

# Cirrhosis: Preventing The Disease Is Preventing Death

Meg McManus PA-S2, Alexandria Stanton PA-S2, Nicola Beilman PA-S2, and Ashley Nordan MHPE, MSCR, MPAP, PA-C  
Physician Assistant Program, College of Pharmacy & Health Sciences, Campbell University

## Background

What is cirrhosis?

- A life-threatening end-stage organ disease that results in irreversible fibrosis of the hepatic tissue
- Prevents synthesis of proteins and clotting factors that are necessary for hemostasis

Epidemiology:

- 9<sup>th</sup> leading cause of death in the US
- 4.5 million adults over 18 diagnosed with liver disease
- 14.8% death rate in North Carolina

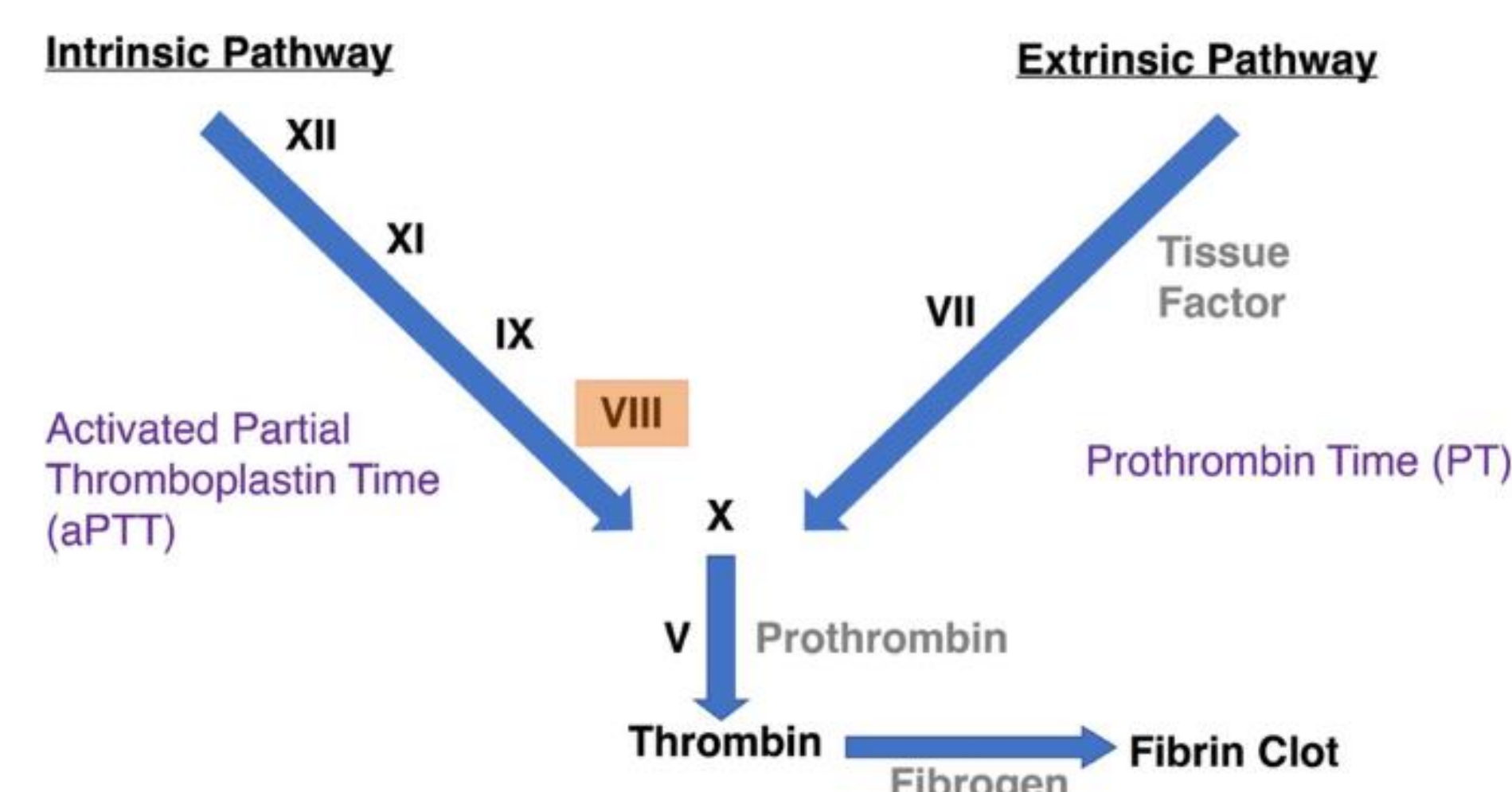
Etiologies:

- Chronic hepatitis infection (Hepatitis B & C)
- Alcohol-associated liver disease
- Non-alcoholic fatty liver disease
- Hemochromatosis

Common Complications:

- Clotting factor disruption
- Portal hypertension
- Ascites
- Congestive splenomegaly
- Jaundice

## Coagulation Cascade



1 • Natural anticoagulants (including antithrombin) inactivate thrombin and the active forms of Factors X, IX, XI, & XII.

2 • Thrombomodulin makes thrombin less capable of cleaving fibrinogen when it is thrombin bound.

3 • This interaction slows the effects of thrombin and reduces thrombosis.

## Case Description



Figure 1. Scleral icterus

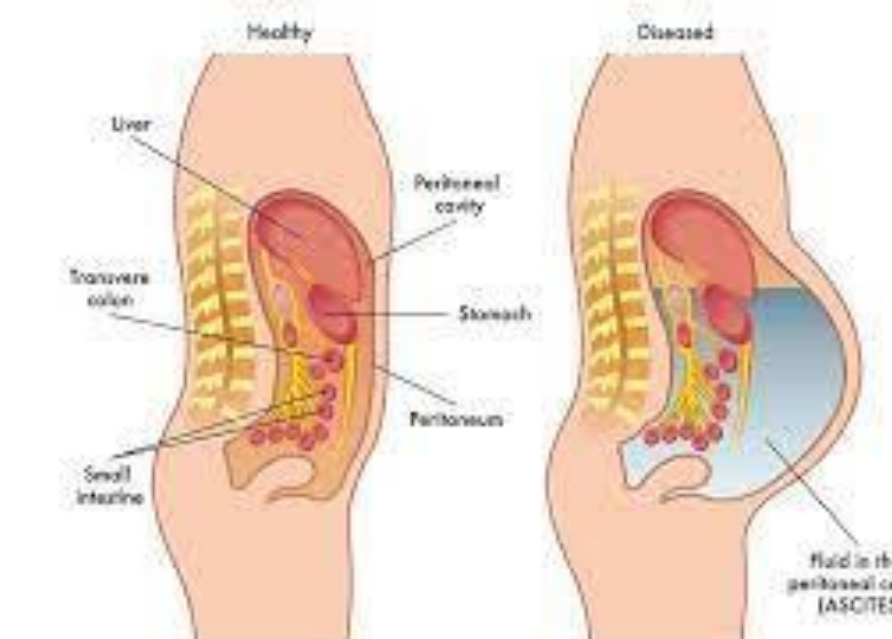


Figure 2. Ascites

### History of Present Illness:

- NR is a 51-year-old male who initially presented to the ED for 7 days of worsening abdominal pain
- No previous diagnosis of cirrhosis
- He reported moderate alcohol consumption of 3-6 high alcohol percentage beers per week
- Unhealthy diet and no regular physical activity

### Pertinent Exam Findings:

- Well-appearing obese male in no acute distress
- Mild jaundice and scleral icterus
- Generally distended abdomen
- Mild bilateral lower extremity edema

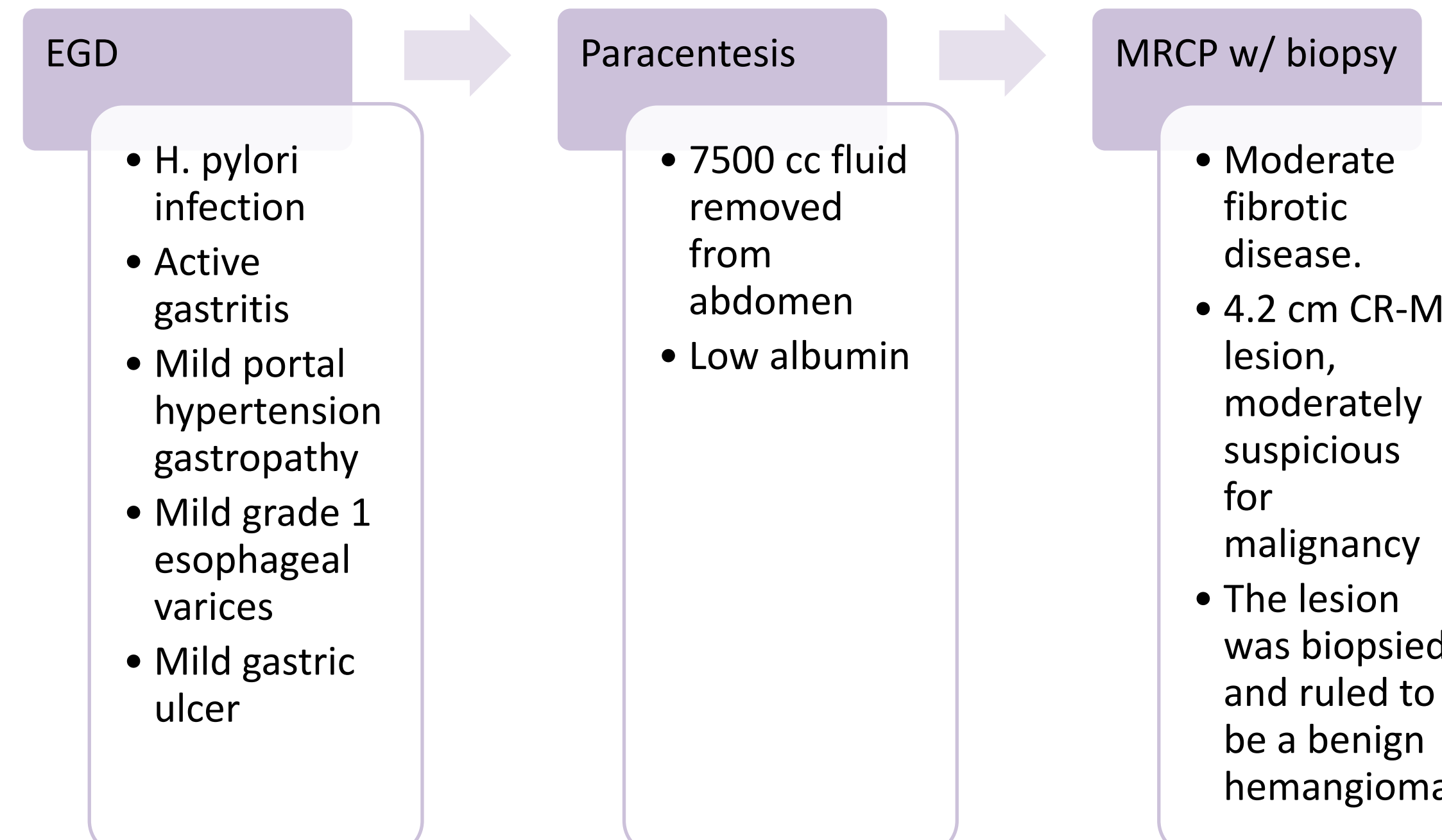


Figure 3. Splenomegaly

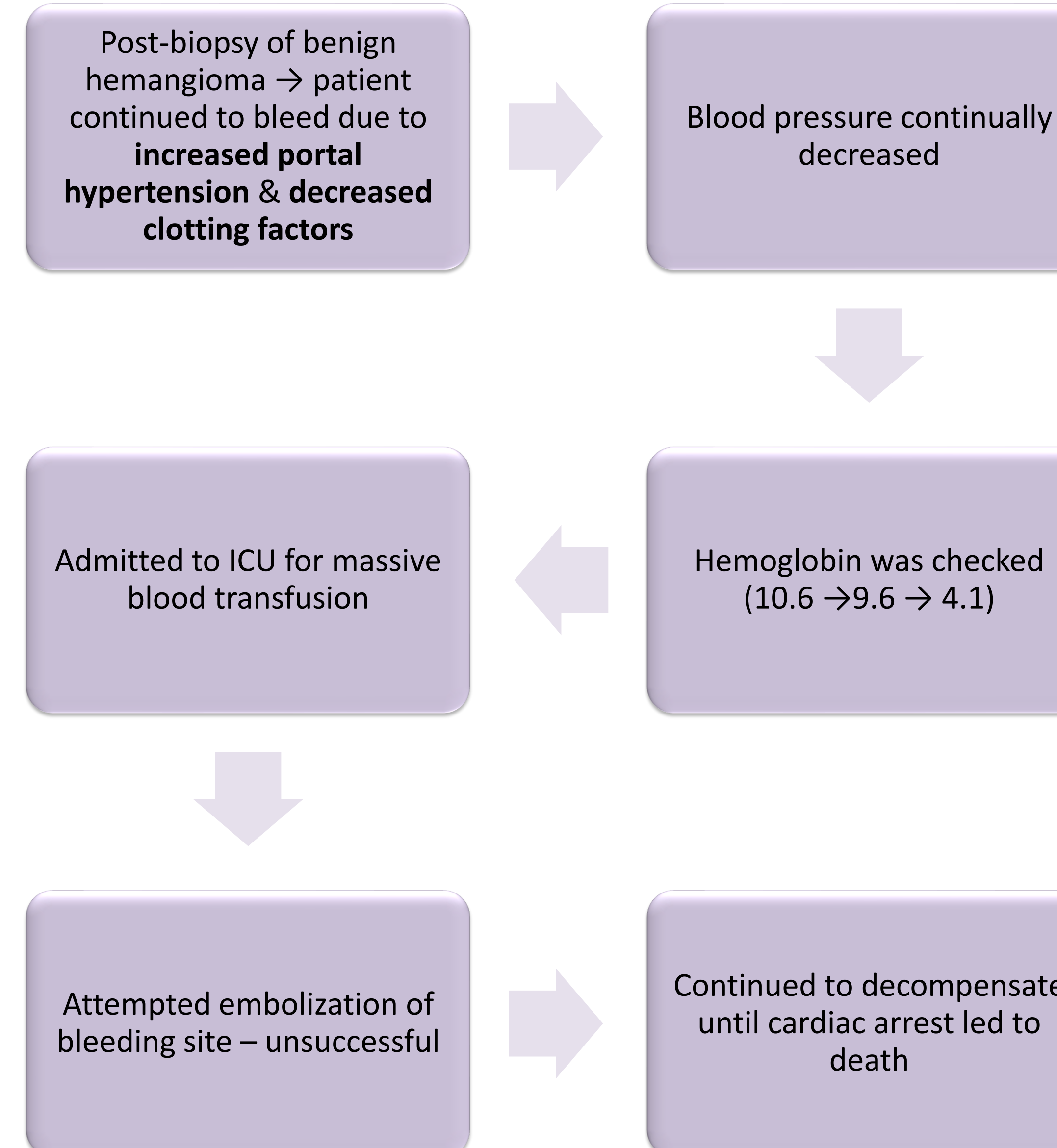


Figure 4. Pitting Edema

### Diagnostics



## Outcome



Total Bilirubin	4.49 mg/dL
Alkaline Phosphatase	168 U/L
AST	95 U/L
Hgb	10.6 g/dL
MCV	92 $\mu\text{m}^3$
WBC	2900/mm <sup>3</sup>
Platelets	90,000/mm <sup>3</sup>
INR	2.6

Table 1. Baseline Labs

Could this patient's death have been prevented?

## Discussion

Patient education on risk factors and lifestyle modifications are essential in preventing long term health complications and fatality.

### Primary Care Prevention Strategies:

Patient education on lifestyle modifications

- Limit alcohol consumption
- Weight reduction
- Sodium restriction
- Clean needle protocols

Limit prescription of hepatotoxic medications

- Acetaminophen
- Some antibiotics
- Antineoplastic drugs

Use Risk Stratification Tools

- MELD Score → predicts % 90-day mortality

It is essential for primary care providers to educate patients at risk for cirrhosis on lifestyle modifications. **With proper patient education, primary care providers can give patients the tools to prevent serious disease, and ultimately, extend their lives.**



Figure 5. Normal vs cirrhotic liver

## References

- 1) Centers for Disease Control and Prevention. (2023, November 6). *FASTSTATS - chronic liver disease or cirrhosis*. Centers for Disease Control and Prevention. <https://www.cdc.gov/nchs/fastats/liver-disease.htm>
- 2) Flores B, Trivedi HD, Robson SC, Bonder A. Hemostasis, bleeding and thrombosis in liver disease. *J Transl Sci*. 2017 May;3(3):10.15761/JTS.1000182. doi: 10.15761/JTS.1000182. Epub 2017 Mar 4. PMID: 30221012; PMCID: PMC6136435.
- 3) Goldberg E, . (2023). Cirrhosis in adults: Etiologies, clinical manifestations, and diagnosis. UpToDate. Retrieved March 3, 2024.
- 4) Heilman, J. (2010). Pitting edema during and after the application of pressure to the skin. Wikipedia. Retrieved 2024,.
- 5) Heywood, A. L. (2023). Pictures of jaundice in black people. Healthline. Retrieved 2024,.
- 6) *Normal vs cirrhotic liver*. (2018). Fronzuto Law Group. Retrieved 2024,
- 7) Packebush, M.H., Sanchez-Martinez, S., Biswas, S. et al. Natural and engineered mediators of desiccation tolerance stabilize Human Blood Clotting Factor VIII in a dry state. *Sci Rep* 13, 4542 (2023). <https://doi.org/10.1038/s41598-023-31586-9>
- 8) Sequana Medical NV. (2022). *Ascites*. Alfapump. Retrieved 2024,.
- 9) Todd, G. (2022). Splenomegaly. Mount Sinai. Retrieved 2024,.