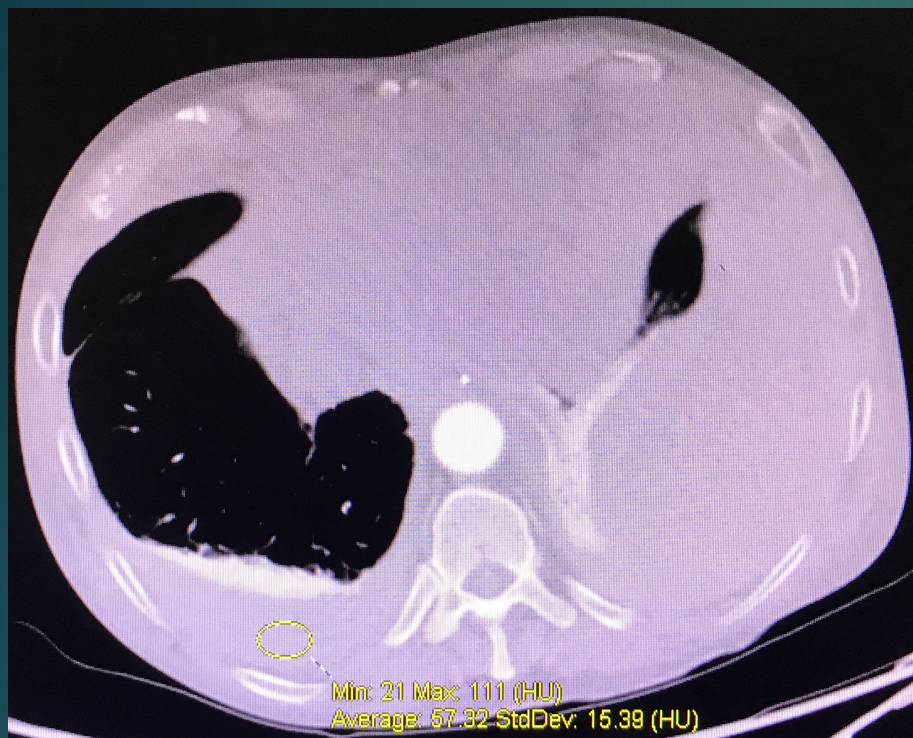
# Hospital Course, Day 1

- ▶ Portable CXR : Abnormal widening of the mediastinum
- ▶ TTE: EF 50%, normal LV size, mild TVR, trivial pericardial effusion, mass with fluid collection in mediastinum. Left pleural effusion.
- ▶ Blood Cultures x2: gram negative rods
- ▶ ID consulted: changed Cefepime to Merrem
- ▶ H/H dropped to 8.7/25.3
- ▶ proBNP 5264
- ▶ BP 95/59
- ▶ Pt went to CT surgery w stent placement in left subclavian artery, repair of left brachial artery, endovascular repair of aortic arch penetrating ulcer with a Valiant thoracic endovascular graft and catheter sheath placement in aorta.

# Hospital Course, Day 1 post surgery

- ▶ H/H stable
- ▶ Developing critical acidosis w pH 6.91, pCO<sub>2</sub> 34.6 and AG 22; received 3 amps and drip of bicarb
- ▶ Patient intubated, off sedation (no response to painful stimuli)
- ▶ Persistent Hypotension 91/56 requiring 4 vasopressors
- ▶ PCXR – enlarging Left pleural effusion and mediastinum
- ▶ Repeat CT Chest/Abd/Pelvis: no extravasation of contrast noted, increasing large mediastinal hematoma since pre-operative study with mass effect on the heart and main pulmonary artery. Very large left pleural effusion with pronounced compressive atelectasis left upper and lower lobes. Moderate right pleural effusion. Small amount of scattered ascites with intermediate density. Interval aortic grafting at level of aortic isthmus with placement of left subclavian artery stent(occluded).
- ▶ Patient transferred to ICU around midnight







# Hospital Course, Day 2

- ▶ HR 120, RR 30, BP 110/65, MAP 80, 99% on vent
- ▶ Lactate 9.4, INR 3.6
- ▶ 4 units FFP transfused
- ▶ ABGs 7.362/39.7/22/22.6
- ▶ Patient goes to Emergent Mediastinal Washout and Exploration Sternotomy. Findings: Massive tamponade with clot in anterior mediastinum and left chest. Upon entering the left chest, there was massive exsanguination. Pt loss pulse and pericardium opened, heart was decompressed and flaccid, open cardiac massage performed, location of bleeding cannot be visualized. It was felt that the aorta has ruptured.
- ▶ Pronounced dead at 1115hrs.

# Discussion

- ▶ Bacteremia with subsequent endovascular infection is a known complication of gastroenteritis caused by nontyphoidal *Salmonella*.
- ▶ Infectious endarteritis, also known as mycotic aneurysm due to its appearance of “fresh fungus vegetations,” are associated with high morbidity and mortality and therefore high-clinical suspicion and early intervention are necessary.
- ▶ Infectious endarteritis occurs when degeneration of the arterial wall leads to an aneurysm, usually in the setting of bacteremia or septic embolization.
- ▶ Risk factors include: arterial injury as seen in IV drug users or in treatments with direct access to arteries; antecedent infections; immunocompromised states, including diabetes, HIV, cirrhosis, alcoholism and dialysis patients; atherosclerosis; and in preexisting aneurysms.

# Discussion

- ▶ The etiologies include bacteremic seeding of at-risk arteries (atherosclerosis or preexisting aneurism), direct bacterial inoculation at the time of vascular injury, extension of an infection in the periarterial space, or infectious metastases arising from septic emboli.
- ▶ The most common pathogens are *Staphylococcus* spp, including methicillin-resistant and vancomycin-intermediate (MRSA and VISA) *S. aureus*, and *Salmonella* spp. Case studies may suggest that *Salmonella* is associated with seeding of an atherosclerotic aorta and that aneurysm rupture is associated with infections by gram-negative pathogens. Other less common pathogens include *T. pallidum*, *Mycobacterium* spp, *Coxiella burnetii* as seen in chronic Q fever, and fungal pathogens. Other gram positives, gram negatives and anaerobes have also been reported.



# Discussion

- ▶ The classic clinical manifestation is an enlarging, pulsatile and painful mass with systemic symptoms such as fever, weight loss and elevated inflammatory markers.
- ▶ Other manifestations include GI bleeding, HF, expanding hematoma, mesenteric or peripheral ischemia, dysphagia, hoarseness, hemoptysis, osteomyelitis, psoas abscess and neuropathy.
- ▶ Definite diagnosis is made with imaging, of which CTA is the best modality.
- ▶ Treatment involves antibiotics, surgical debridement and may require revascularization

# Discussion

- ▶ Antibiotic treatment is empiric with gram-positive coverage with vancomycin and gram-negative coverage with Rocephin, a fluoroquinolone or Zosyn, followed by targeted coverage based on cultures and susceptibilities.
- ▶ Surgical treatment typically involves debridement without revascularization (excision and ligation).
- ▶ If arterial reconstruction is needed, it may be done immediately if there is a high risk of distal ischemia, or it may be done following an interval of antibiotic treatment in cases with low to moderate risk of distal ischemia.
- ▶ Endovascular treatments are used when open surgery is not an option or as a temporizing measure in the setting of rupture and is becoming the preferred modality in thoracic aortic aneurysms.



# Conclusion

- ▶ Conclusion: Infectious Endarteritis, though rare, is often caused by Nontyphoidal *Salmonella* spp. Infectious endarteritis is associated with significant morbidity and mortality, and is likely to have non-specific symptoms at presentation. Having a high clinical suspicion for early recognition and treatment can be life-saving.

# A TUMOR THAT WOULD NOT BE FLUSHED

LUKE BAILEY

PAREKHA YEDLA, MD

# **PREVIOUS ADMISSION 2011**

# PREVIOUS ADMISSION

- The patient is a 62-year-old Caucasian female who presented to her PCP complaining of occasional diarrhea, bloating, and abdominal fullness.
- She described these symptoms as slowly progressive and felt that something “just wasn’t right”.
- She denied fever, nausea, or flushing.
- Past medical and family histories were negative.

# PREVIOUS ADMISSION

- On exam, she was afebrile with stable vital signs.
- Abdominal exam revealed abdominal distension and mild hypogastric tenderness to palpation; bowel sounds were positive.
- Laboratory studies were all within normal limits.



# PREVIOUS ADMISSION

- She received an abdominal ultrasound that showed large bilateral ovarian cysts and confirmed the presence of an umbilical hernia.
- She was subsequently scheduled for total abdominal hysterectomy with bilateral oophorectomy and umbilical hernia repair.

# PREVIOUS ADMISSION

- Pathology of umbilical hernia contents revealed well-differentiated carcinoid tumor with positive lymphovascular invasion and positive staining for chromogranin, synaptophysin, and CD56.

# PREVIOUS ADMISSION

- The patient was followed by gastroenterology and treated with monthly Octreotide injections, which were well-tolerated.
- Metastatic lesions were subsequently discovered 7 years later in the liver and abdomen, the latter necessitating a ureteral stent due to compression on the right ureter that resulted in hydronephrosis.

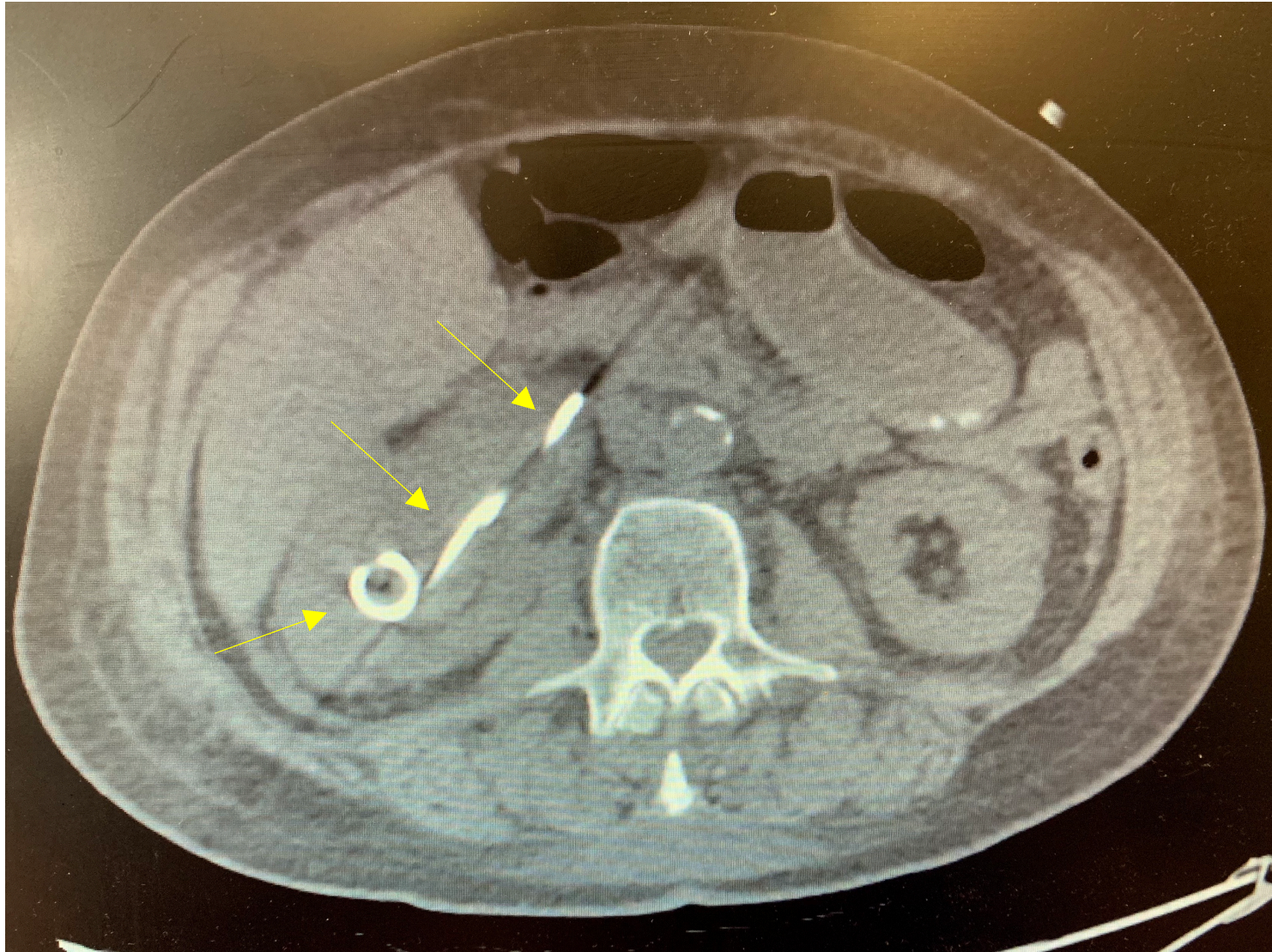
# **PRESENT ADMISSION 2019**

# PRESENT ADMISSION

- The patient presented to the ED with altered mental status, E. coli bacteremia, and was found to have severe right sided hydronephrosis due to migration of the ureteral stent into the renal pelvis.



# PRESENT ADMISSION



# PRESENT ADMISSION

- The patient required emergent percutaneous nephrostomy tube placement and was transferred to Vanderbilt Medical Center for further treatment.

# DISCUSSION

# DISCUSSION

- Well-differentiated neuroendocrine tumors, known as carcinoids, are tumors that commonly arise from the gastrointestinal tract.
- Carcinoid tumors are relatively rare
- Incidence by race and gender (per 100,000):
  - Caucasian: 4.6
  - African American: 6.46
  - Male: 4.97
  - Female: 4.49
- The mean age of diagnosis is 63.

# DISCUSSION

- Though rare, the incidence of carcinoid tumor is increasing in the United States.
  - The age-adjusted incidence rate for all neuroendocrine tumors rose from 1.09 to 6.98 per 100,000 between 1973 and 2012.
- This increase is likely due to increased detection by imaging modalities.



# DISCUSSION

- Detection of neuroendocrine tumors:
  - Biochemical testing:
    - 5-HIAA, Serotonin – plasma and/or urine
    - Chromogranin concentration – urine
  - Imaging:
    - CT
    - MRI
    - Octreoscan
    - PET
    - Endoscopy



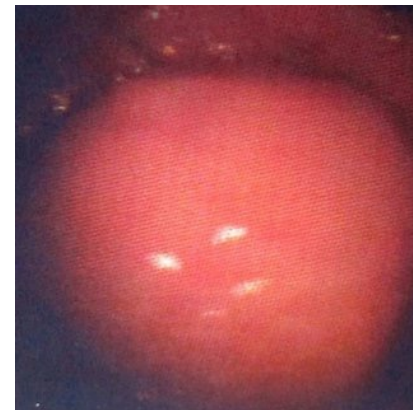
# DISCUSSION

- Carcinoids are frequently diagnosed due to carcinoid syndrome, which occurs with metastasis and is characterized by chronic flushing and diarrhea.
- Only 8-10% of neuroendocrine tumors result in carcinoid syndrome. Many, as with this patient, are diagnosed incidentally and experience vague, nonspecific symptoms.

# DISCUSSION

- Uncommon presenting symptoms of neuroendocrine tumors:

- Hematuria
- Urinary obstruction
- Scrotal swelling
- Intussusception
- Odynophagia
- Dysphagia
- Hearing loss
- Facial nerve paresis
- Recurrent pneumonia
- Nephrolithiasis
- Etc.



# DISCUSSION

- Treatment includes the use of chemotherapy, radiation, somatostatin analogues, and surgery.
- Octreotide, a long-acting somatostatin analog, blocks hormone secretion by the tumor.
- This is helpful not only in reducing symptoms, but also in inhibiting tumor growth and slowing disease progression.

# DISCUSSION

- Fortunately for patients, even when distant metastasis is present the overall five-year survival ranges from 40-85%, and ten-year survival from 40-60%.



# REFERENCES

- Pape U, -F, Perren A, Niederle B, Gross D, Gress T, Costa F, Arnold R, Denecke T, Plöckinger U, Salazar R, Grossman A: ENETS Consensus Guidelines for the Management of Patients with Neuroendocrine Neoplasms from the Jejunum-Ileum and the Appendix Including Goblet Cell Carcinomas. *Neuroendocrinology* 2012;95:135-156. doi: 10.1159/000335629
- Rubin de Celis Ferrari, Anezka C et al. “Carcinoid syndrome: update on the pathophysiology and treatment” *Clinics (Sao Paulo, Brazil)* vol. 73,suppl 1 e490s. 3 Aug. 2018, doi:10.6061/clinics/2018/e490s
- S. Mocellin, D. Nitti, Gastrointestinal carcinoid: epidemiological and survival evidence from a large population-based study ( $n = 25\,531$ ), *Annals of Oncology*, Volume 24, Issue 12, December 2013, Pages 3040–3044, <https://doi.org/10.1093/annonc/mdt377>
- Yao, JC et al. DOI: 10.1200/JCO.2007.15.4377 *Journal of Clinical Oncology* 26, no. 18 (June 20 2008) 3063-3072.

THANK YOU!