

Pulmonary Medicine

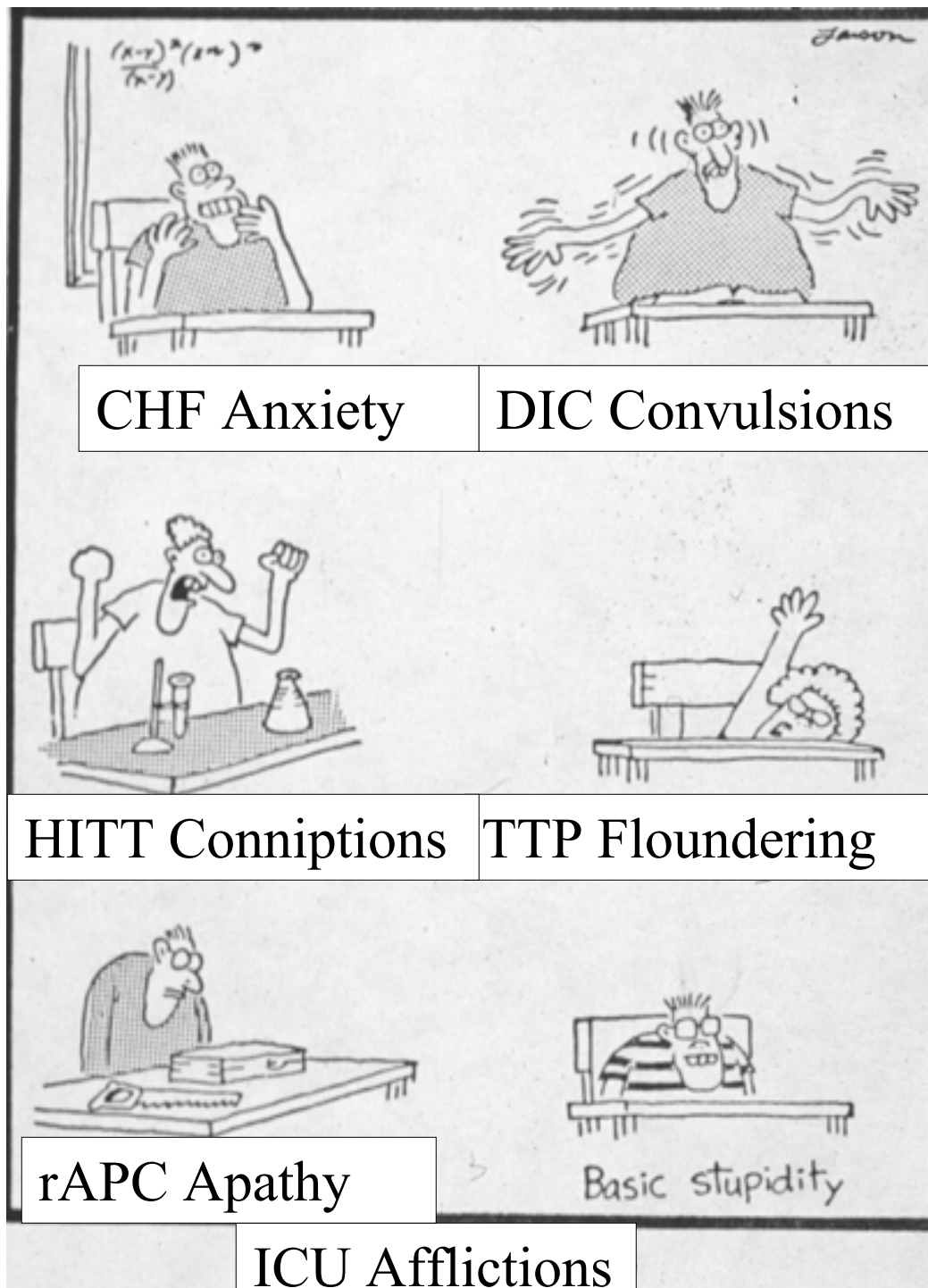
Grand Rounds

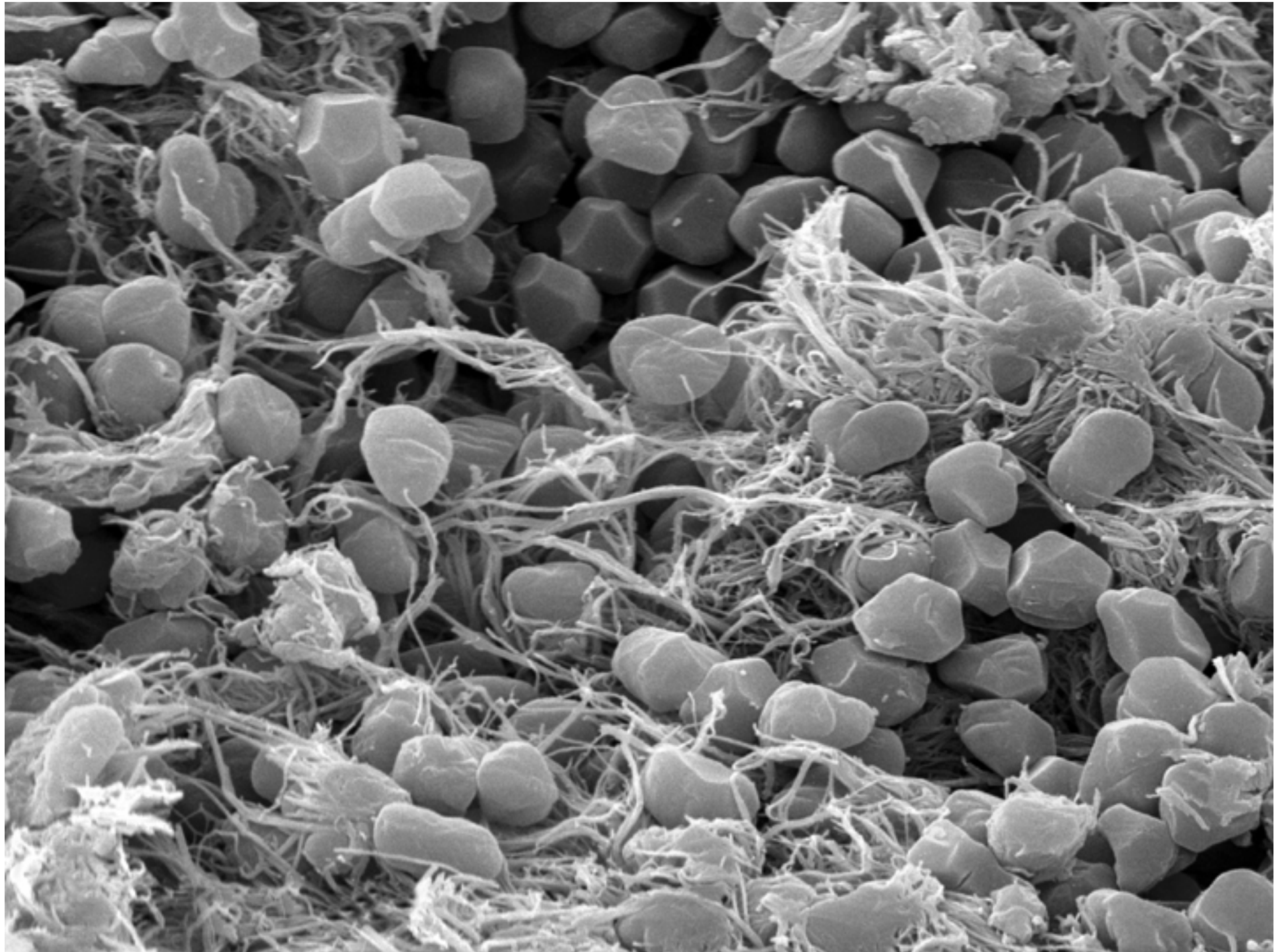
1/18/02

“Coagulopathies in Intensive  
Care Medicine”

Marcus E. Carr, Jr., MD, PhD

**My Hope Is To  
Relieve You of  
Several of These  
ICU Afflictions  
That May Be  
Brought On By a  
Variety of ICU  
Coagulopathies.**

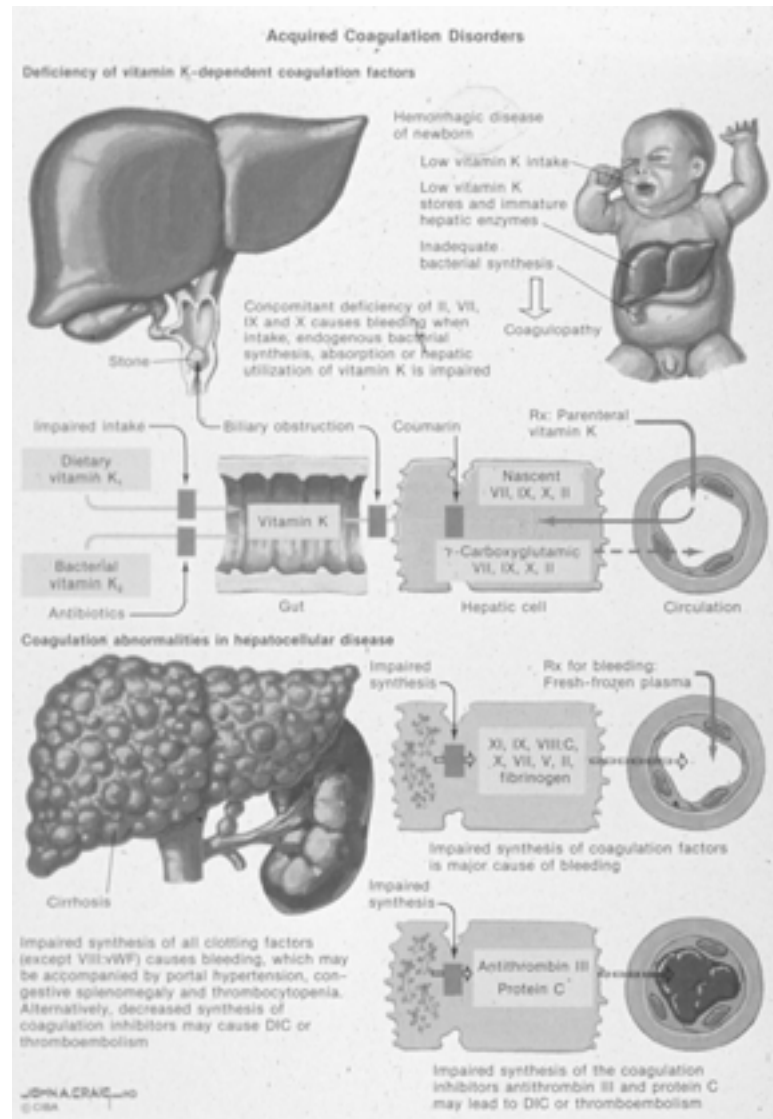




# “Coagulopathies in Intensive Care Medicine”

Coagulopathy  
of  
Hepatic Failure  
(CHF?)

# Coagulopathy of Liver Disease



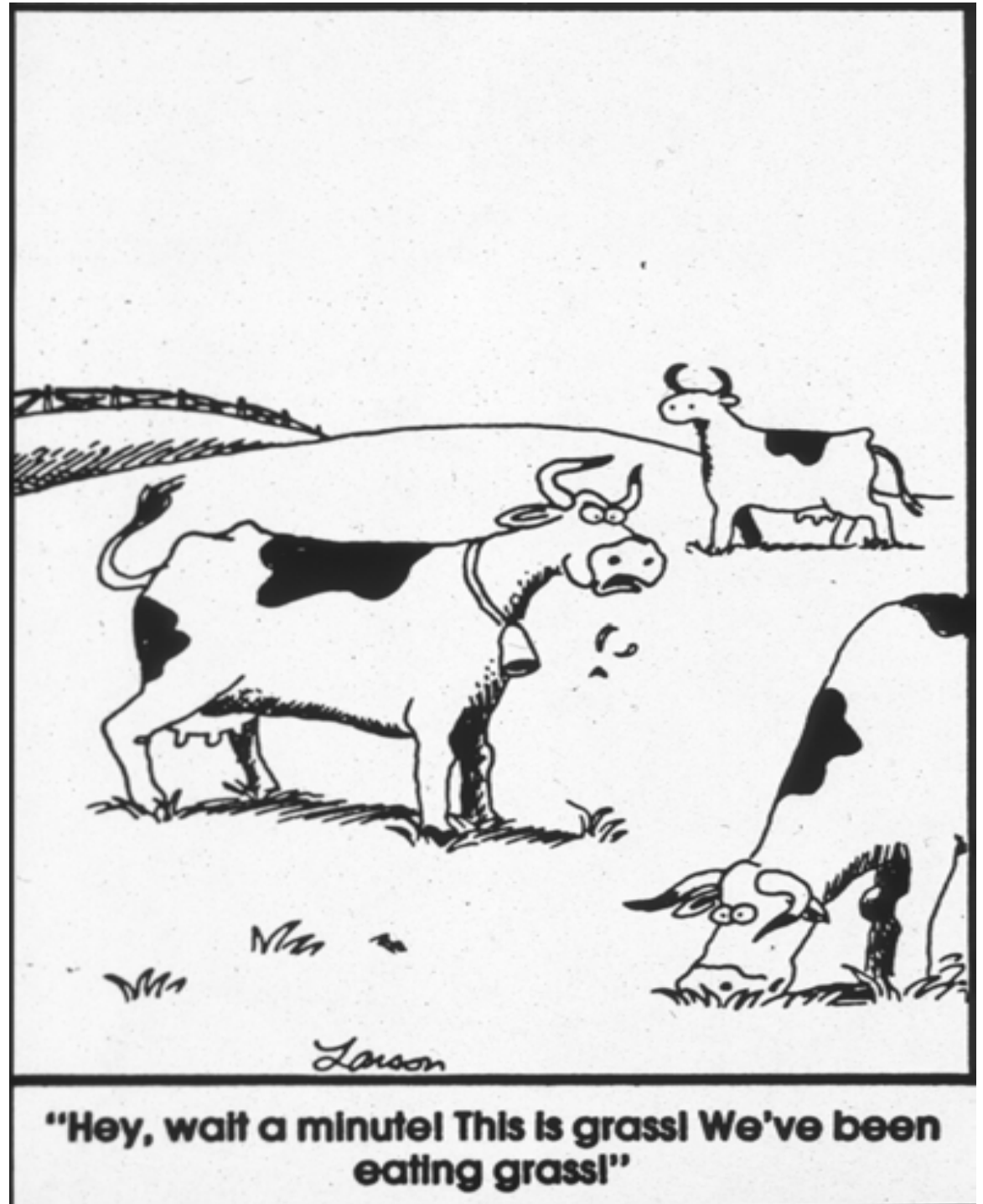
# Coagulopathy of Liver Disease - Case #1

- HPI - 44 yo Asian-American male with cirrhosis 2° to ETOH. Injured his left leg while riding bike on 12/18/01. Seen in ER on 12/23 with large thigh hematoma. Was admitted and underwent surgical drainage but continued to bleed. Rx - FFP&pRBC and transfer to MCV. Upon arrival PT=20.6, PTT=38, HgB=7.6, WBC=13.0, PLTs 46K. Since admission Rx 55 units of FFP, >25 units of PRBC and >20 units of PLTS.
- PMHx: Cirrhosis, hypothyroid, cardiomegaly, adrenal insufficiency.

# Coagulopathy of Liver Disease - Case #1

- Medications: Spironolactone, prednisone, levothyroid, prilosec, digitek
- Labs: WBC 11.1, HgB 9.4, PLT 42K, PTT 39, PT 31.2, INR 2.7, BILI 14.1, PT mix 11.6, Ammonia 29
- P Ex: Scleral icterous, Left thigh packed hematoma wound, Right Femoral cath - oozing, oriented x 2,
- CONSULT: HOW DO YOU STOP THE BLEEDING?

**Occasionally you will run across a patient who is being poisoned with warfarin, but the most common cause of Vit. K deficiency is ETOH and Hepatic Insufficiency.**



# Coagulopathy of Liver Disease - Case #1

- This patient was given 30 mg of IV Vitamin K over a three day period. The patients Factor VII level (despite >50 units of FFP) was <4%. He had no synthetic function. You cannot normalize the PT in such a patient with FFP infusion, and you should not try. An old prognostic test used to be: a Factor VII level <7% four hours after vitamin K was a “dead liver.” It’s still true.

**Make Sure  
the Therapy  
Is Not  
Worse Than  
the Disease -  
Use a  
Balanced  
Product -  
FFP.**



# Coagulopathy of Liver Disease - Case #1

- Don't forget the benefit of local hemostatics
  - Fibrin Glue - Tisseel (Bayer)
  - Topical Thrombin
  - Marine Bandage
  - Chitosan Bandage
- NovoSeven will stop bleeding if the patient has some clotting factors and fibrinogen - it truly is the “intravenous hemostat” but:
  - It is very expensive
  - There may be thrombotic risk
  - Effect is measured in minutes (q 2 hr dosing)

# Coagulopathy of Liver Disease

- Treatment of Bleeding should utilize the most appropriate product
- For superficial oozing, use a topical
- For diffuse bleeding use a balanced product
  - FFP
  - Plasma Exchange
- For very low fibrinogen use cryoprecipitate
- Avoid Plasma derived factor concentrates which may contain activated clotting factors
- Proline Deficiency should be treated with proline

# Coagulopathy of Liver Disease - Case #2

- HPI: 55 yo female with history of polycystic liver and kidney disease returned to clinic after recent admission for hepatic encephalopathy thought 2° to non-compliance complained of increased dizziness and was admitted. Exam revealed dilated chest veins and neck vascular engorgement. CT revealed portal vein and SMV thrombosis. Liver enzymes >3000 on admission consistent with acute hepatic insult. Patient is being considered for transplant.

# Coagulopathy of Liver Disease - Case #2

- PMHx: Polycystic liver disease, polycystic kidney disease, GERD, s/p hepatic lobe resection, s/p esophageal varices banding.
- MEDS: lactulose, flonase, Mg Gluconate, propranolol, estrogen, reglan, lasix.
- PEx: Intubated, some neck swelling, mild tachycardia, telangectasia, varicosities, unresponsive
- LABS: WBC 11.5, HgB 11, PLTs 124K, PT 16.6, PTT 29, FIB 278, ALT 1309, AST 3027.

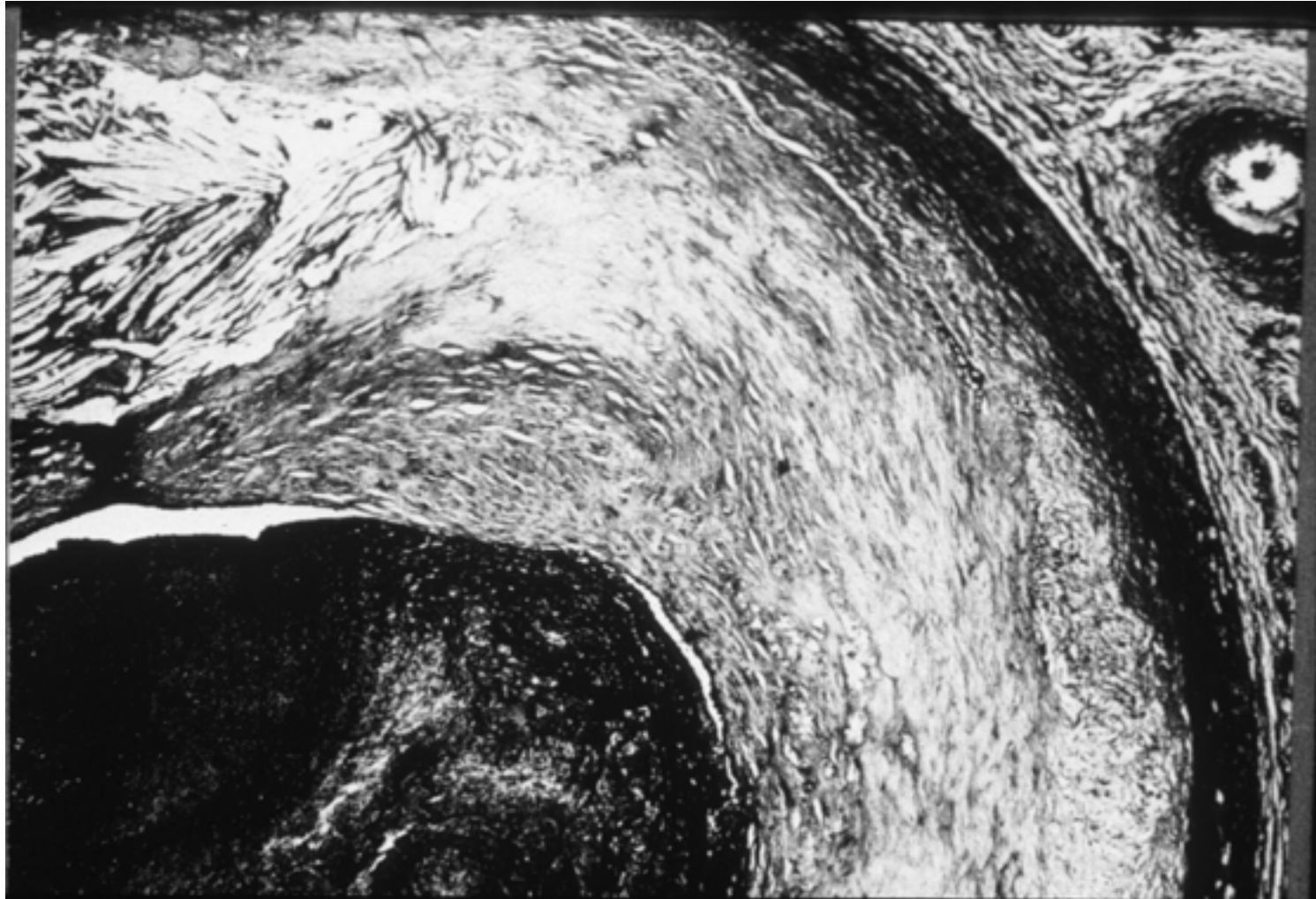
# Coagulopathy of Liver Disease - Case #2

- Doppler's confirmed clot in internal jugular vein.
- DX: End stage liver disease with coagulopathy and thrombosis.

# Coagulopathy of Liver Disease - Case #2

- Remember these patients can die a thrombotic death. This patient needed anticoagulation. There was no choice. It should be obvious that she is not anti-coagulated even though she has a “therapeutic INR.” The INR only reflects the coagulant side. This patient had very little in the way of anticoagulants.

# Failure of The Control Mechanisms Leads to Thrombosis



# Sitting on the Razor's Edge

