

Variceal Bleeding

from Theory to Practice



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CASE STUDY

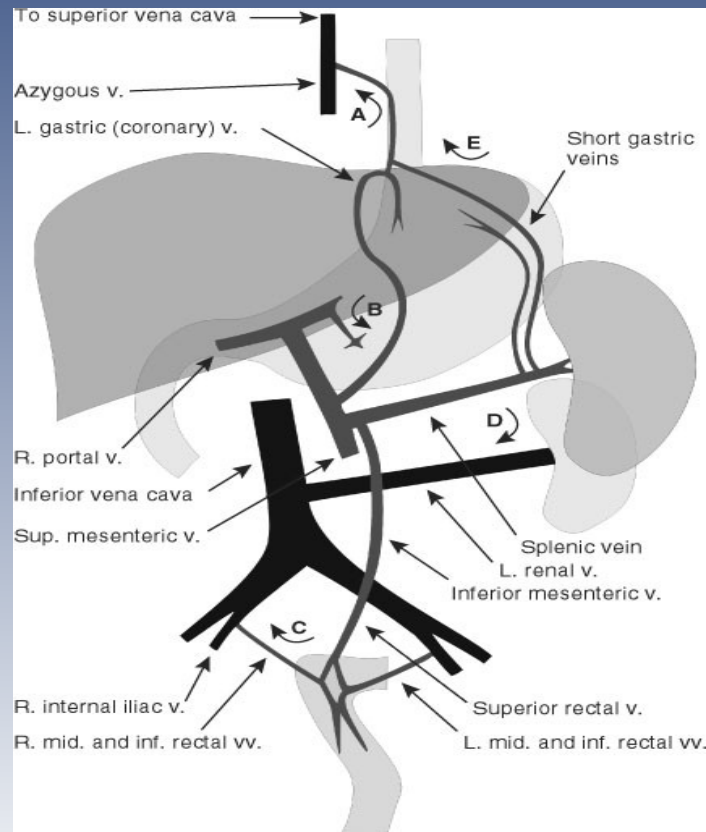
- ✓ JP.T. is a 47 year-old man who was referred to the liver clinic due to the finding of anti HCV Ab+. Recently, he felt mild fatigue.
- ✓ **PMH:** IVDU between age 20-25 years old.
Has been drinking 2 glasses of wine per day for many years.
- ✓ **Physical Exam:** No jaundice, but has palmar erythema & spider angioma. Unable to palpate the spleen. No ascites.



CASE STUDY

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- ✓ **PMH:** IVDU between age 20-25 years old.
Has been drinking 2 glasses of wine per day for many years.
- ✓ **Physical Exam:** No jaundice, but has palmar erythema & spider angioma. Unable to palpate the spleen. No ascites.
- ✓ **Lab:** ALT: 65 iu/L Albumin: 40 gr/L
 T. Bilirubin: 17 mmol/L PLT: 130,000
 PT: 1.3
- ✓ **Abdominal US:** suggested liver cirrhosis, normal spleen size
- ✓ **Liver biopsy :** liver cirrhosis
- ❖ **What would PUT his life at risk?**
- ❖ **What is the next step?**

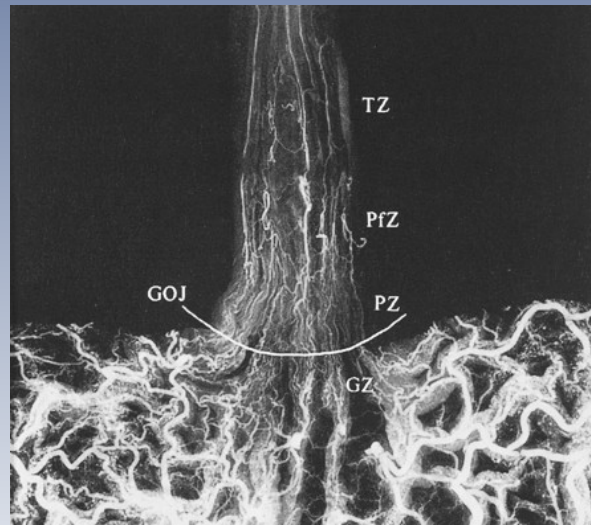
VARICEAL BLEEDING



DEFINITIONS

▶ **collateral vessels (pre-existing channels)**

- ✓ Portal blood is diverted to the systemic circulation bypassing the liver.



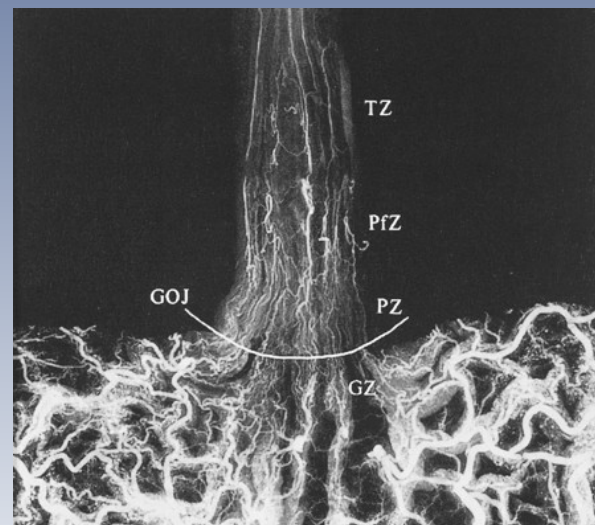
DEFINITIONS

▶ **collateral vessels (pre-existing channels)**

- ✓ Portal blood is diverted to the systemic circulation bypassing the liver.

▶ **gastro-esophageal collateral**

- ✓ The most important anastomotic system.



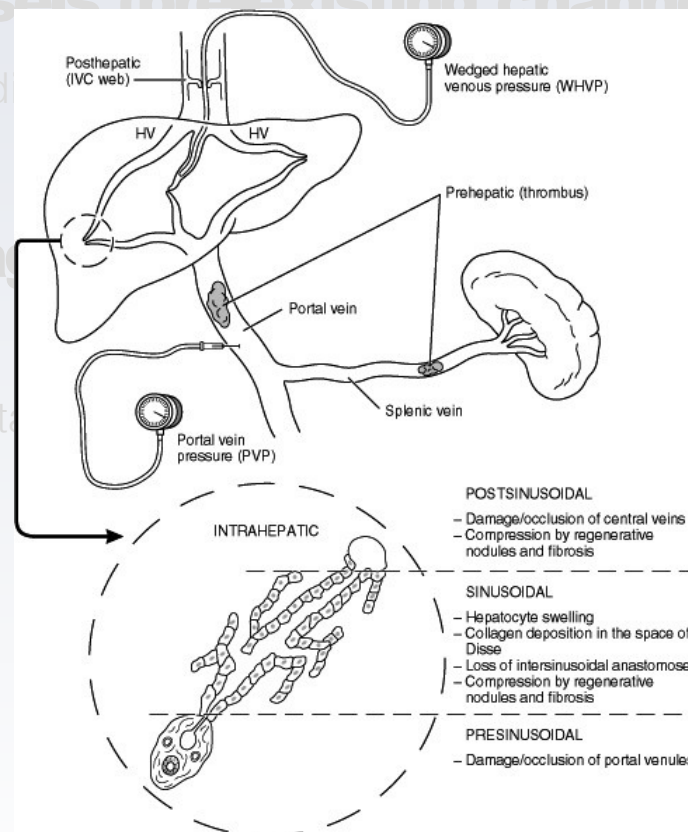
DEFINITIONS

▷ collateral vessels (pre-existing channels)

Portal blood is diverted to collateral vessels bypassing the liver.

▷ gastro-esophageal collateral

✓ The most important



DEFINITIONS

▶ collateral vessels (pre-existing channels)

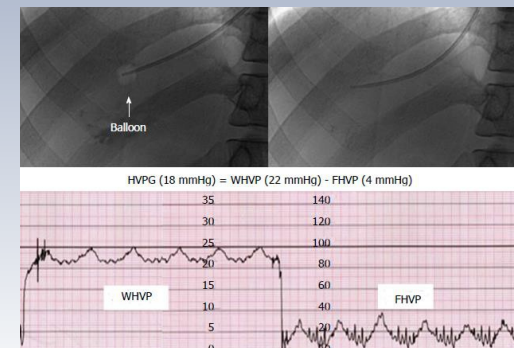
Portal blood is diverted to the systemic circulation bypassing the liver.

▶ gastro-esophageal collateral

- ✓ The most important anastomotic system.

▶ Portal Hypertension in chronic liver disease

- ✓ Normal Hepatic Venous Pressure Gradient (HVPG): > 5 mmHg.
- ✓ Mild portal HTN:
HVPG > 5 mmHg, but < 10 mmHg
- ✓ Clinical Significant Portal HTN (CSPH):
HVPG > 10 mmHg



PREVALENCE

▶ **Esophageal varices at presentation**

- ✓ 30-40% in compensated cirrhosis.
- ✓ 60-85% in decompensated cirrhosis.

30-40%

60-85%

Compensated Cirrhosis

Decompensated Cirrhosis

PREVALENCE

▶ **Esophageal varices at presentation**

- ✓ 30-40% in compensated cirrhosis.
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▶ **incidence of new varices**

- ✓ 8-23% every year.
- ✓ Varices progress from small to large at a rate of 10-12% per year.



PREVALENCE

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▶ incidence of new varices

- ✓ 8-23% every year.
- ✓ Varices progress from small to large at a rate of 10-12% per year.

▶ Risk of bleeding

- ✓ In 1st year after finding: 2% (no varices), 5% (small varices), 15% (large varices).
- ✓ **6 weeks mortality : 15-25%.**



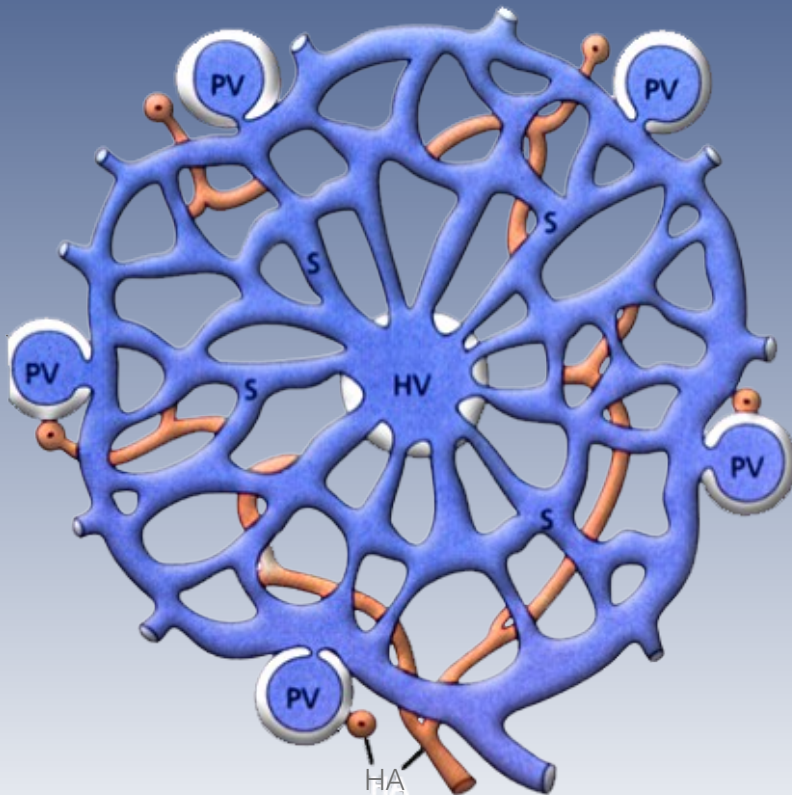
PATHOPHYSIOLOGY

Ohm's law:

$$\Delta P = Q \times R$$

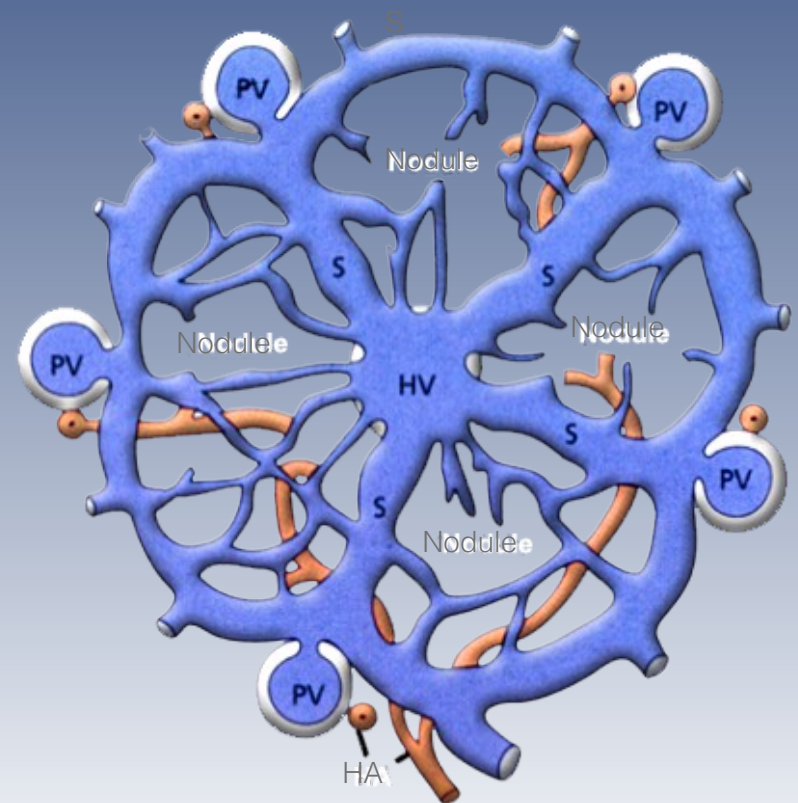
PATHOPHYSIOLOGY

Normal



Normal

Cirrhosis

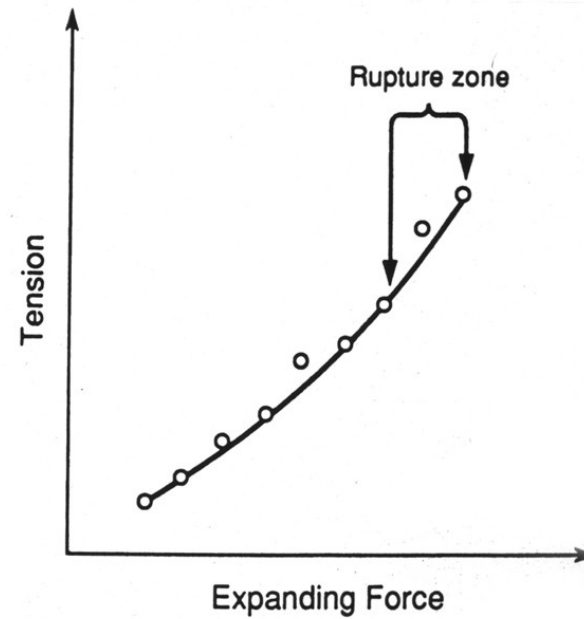
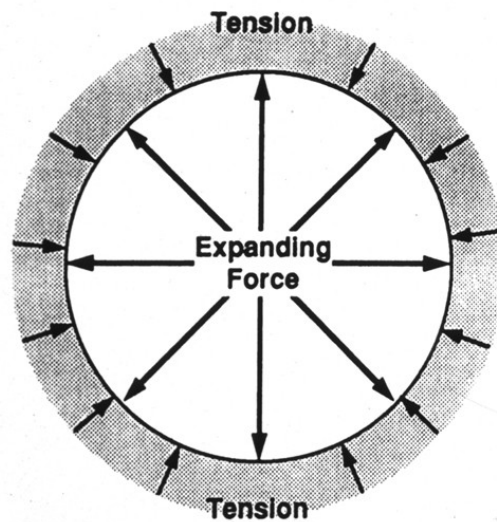


Cirrhosis

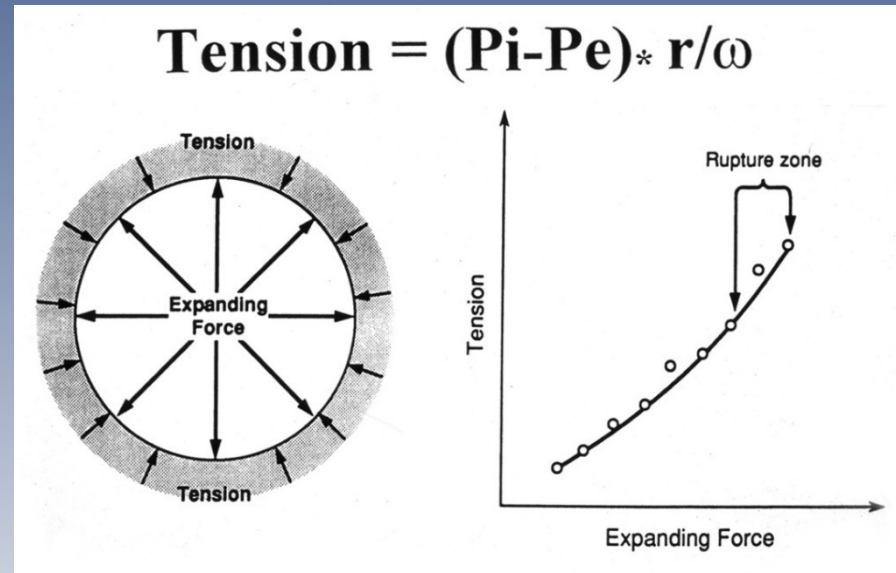
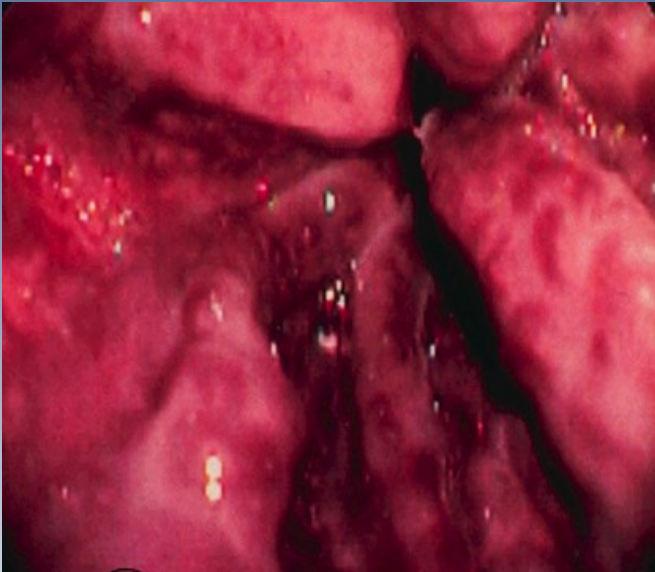


WHY DO VARICES RUPTURE?

$$\text{Tension} = (P_i - P_e) * r / \omega$$



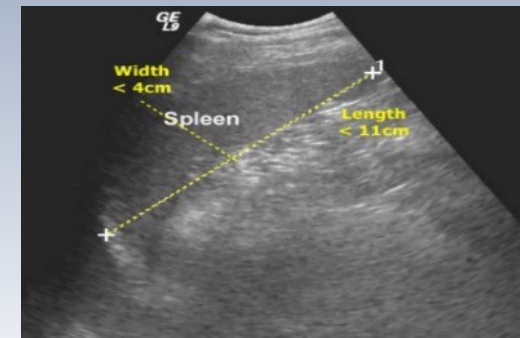
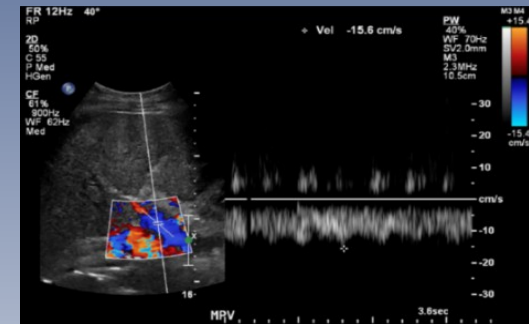
WHY DO VARICES RUPTURE?



DIAGNOSIS

▶ **NON-INVASIVE Tests in the Diagnosis of Clinical Significant Portal HTN (CSPH)**

- ✓ Abdominal US: portocollateral circulation or reversal flow within the portal system.



DIAGNOSIS

▶ NON-INVASIVE Tests in the Diagnosis of Clinical Significant Portal HTN (CSPH)

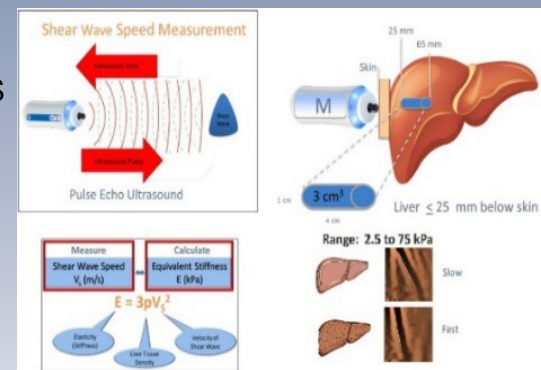
- ✓ Abdominal US: portocollateral circulation or reversal flow within the portal system.
- ✓ Fibroscan: Liver Stiffness > 20-25 kPa

Robic MA et al. J Hepatol 2011;55:1017

Liver stiffness (kPa) X Spleen size (cm) / Platelets count (number/mm³) Score **(LSPS)** > 2.06

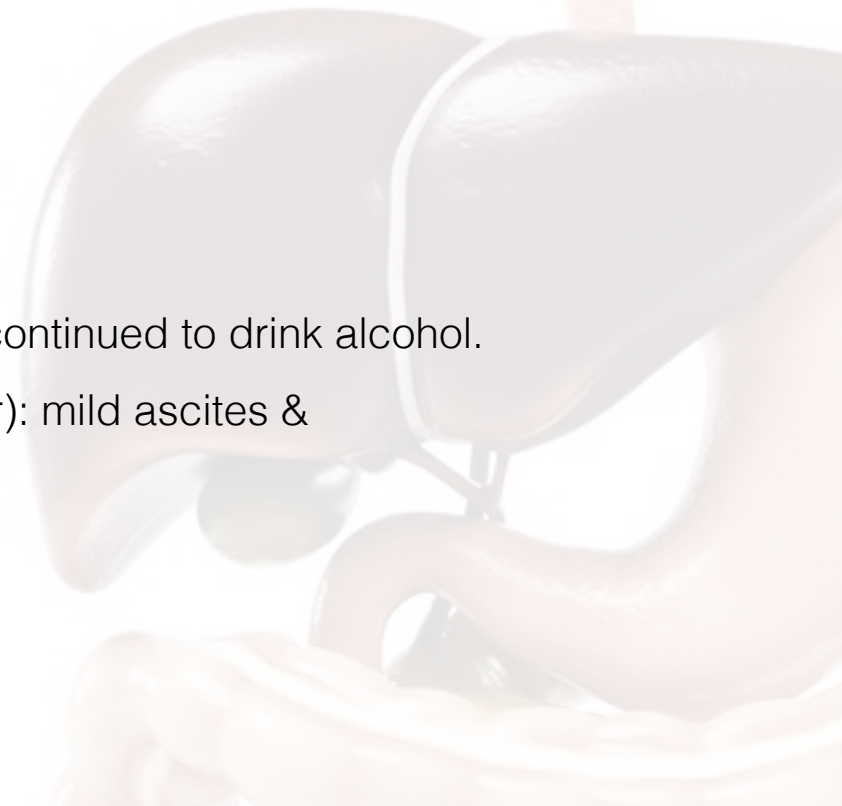
Berzigotti A et al. Gastroenrerology 2013;144:102

- ✓ Spleen Stiffness > 55 kPa - needs sonoelastographic methods.



CASE STUDY - CONTINUED

- ✓ JP.T is a 52 year-old man with liver cirrhosis due to HCV and alcohol.
 - Child-Pugh score: 6 (A)
 - Abdominal US: spleen size 13 cm
 - Fibroscan: 17 kPa
 - LSPS: 1.8
- ❖ What would be your next step?
- ✓ Patient refused Tx with PEG Inf. / RBV and continued to drink alcohol.
 - Repeat abdominal US (one year later): mild ascites & splenomegaly of 14.5cm
- ❖ What should you do?



PREVENTION

of **first variceal hemorrhage** (VH) in patients
with **medium/large esophageal varices**

▶ **NON SELECTIVE BETA BLOCKERS (NSBB)**

- ✓ NSBBs (propranolol, nadolol) have benefit in preventing first VH.

D'Amico G. et al. Semin Liver Dis 1999;19:475

- ✓ In case of intolerance, try switching to Carvedilol:

- Propranolol: 20-40mg bid; Max: 320mg/d; **Goals?**: HR 55-60 beats/min, BP < 90 mmHg
- Nadolol: 20-40mg qd; Max: 160mg/d; **Goals?**: as above
- Carvedilol: 6.25mg qd; Max: 12.5mg/d; **Goals?**: BP < 90mmHg

Garcia-Tsao G et al. Hepatology 2017;65:310-335



PREVENTION

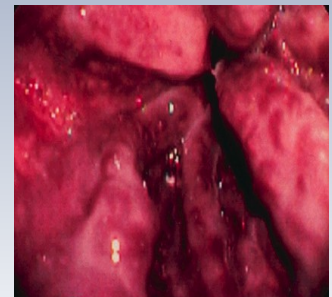
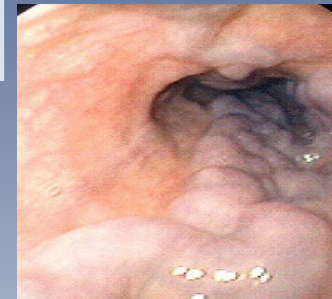
of **first variceal hemorrhage** (VH) in patients
with **medium/large esophageal varices**

▶ **NON SELECTIVE BETA BLOCKERS (NSBBs)**



Esophageal Varices Ligation (EVL)

- ✓ Esophageal Varices Ligation (EVL) may associate with lower rates of VH Compare to NSBBs but, no change in mortality.
Gluud LL et al. Cochrane Database Syst rev 2012;(8): CD005-44
- ✓ Combination of NSBBs & EVL is not recommended due to high SE?
Sarin SK et al. Am J Gastroenterol 2005;100:797



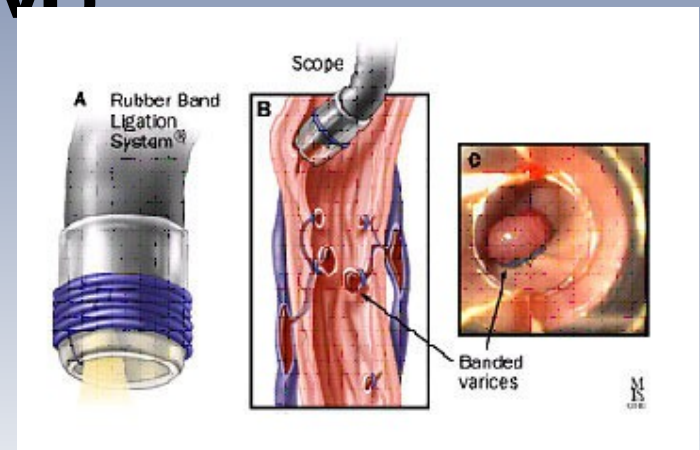
PREVENTION

of **first variceal hemorrhage** (VH) in patients
with **medium/large esophageal varices**

▷ **NON SELECTIVE BETA BLOCKERS**
(NSBBs)

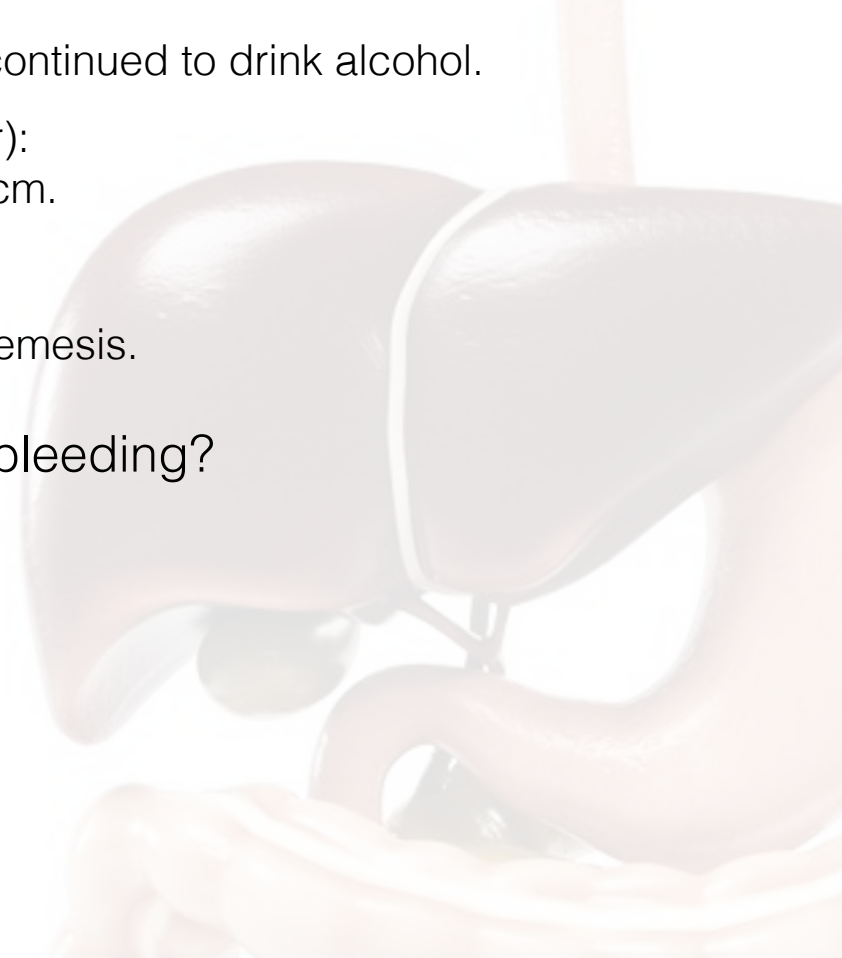


Esophageal Varices Ligation (EVL)



CASE STUDY - CONTINUED

- ✓ JP.T is a 53 year-old man with liver cirrhosis due to HCV and alcohol.
- ✓ Patient refused Tx with PEG Inf. / RBV and continued to drink alcohol.
 - Repeat abdominal US (one year later): mild ascites & splenomegaly of 14.5cm.
 - Took NSAIDs for low back pain
 - Presented to ER with massive hematemesis.
- ❖ What are the possible causes of the bleeding?
- ❖ What should you do?

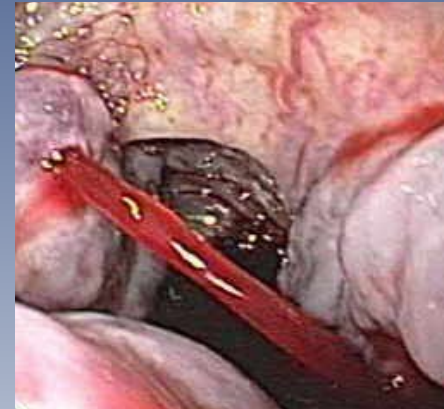


MANAGEMENT

Acute Esophageal Variceal Bleeding

▶ **Immediate goals**

- ✓ Control bleeding.
- ✓ Prevent early recurrence in 5 days.
- ✓ Prevent 6-weeks mortality.



MANAGEMENT

Acute Esophageal Variceal Bleeding

▶ Immediate goals

▶ **VOLUME RESTITUTION**

- ✓ “Restrictive” packed red blood cell (PRBC) transfusion strategy: start transfusion when Hb < 70 gr/L and maintain Hb 70-90 gr/L..
Villanueva C et al. N Engl J Med 2013;368:11-21
- ✓ There is no evidence that correction of coagulopathy has any benefit.



MANAGEMENT

Acute Esophageal Variceal Bleeding

▶ **Immediate goals**

▶ **VOLUME RESTITUTION**

▶ **Antibiotics**

- ✓ High risk to develop bacterial infections → antibiotics prophylaxis [IV ceftriaxone 1 gr/d for 5-7 days]

MANAGEMENT

Acute Esophageal Variceal Bleeding

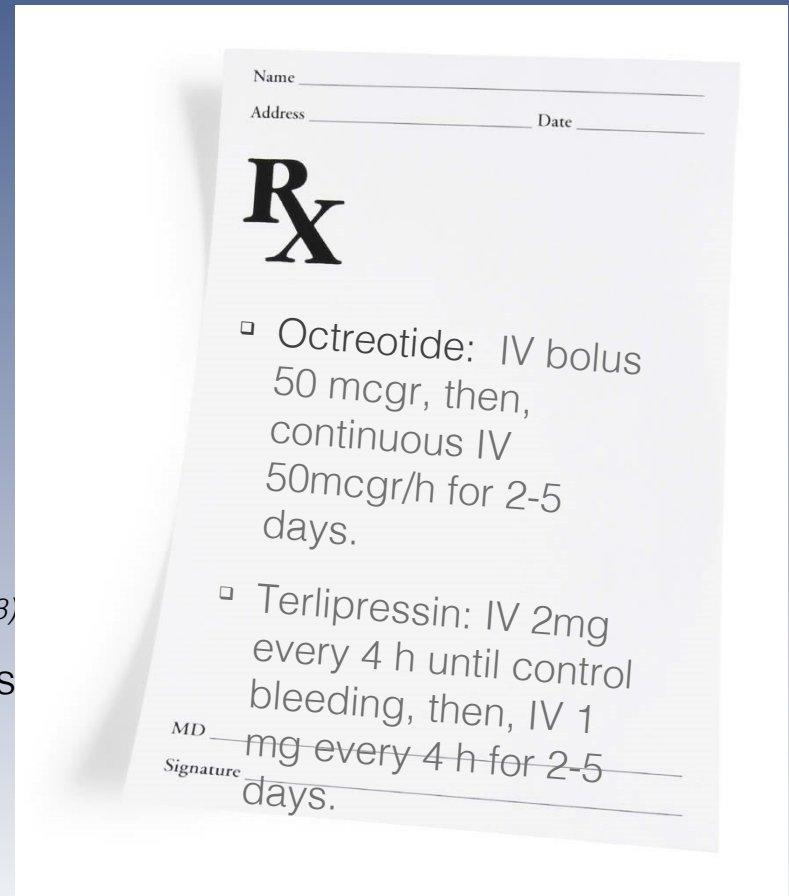
▶ **Immediate goals**

▶ **VOLUME RESTITUTION**

▶ **Antibiotics**

▶ **Vasoactive agents**

- ✓ Lower 7-days mortality.
Wells M et al. Aliment Pharmacol Ther 2012;35:1267-1278;
- ✓ Start as early as possible before gastro



MANAGEMENT

Acute Esophageal Variceal Bleeding

- ▶ **Immediate goals**
- ▶ **VOLUME RESTITUTION**
- ▶ **Antibiotics**
- ▶ **VASOACTIVE AGENTS**

- ▶ **Endoscopy**

- ✓ Within 12 hours after presentation.
- ✓ EVL for esophageal bleeding- active bleeding or sign of recent bleeding.



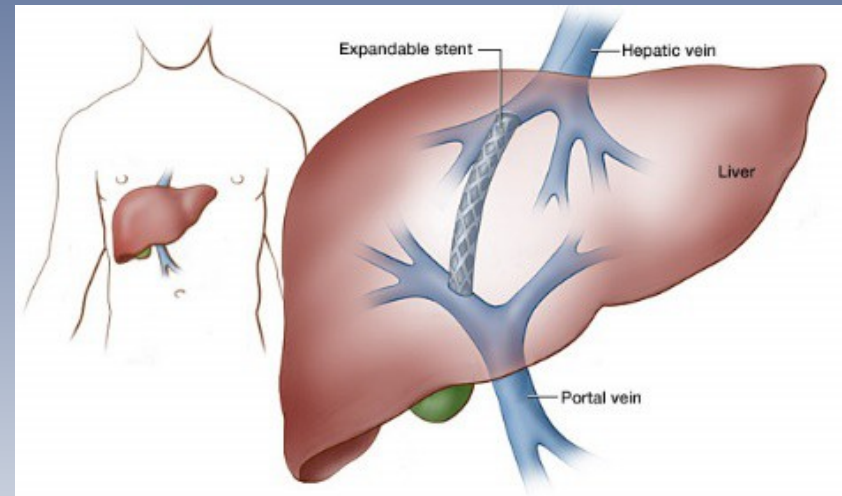
MANAGEMENT

Acute Esophageal Variceal Bleeding

- ▷ **Immediate goals**
- ▷ **VOLUME RESTITUTION**
- ▷ **Antibiotics**
- ▷ **VASOACTIVE AGENTS**
- ▷ **Endoscopy**

▶ **TIPS**

- ✓ For patients with early rebleeding who failed vasoactive agents and/or EVL or high-risk patients (Child-Pugh B/C & active bleeding during endoscopy)



AFTER RECOVERY

Patients who recovered from an episode of acute esophageal varices bleeding

▶ **RISK**

- ✓ Risk of Rebleeding: 60% in the first year.
- ✓ Mortality: up to 33%.

AFTER RECOVERY

Patients who recovered from an episode of acute esophageal varices bleeding

▷ RISK

▷ **NSBB + EVL** (for eradication)

- ✓ Combination of **NSBB + EVL** is first line therapy.
- ✓ Propranolol 20-40 mg bid;
Max: 320mg/d, *with ascites*- 160mg/d.
- ✓ Nadolol 20-40mg qd;
Max: 160mg/d, *with ascites*-80mg/d.



AFTER RECOVERY

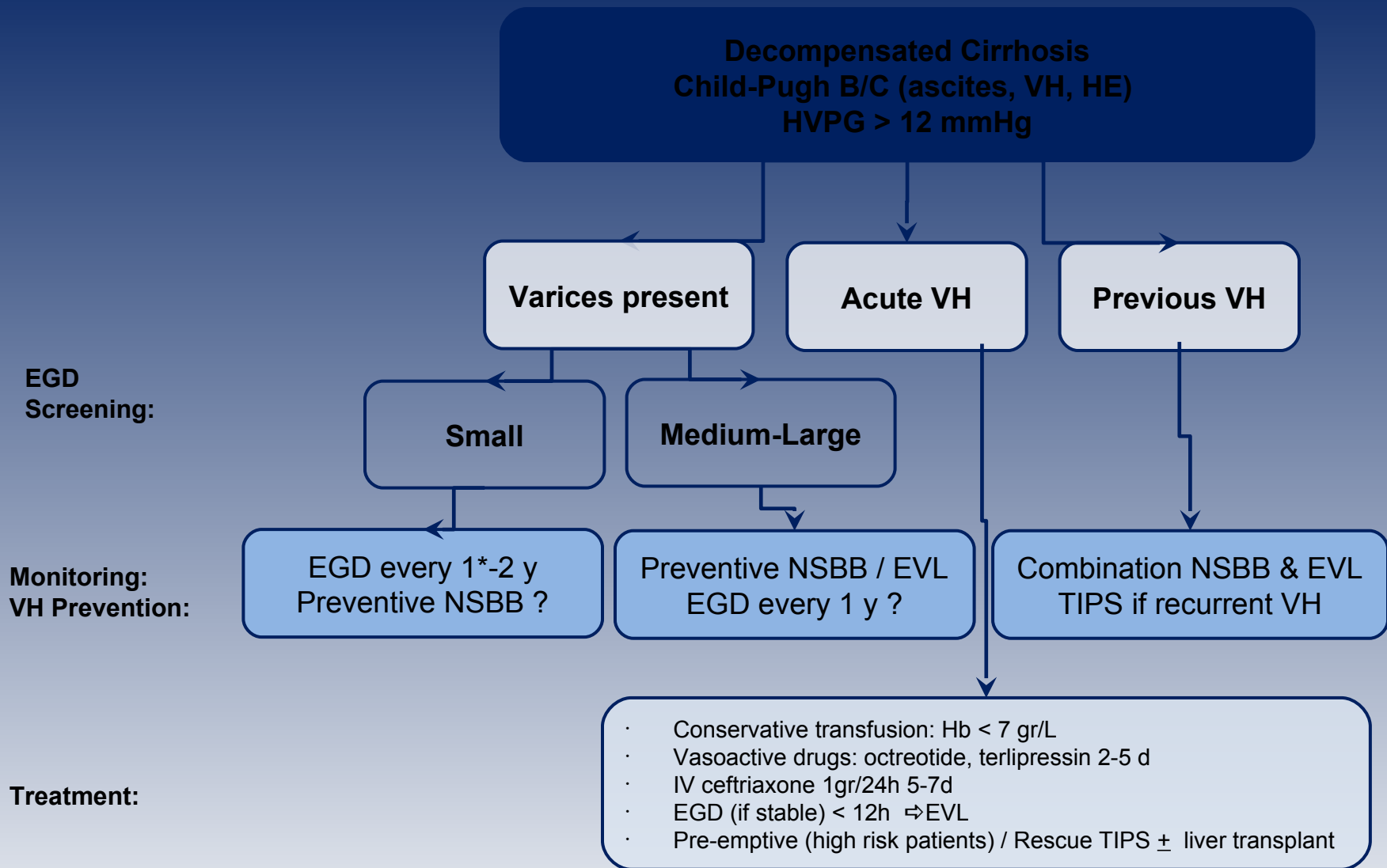
Patients who recovered from an episode of acute esophageal varices bleeding

▶ **RISK**

▶ **NSBB + EVL** (for eradication)

▶ **TIPS**

- ✓ Recommended rescue therapy during acute phase and recurrent bleeding despite combination therapy.
- ✓ Consider referral for liver transplant.



*Active disease

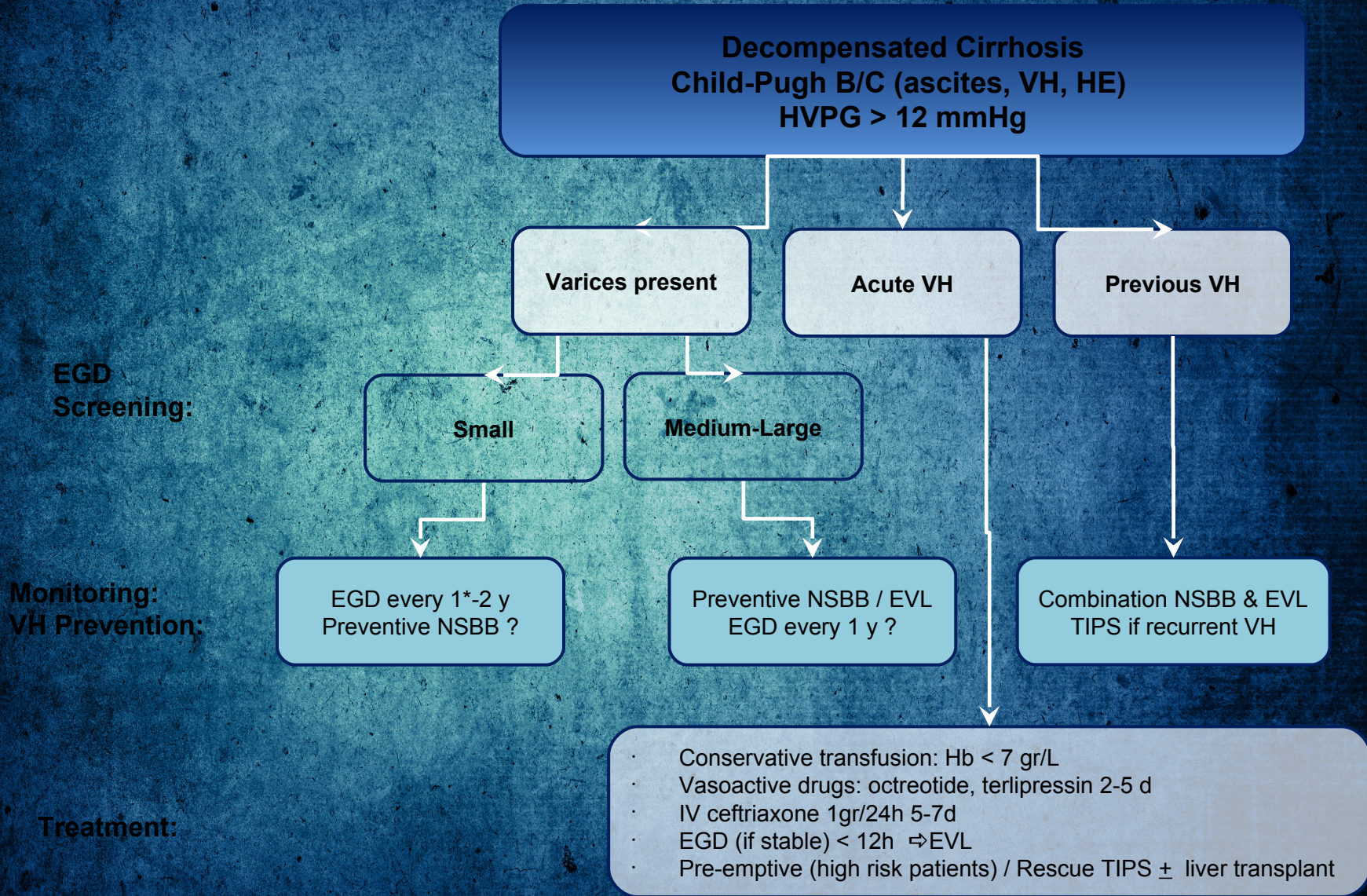
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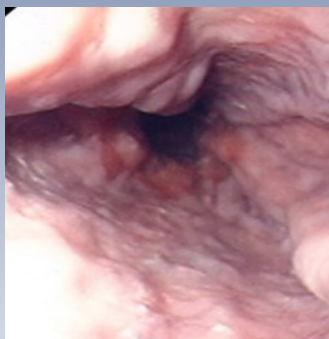
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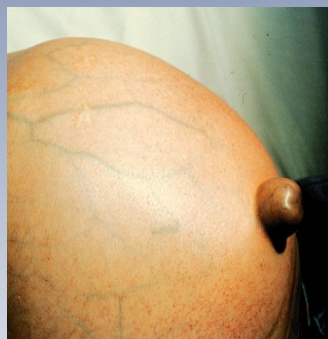
DEFINITIONS

▶ **Decompensated cirrhosis**

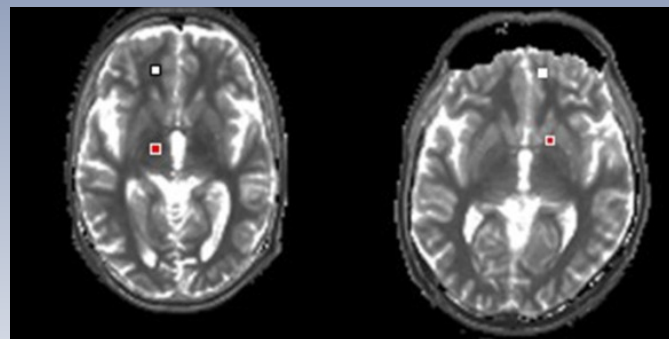
- ✓ Clinical evident of decompensated events; ascites, variceal hemorrhage and hepatic encephalopathy.
- ✓ Child-Pugh score – B/C & median survival 1.8 years.



**Esophageal
Varices**



Ascites



Encephalopathy