

Understanding liver cirrhosis and its complications

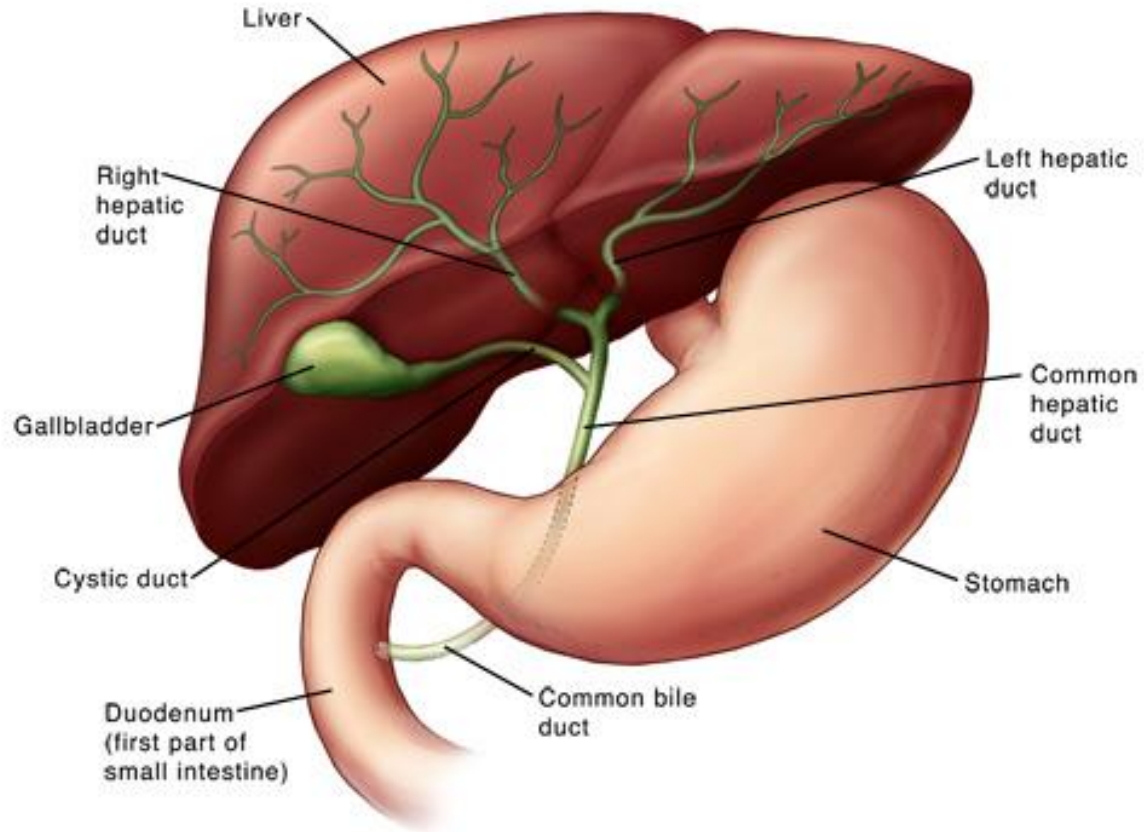
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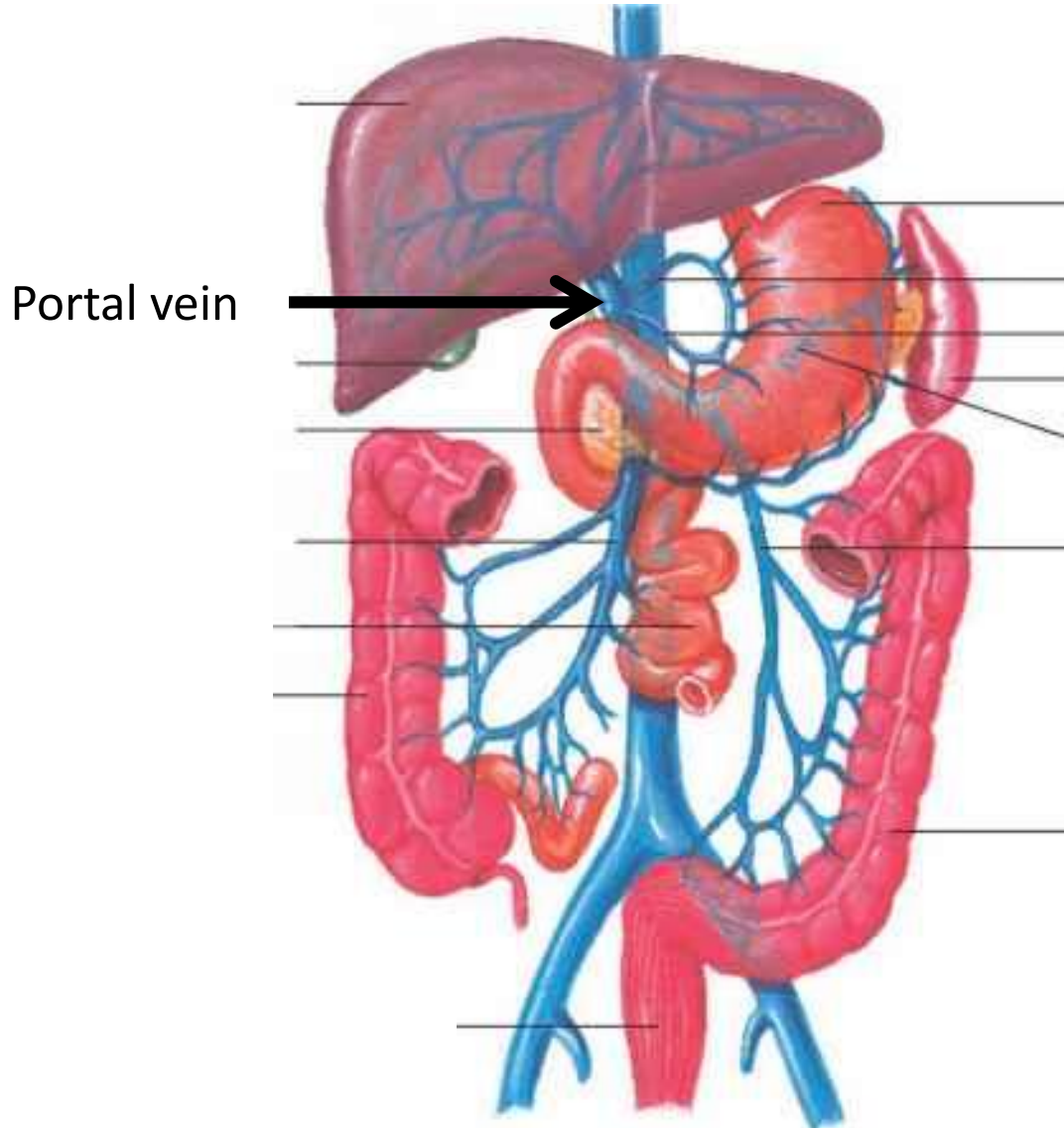
Agenda

- Complications of cirrhosis
 - Loss of functional liver tissue
 - Portal hypertension
 - Hepatocellular carcinoma
- Anatomy and normal function of the liver
- HCV-induced inflammation and fibrogenesis

Biliary system



Liver blood flow

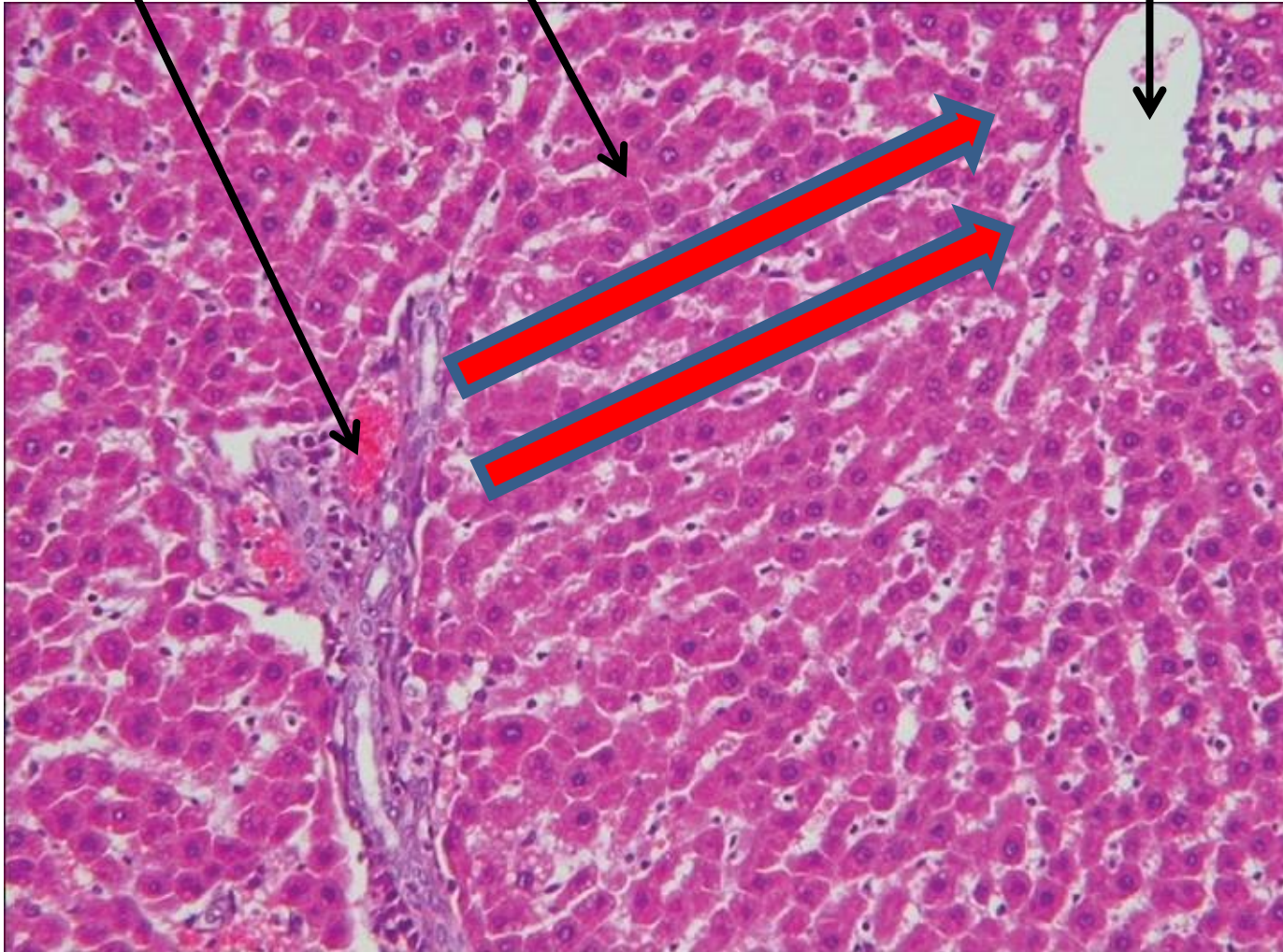


Normal liver tissue

Portal vein

Cords of hepatocytes

Central vein



The function of the liver.....

- Detoxification and metabolism

The function of the liver.....

- Detoxification and metabolism
- Energy metabolism

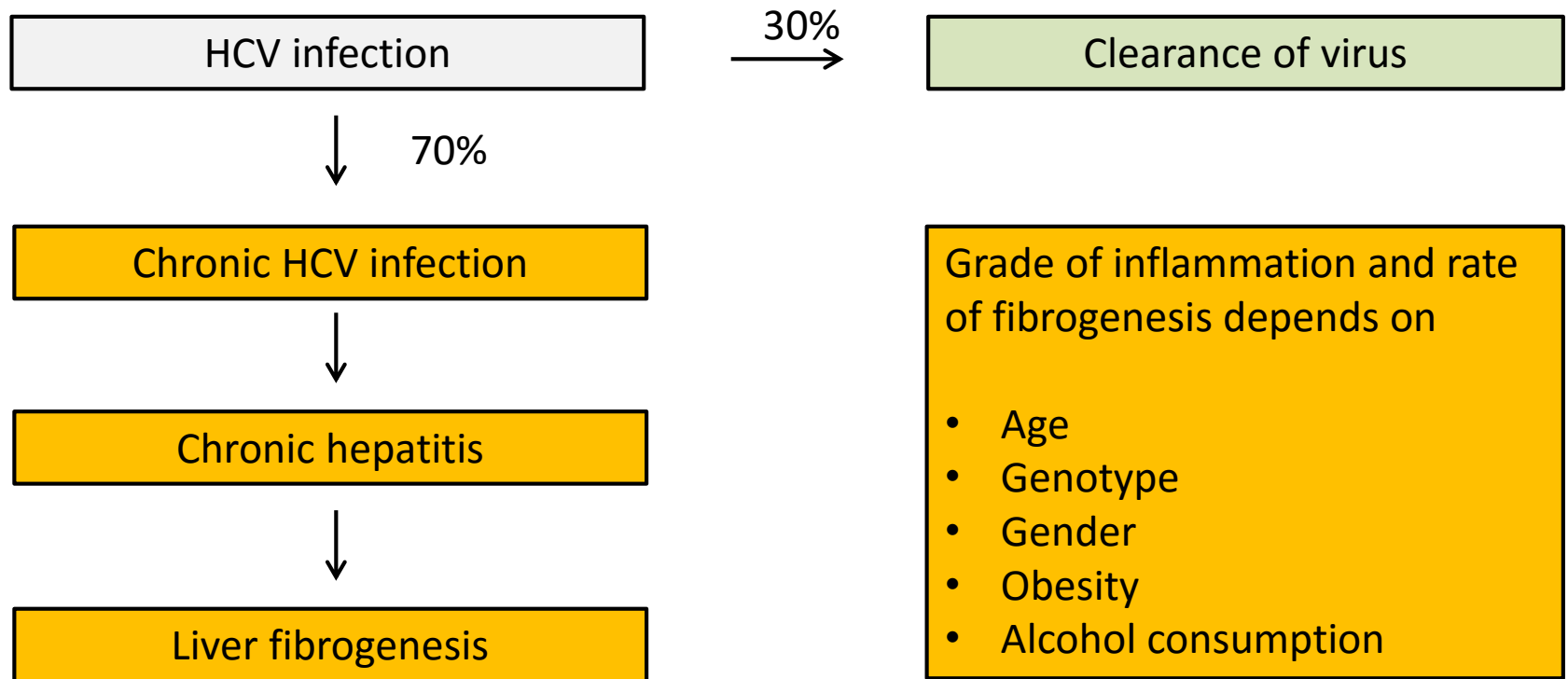
The function of the liver.....

- Detoxification and metabolism
- Energy metabolism
- **Synthesis**
 - Proteins
 - Lipids
 - Carbohydrates
 - Bile
 - Cholesterol

The function of the liver.....

- Detoxification and metabolism
- Energy metabolism
- Synthesis
 - Proteins
 - Lipids
 - Carbohydrates
 - Bile
 - Cholesterol
- Part of the immune system

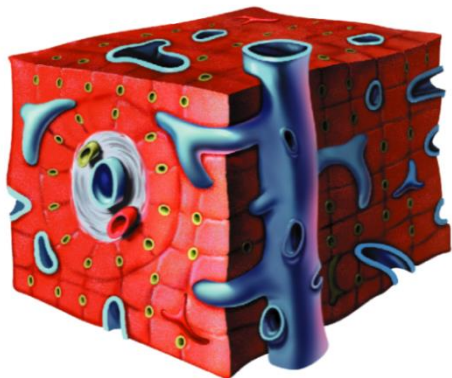
Consequence of HCV infection



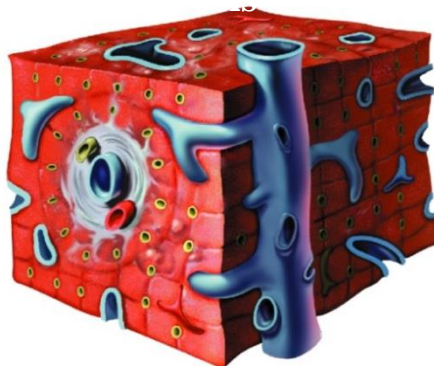
30% develop cirrhosis within 30 years

Stages of fibrosis in HCV

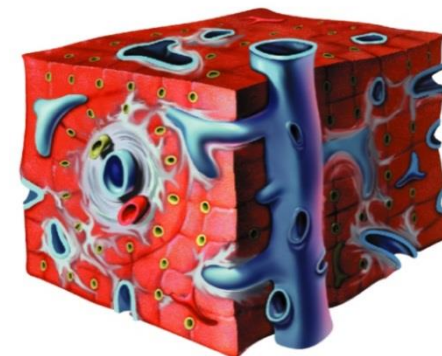
Stage 0



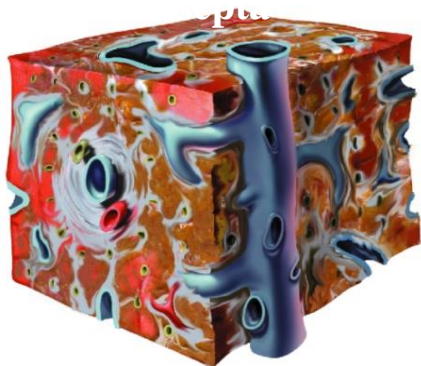
Stage 1



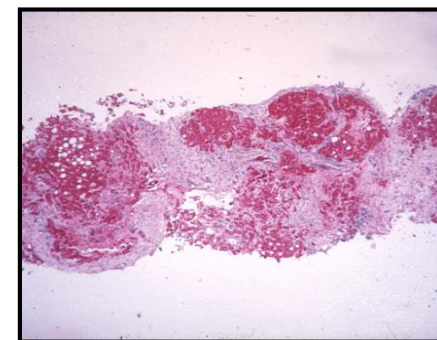
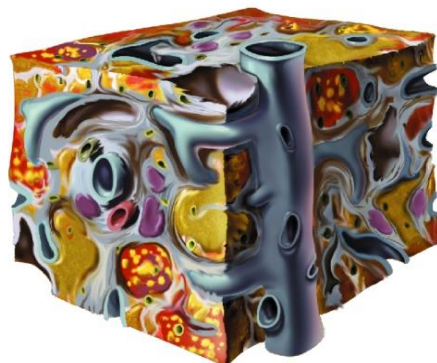
Stage 2



Stage 3



Stage 4 = liver cirrhosis



Agenda

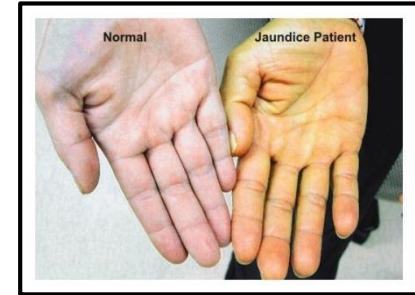
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 - Loss of functional liver tissue
 - Circulatory changes - portal hypertension
 - Hepatocellular carcinoma

Agenda

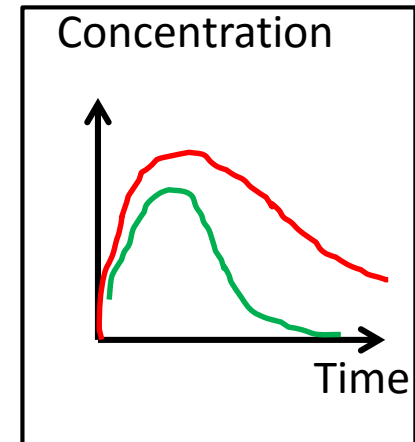
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Disturbed detoxification and metabolism

– Accumulation of bilirubin → icterus/jaundice



– Altered pharmacokinetics → unpredictable responses to medications



– Accumulation of ammonium → Hepatic encephalopathy

Hepatic encephalopathy (HE)

- Neuropsychiatric abnormalities observed in cirrhosis
- HE may be acute or chronic

	West Haven classification
Grade 1	Trivial lack of awareness, euphoria.....
Grade 2	Disorientation for time, personality change.....
Grade 3	Somnolence, gross disorientation.....
Grade 4	Coma

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- Minimal HE is defined as less than grade 1.
 - Common (50-80%)
 - May interfere with daily life
- Drug-induced personality change or HE?

Disturbed energy metabolism

- Diabetes mellitus 50-70%
- Muscle wasting
- Reduced tolerance for fasting
 - Cirrhosis: Protein breakdown after 12 hours
 - Normal: Protein breakdown after 72 hours



Reduced synthetic function

- Coagulation factors ↓ → increased risk of bleeding
- Anti- coagulation factors ↓ → increased risk of thrombosis (x 2)



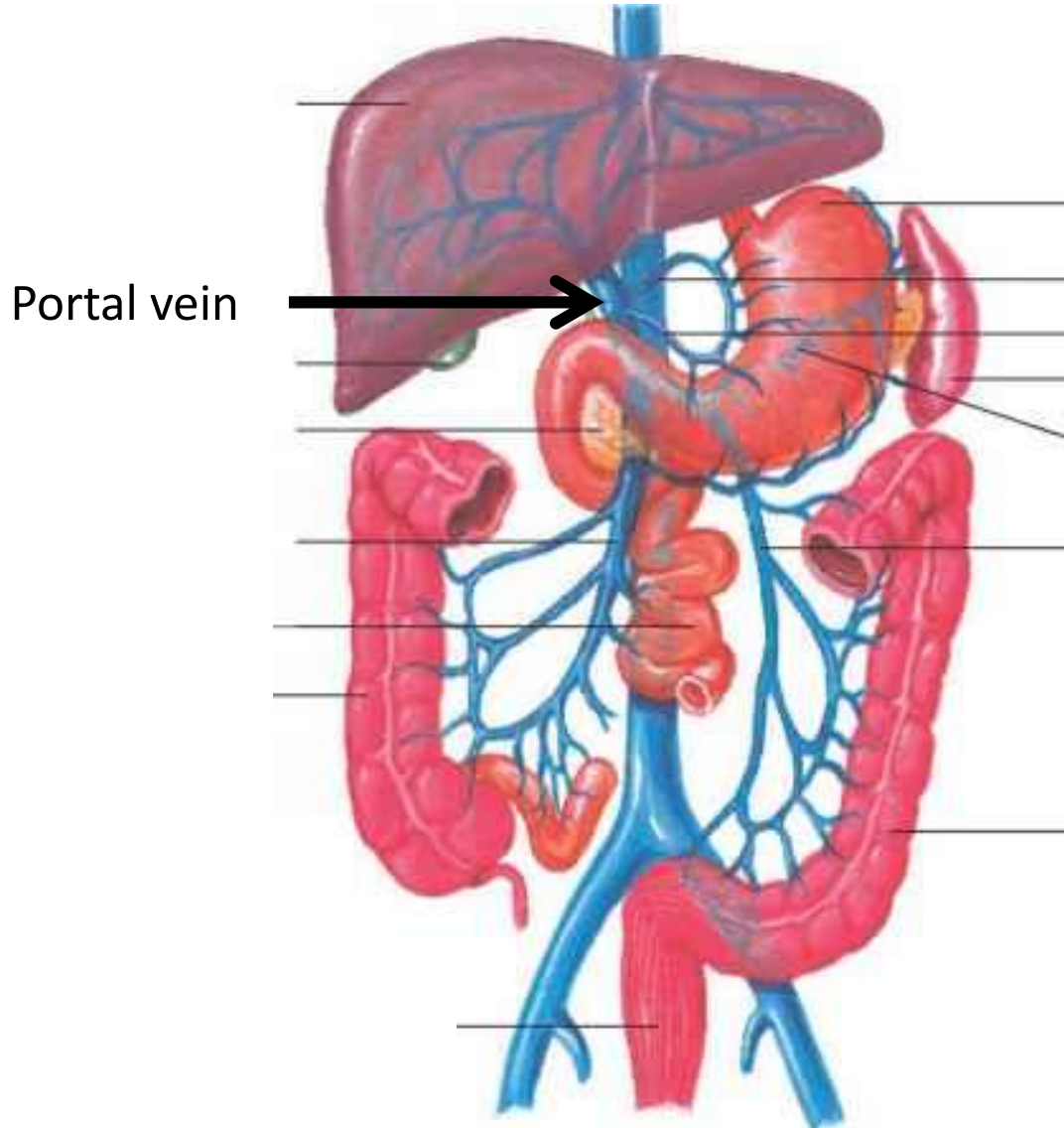
Reduced immune function

- Increased risk of sepsis (x 2)
- When sepsis occurs → increased mortality (x 2)
- Infections are a main cause of death in cirrhosis

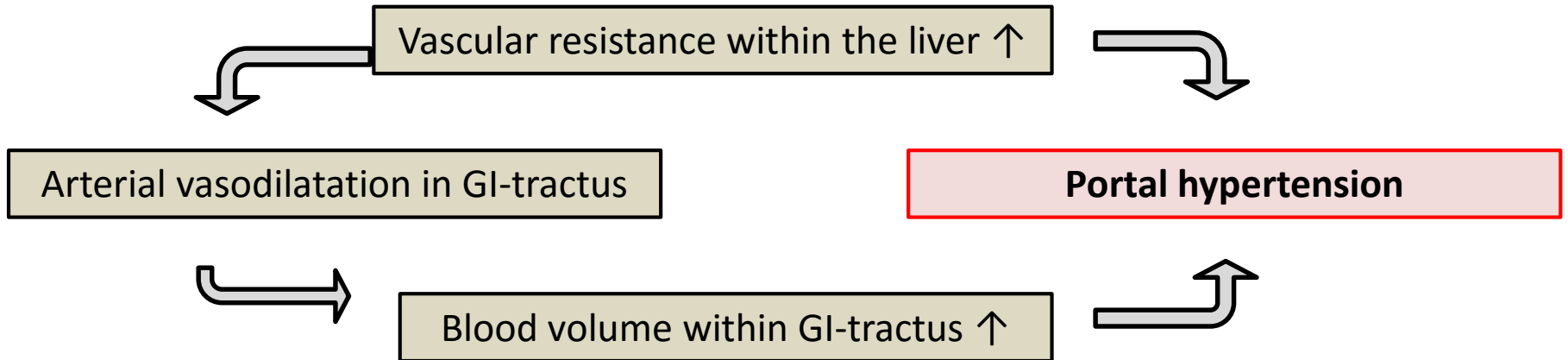
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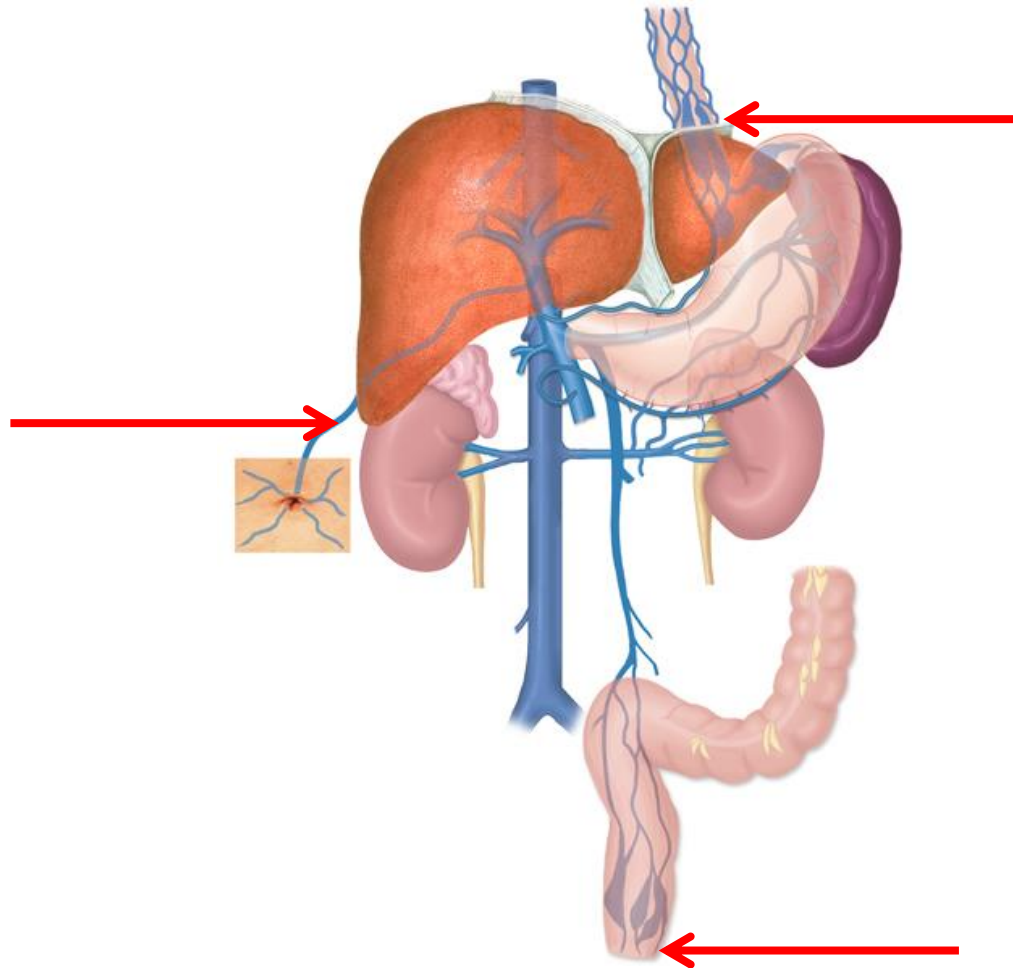
Liver blood flow



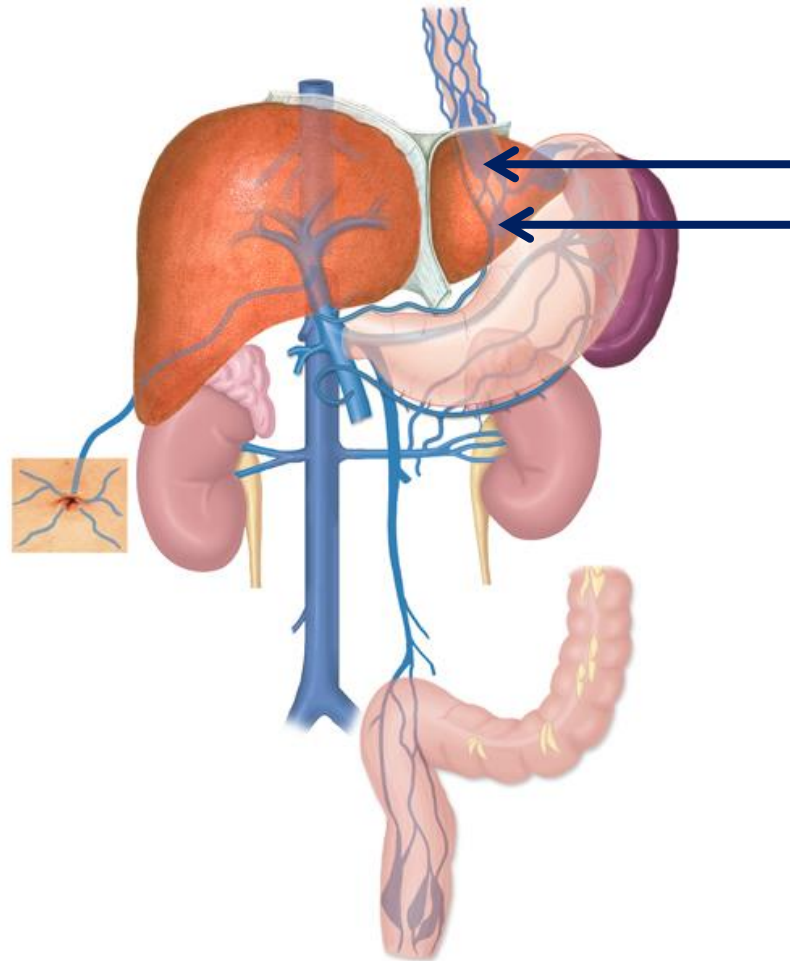
Circulatory changes



Porto-systemic shunting

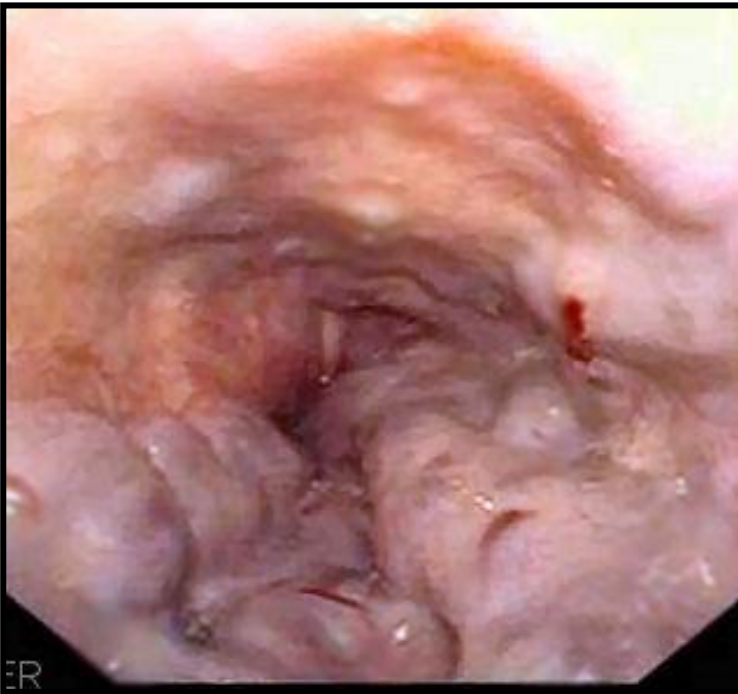


Development of varices

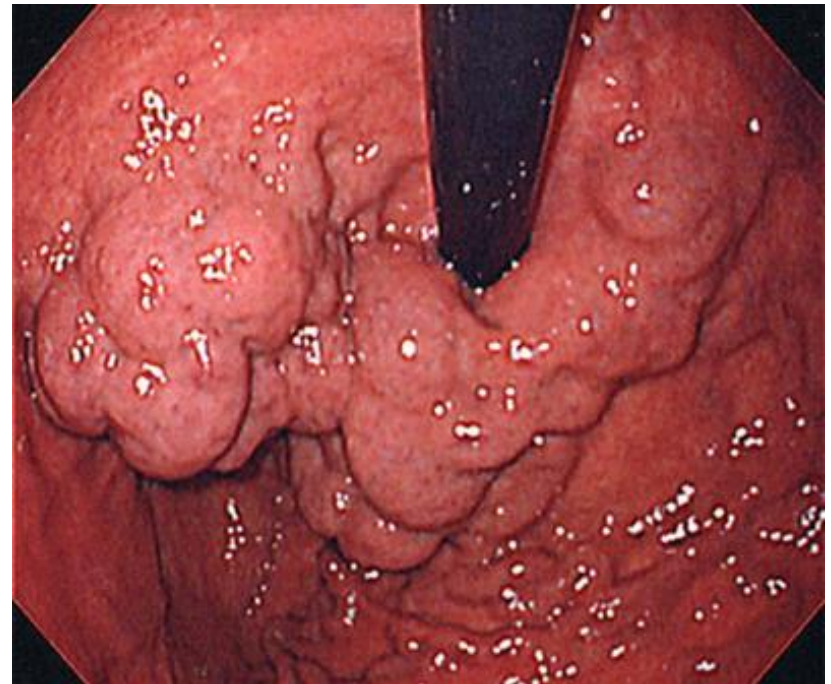


Development of varices

Oesophagus



Stomach



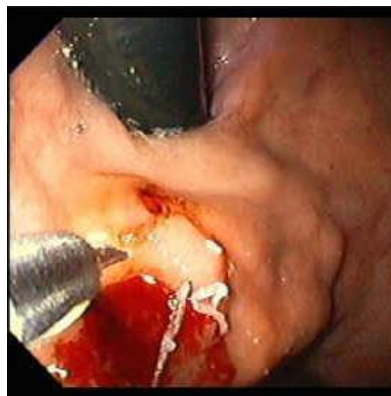
Varices

- Prevalence among cirrhotics: 40-80%
- Annual risk of bleeding: 5-15%
- Bleeding episodes imply high risk of complications and significant mortality
- Therapeutic options:
 - Medications (Nonselective betablockers....)
 - Endoscopic procedures
 - Radiological procedures

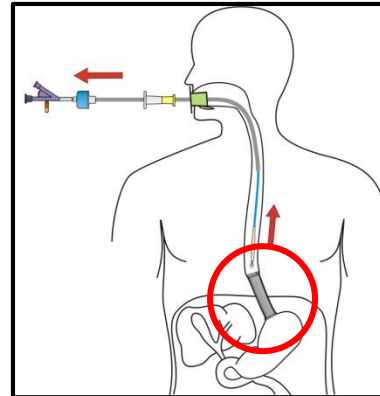
Endoscopic
band ligation



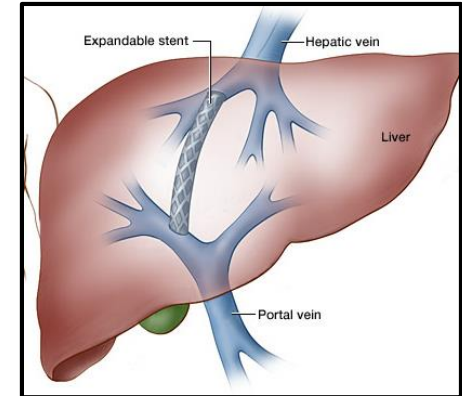
Endoscopic inj.
of histoacryl



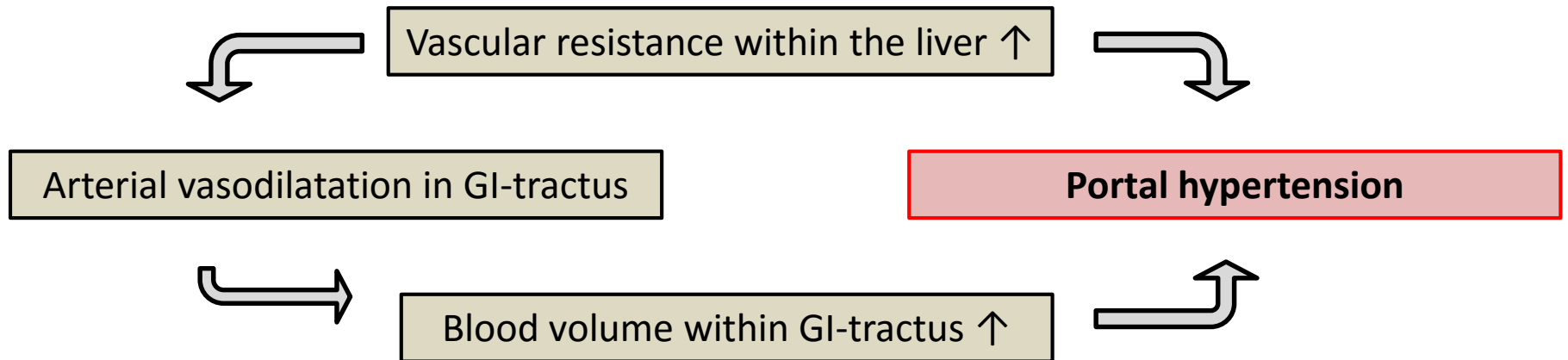
Endoscopic stent
placement



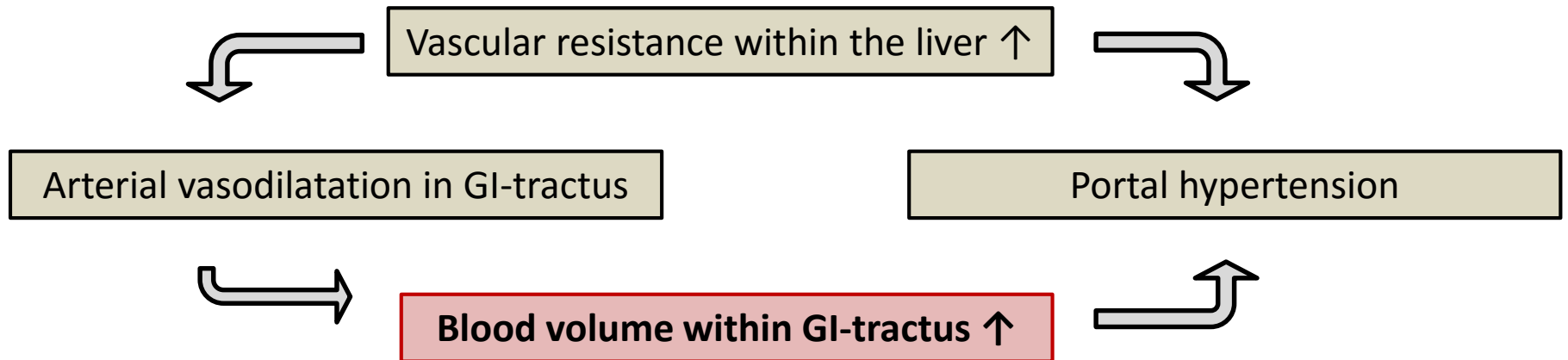
TIPS
(intrahepatic stent)



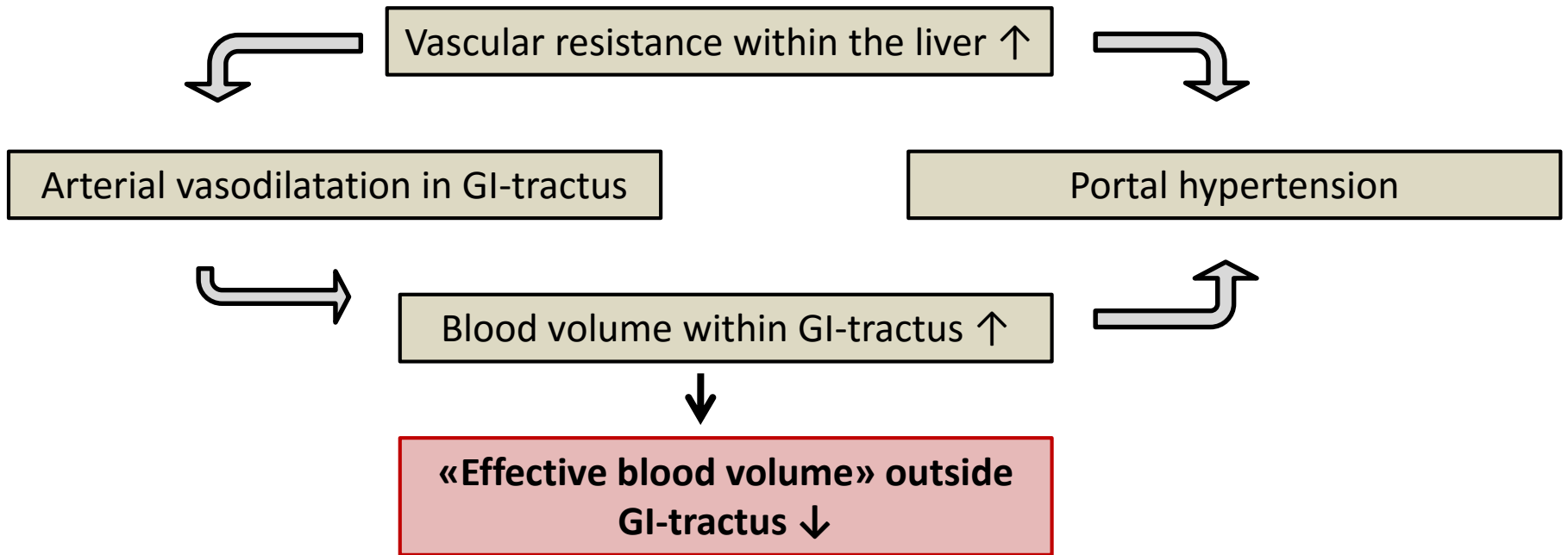
Circulatory changes



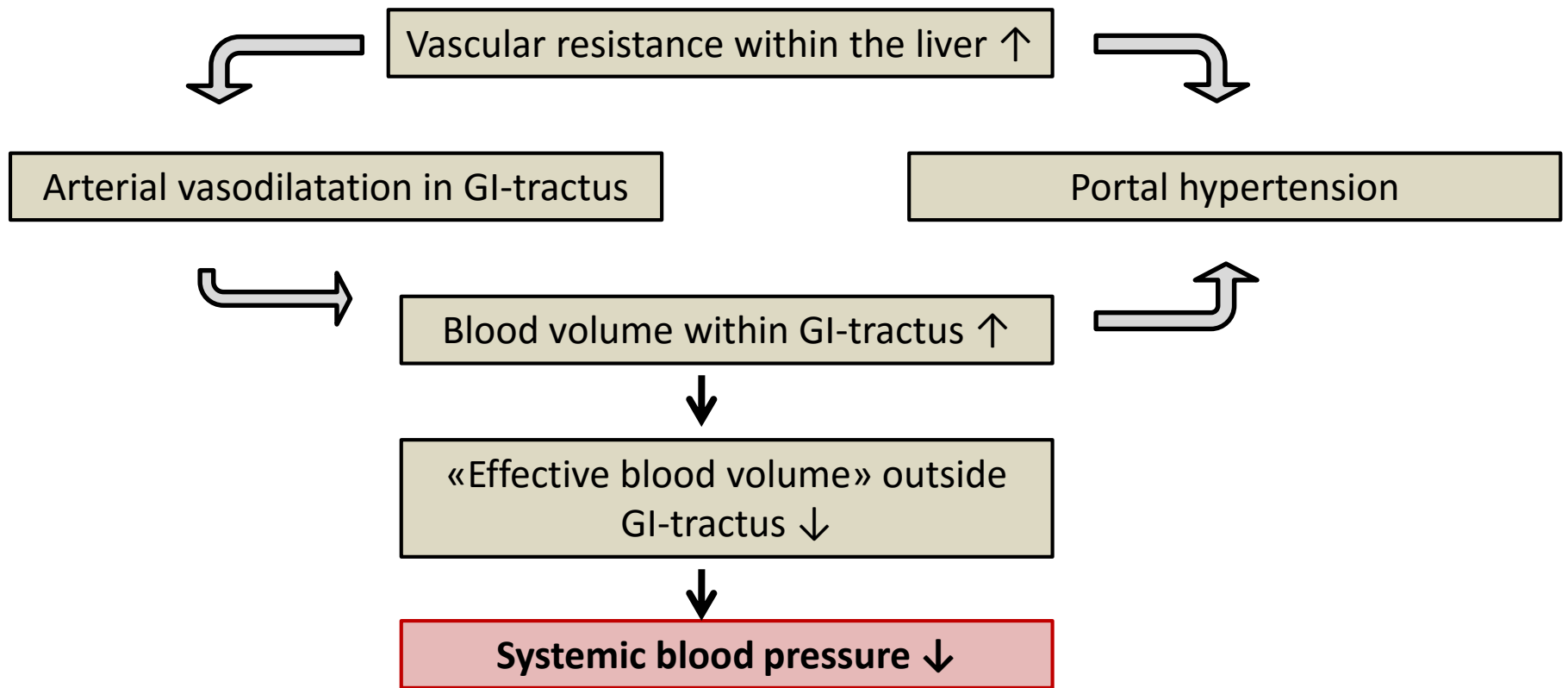
Circulatory changes



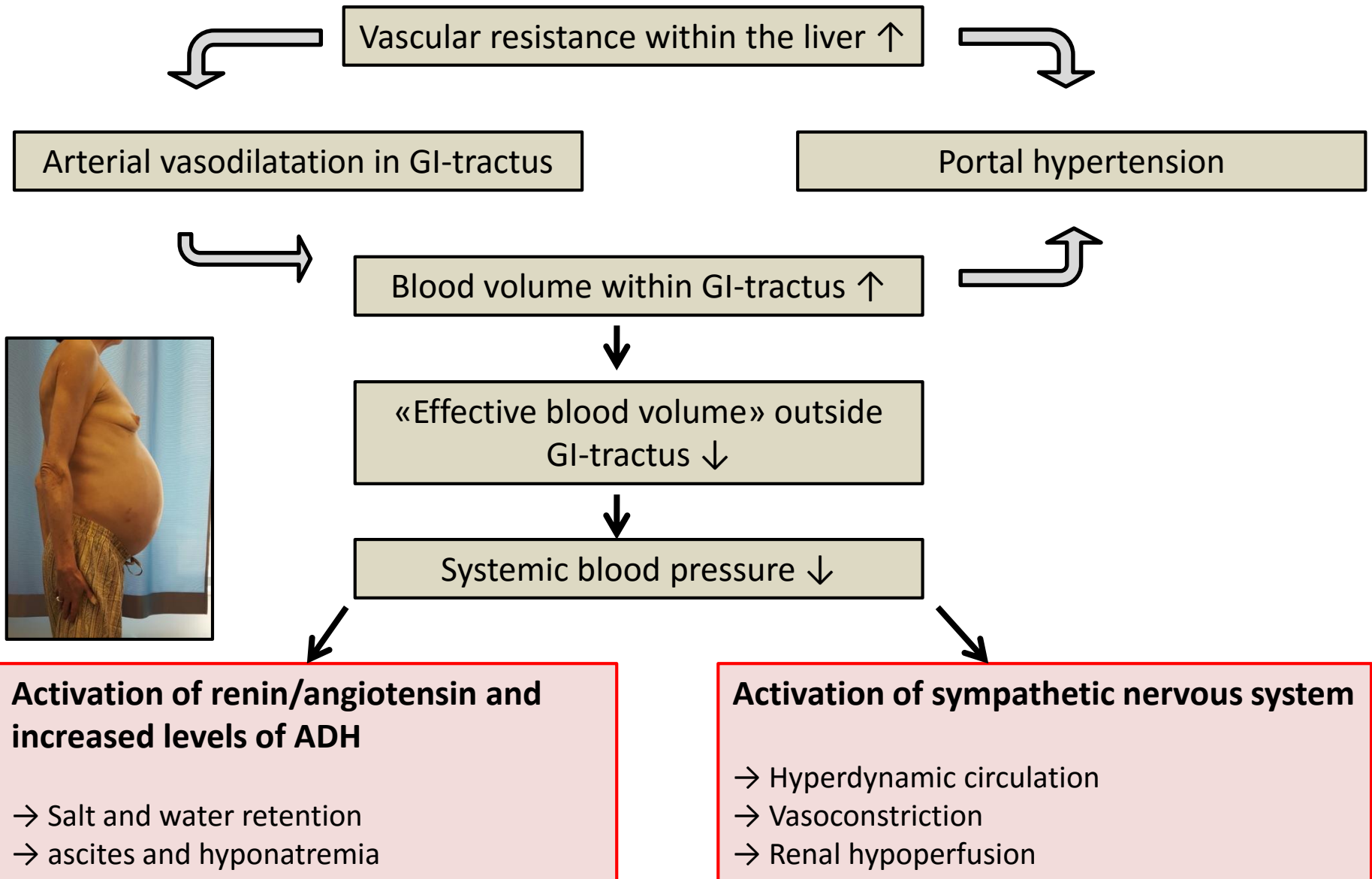
Circulatory changes



Circulatory changes



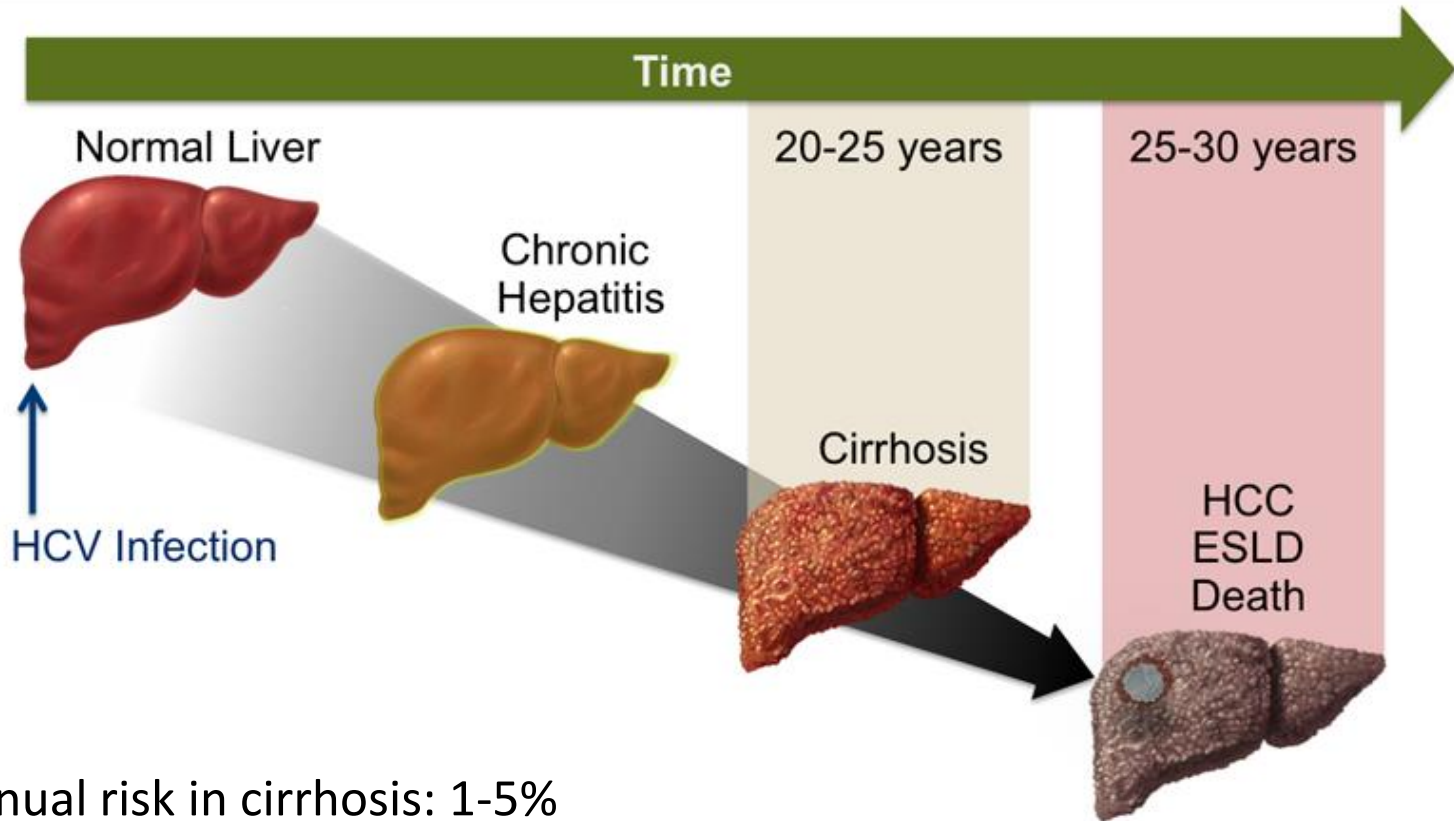
Circulatory changes



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Hepatocellular carcinoma

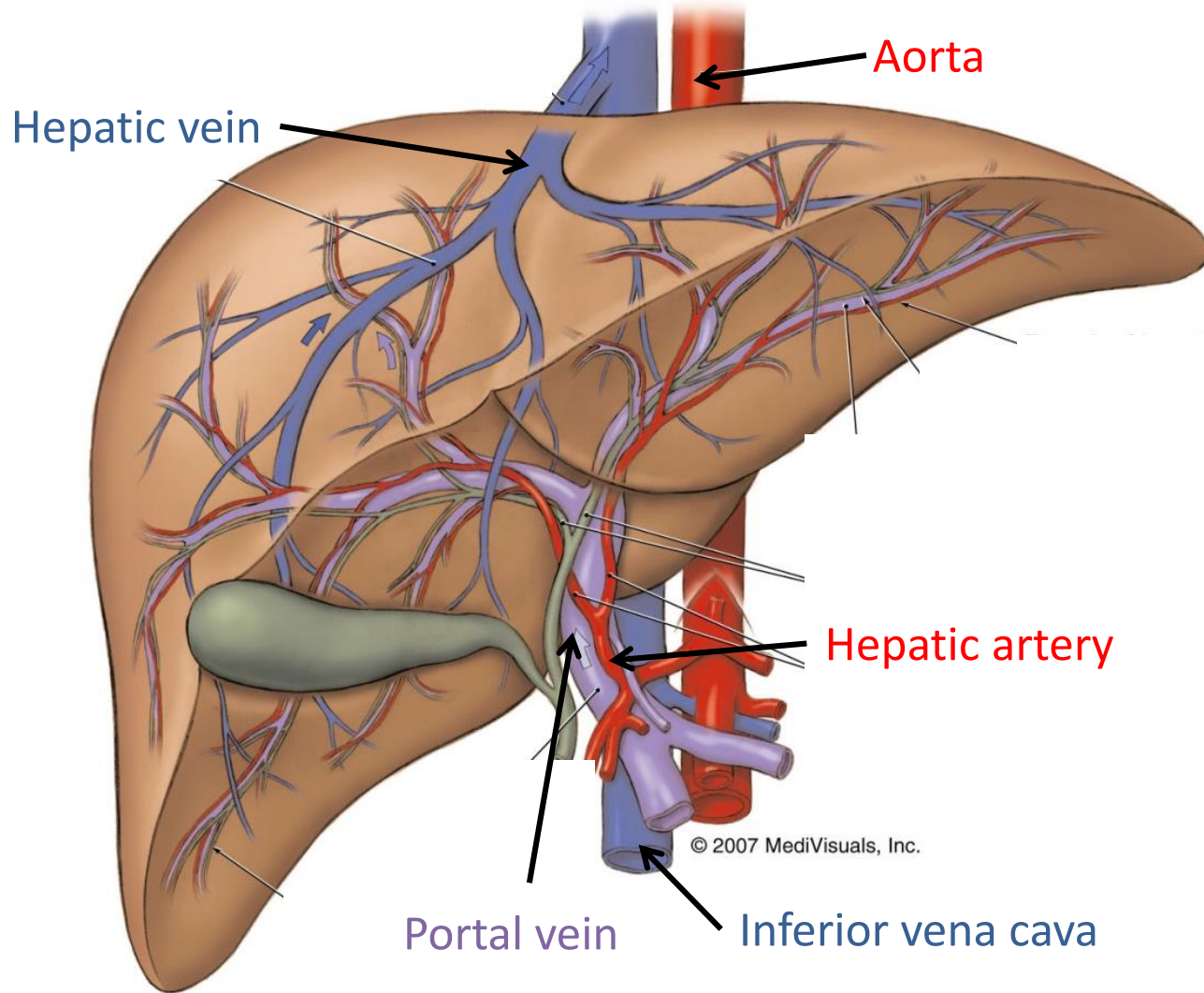


- Annual risk in cirrhosis: 1-5%
- Prognosis is poor when the cancer is symptomatic
- Early detection improves survival
 - Ultrasound/ AFP is recommended every 6. months

Summary

- With cirrhosis the filter is destroyed
- Complications are caused by
 - Loss of functional liver tissue
 - Portal hypertension
 - Oncogenic effect of the chronic inflammatory state
- Prognosis may improve significantly after eradication of the virus

Liver blood flow



	Direct treatment of varices			Reduction of portal pressure		
	Band ligation	Histoacryl injection	Oesophageal stent	Non-selective Beta-blockers	Terlipressin, somatostatin	TIPS
Prophylaxis	✓	✓		✓		✓
Bleeding	✓	✓	✓		✓	✓