

# Alcoholic liver cirrhosis in alcoholism

Alcoholic liver disease is caused by excessive alcohol consumption. The liver is responsible for metabolizing ethanol. The liver of a heavy drinker may become damaged to cause chronic alcoholic liver disease. Early damage to the liver causes fat accumulation in the hepatocytes, resulting in hepatic steatosis or alcoholic fatty liver disease. In a later stage, the lesion progresses to alcoholic liver cirrhosis, scarring of the liver. Heavy alcohol use further involves a variety of organs, including the brain, peripheral nerve, striated muscles, heart, stomach and pancreas.

Ref.: Shield KD, et al. Chronic diseases and conditions related to alcohol use. *Alcohol Res* 2013; 35(2): 155-173. PMID: 24881324

# Case presentation

A 48 y-o male patient with chronic alcoholism was diagnosed as alcoholic liver cirrhosis 4 years earlier. Wernick's encephalopathy and right external ophthalmoplegia were complicated. He drank a bottle of whiskey per day for years. He stopped drinking for 3 years, but then re-started to drink. One year later, he lost his consciousness due to hepatic encephalopathy. Soon, he further complicated renal failure, heart failure, bone marrow failure and phlegmonous inflammation in bilateral upper extremities. Finally, pneumonia and septicemia with DIC killed him 3 months after admission. The autopsy was performed 9 hours after death.

# Laboratory data on admission (3 months before death)

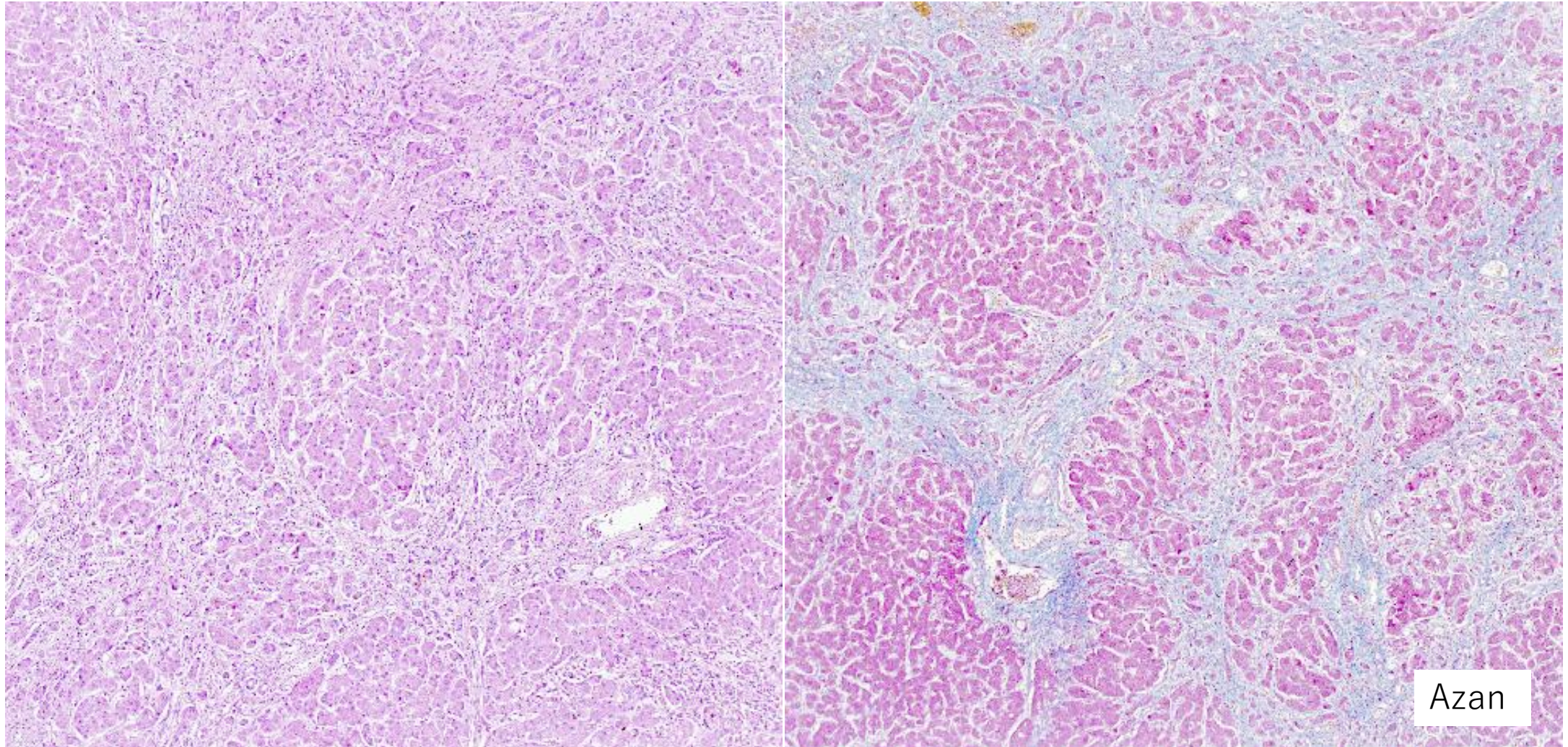
WBC 14,100/ $\mu$ L (Segs 92%, Stab 2%, Eosino 0%, lymph 1%, Mono 5%), RBC 2,400,000/ $\mu$ L, Hb 9.2 g/dL, Ht 24.5%, Platelets 32,000/ $\mu$ L, PT 21.4 sec, APTT 59.2 sec, Hp test 31%

BUN 78 mg/dL, Creatinine 2.7 mg/dL, AST 163 IU/L, ALT 54 IU/L, LDH 871 IU/L, ALP 176 IU/L,  $\gamma$ -GTP 40 IU/L, amylase 199 IU/L, lipase 1,060 IU/L, elastase-1 3,800 ng/dL

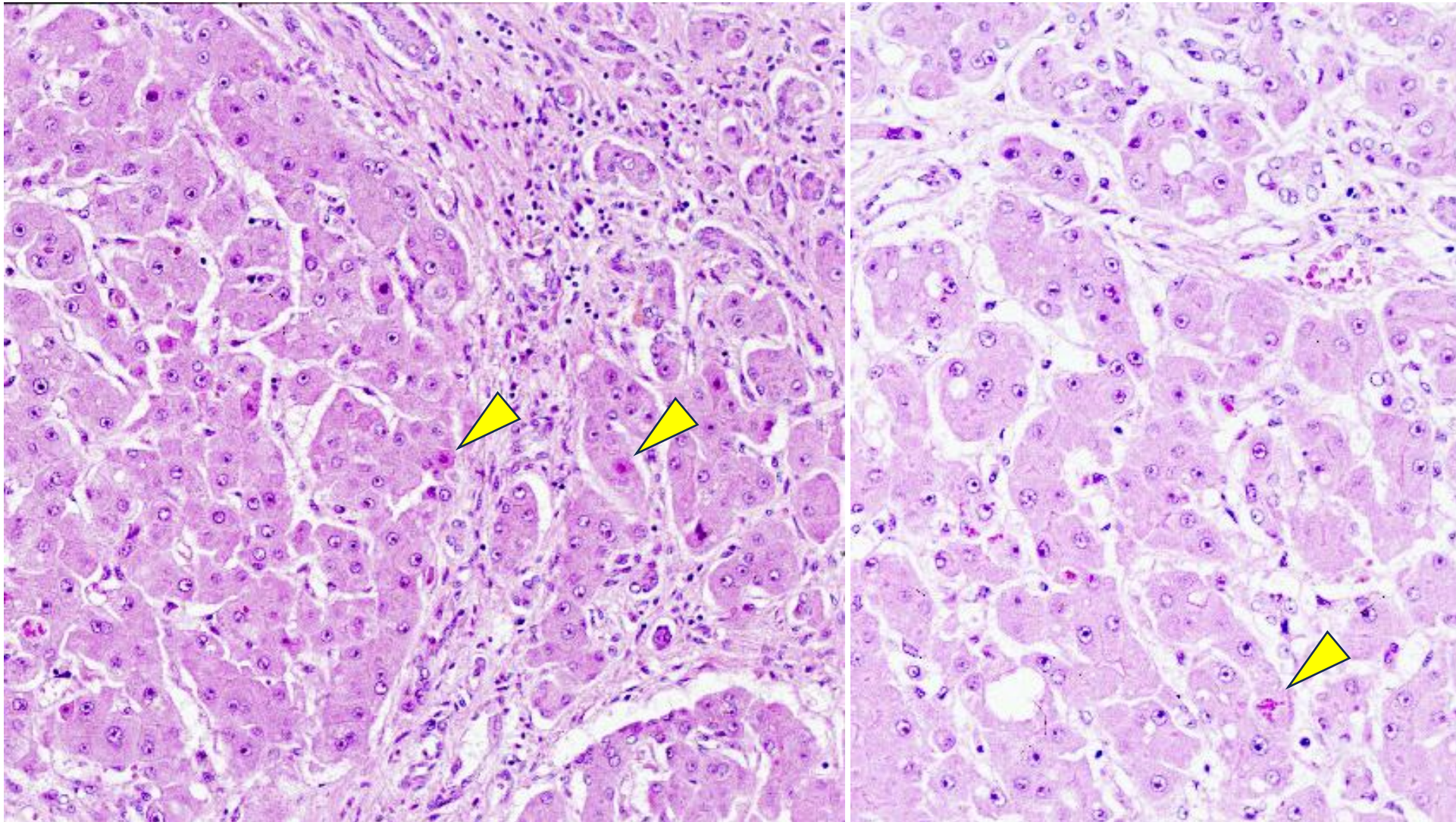
Total protein 5.5 g/dL, albumin 2.9 g/dL, T. bil 8.3 mg/dL, D. bil 5.5 mg/dL, IgG 2,470 mg/dL, IgA 876 mg/dL, IgM 578 mg/dL, glucose 240 mg/dL



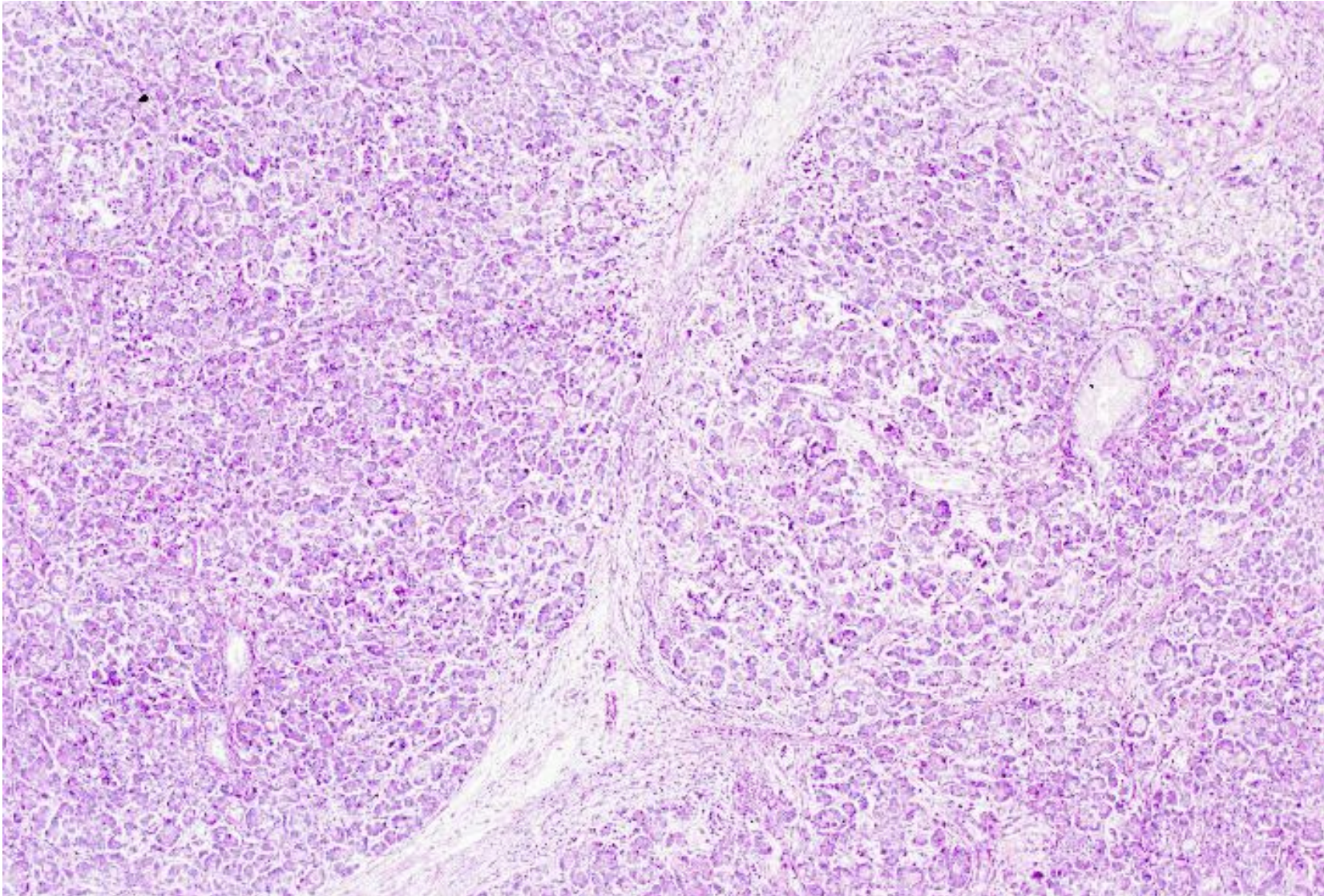
Alcoholic liver cirrhosis (chronic alcoholic liver disease) in alcoholism seen in a 48 y-o male patient. A cut surface of the liver, 970 g in weight, shows irregular fibrotic change. Regenerative nodule formation is not evident.



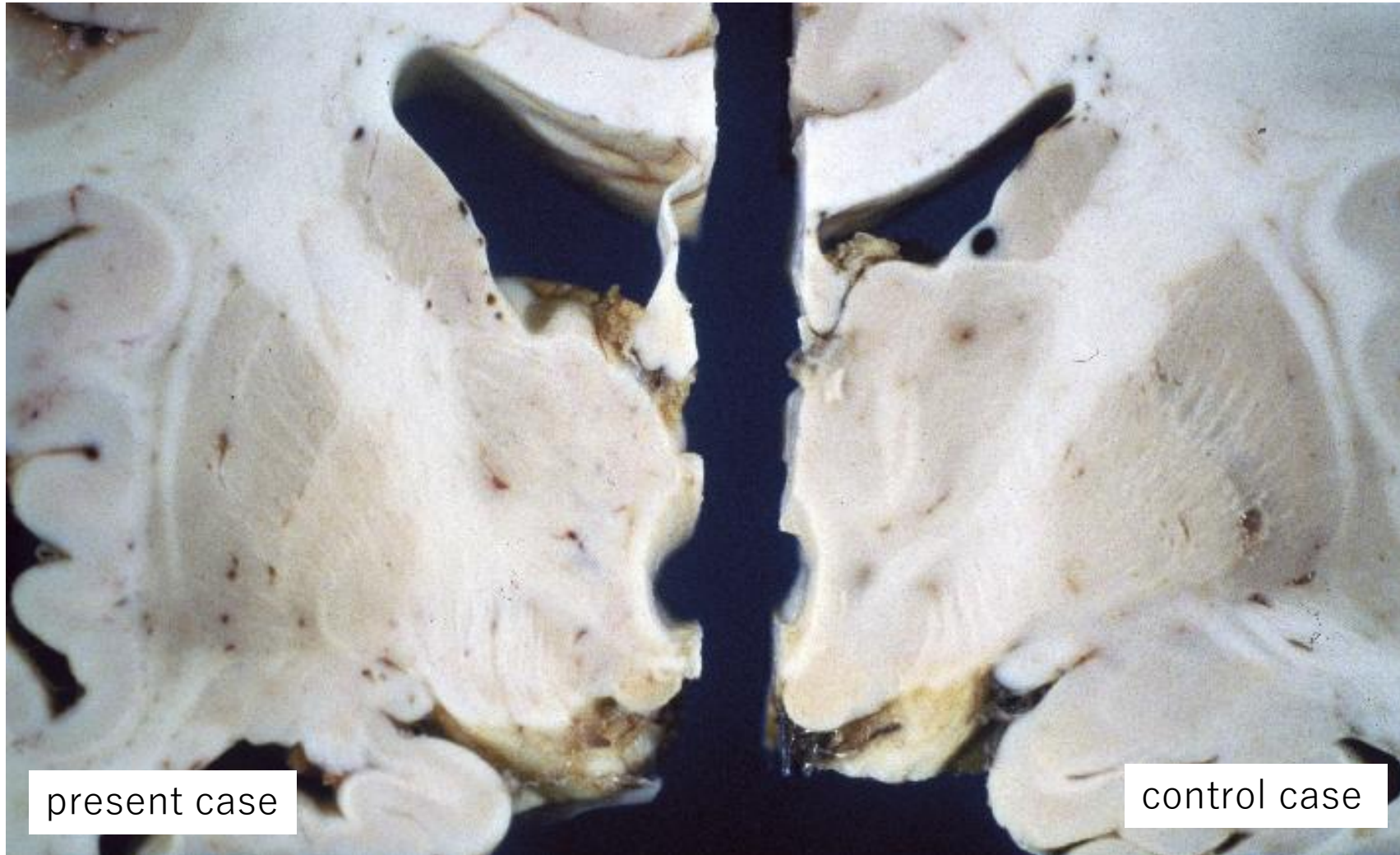
Alcoholic liver cirrhosis (chronic alcoholic liver disease) in alcoholism seen in a 48 y-o male patient. Irregular anastomosing fibrotic change is seen throughout the liver (left: H&E). Azan stain demonstrates fibrotic replacement in the liver parenchyma (right).



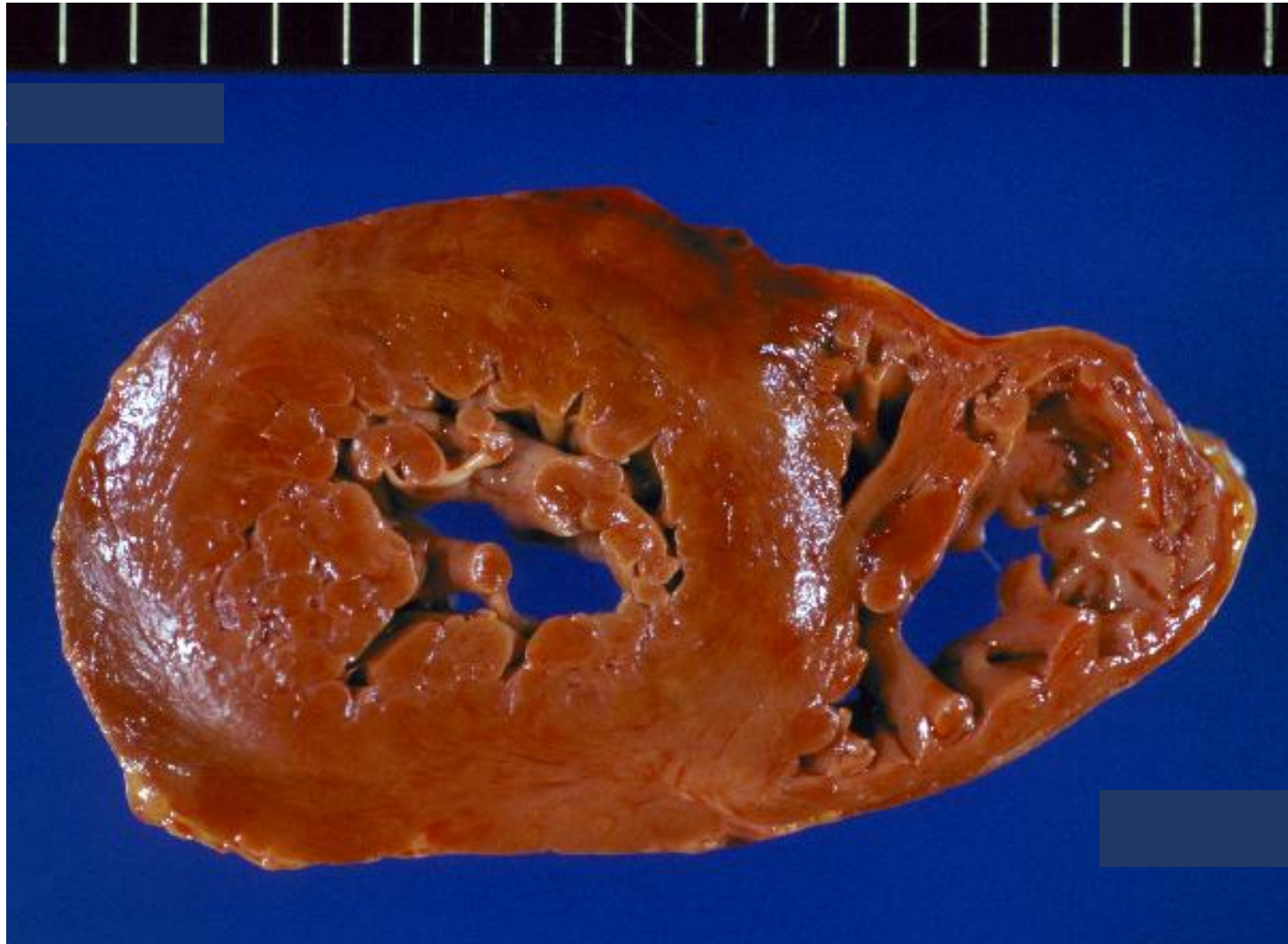
Alcoholic liver cirrhosis (chronic alcoholic liver disease) in alcoholism seen in a 48 y-o male patient. The liver cell cord is distorted by the irregular fibrotic process. The hepatocytes occasionally possess alcoholic hyalines (Mallory bodies) (arrowheads). Because of the 3 month hospitalization, fatty change has disappeared (H&E).



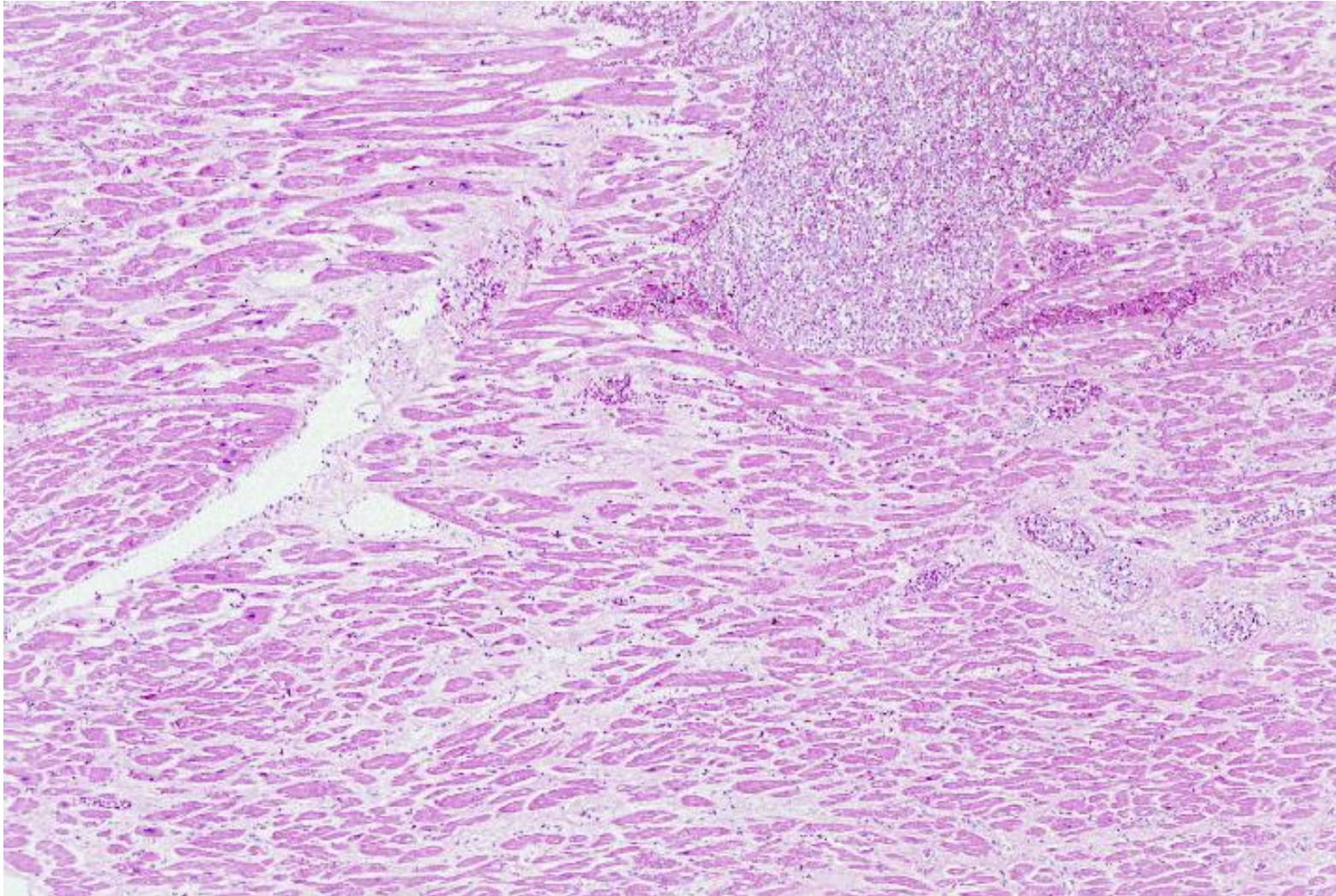
Chronic pancreatitis in alcoholism seen in a 48 y-o male patient. Irregular fibrosis separates the pancreatic parenchyma (H&E).



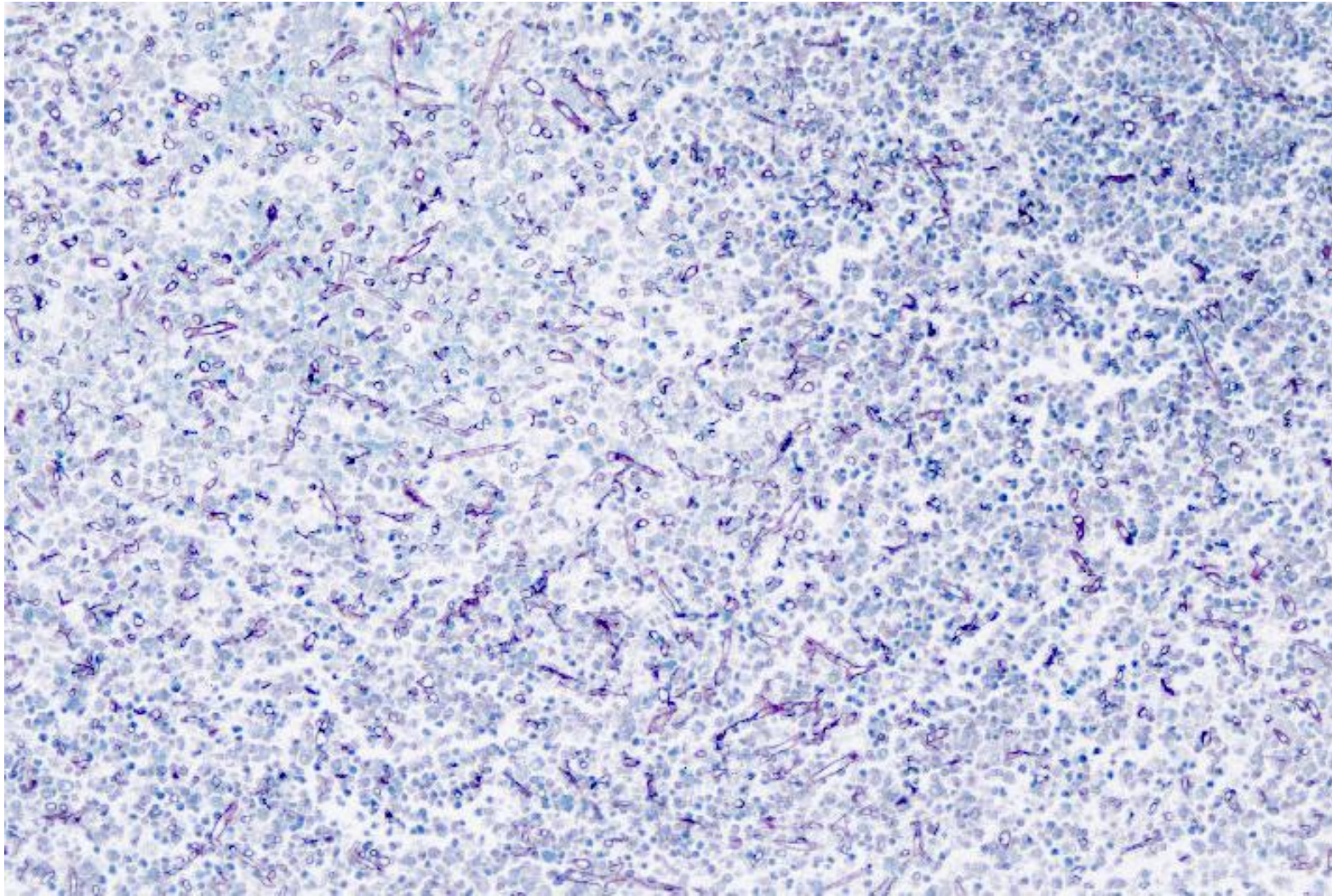
Alcoholic encephalopathy accompanying Wernicke encephalopathy (chronic vitamin B1 deficiency) seen in a 48 y-o male patient. The frontal cut surface of the brain after formalin fixation demonstrates atrophy of the mamillary body (left half). Compare with the normal control case (right half).



Alcoholic cardiomyopathy seen in a 48 y-o male patient. The horizontal cut surface of the heart reveals mild left ventricular hypertrophy. A hemorrhagic lesion in the anterior wall of the left ventricle represents the complication of mucormycosis.



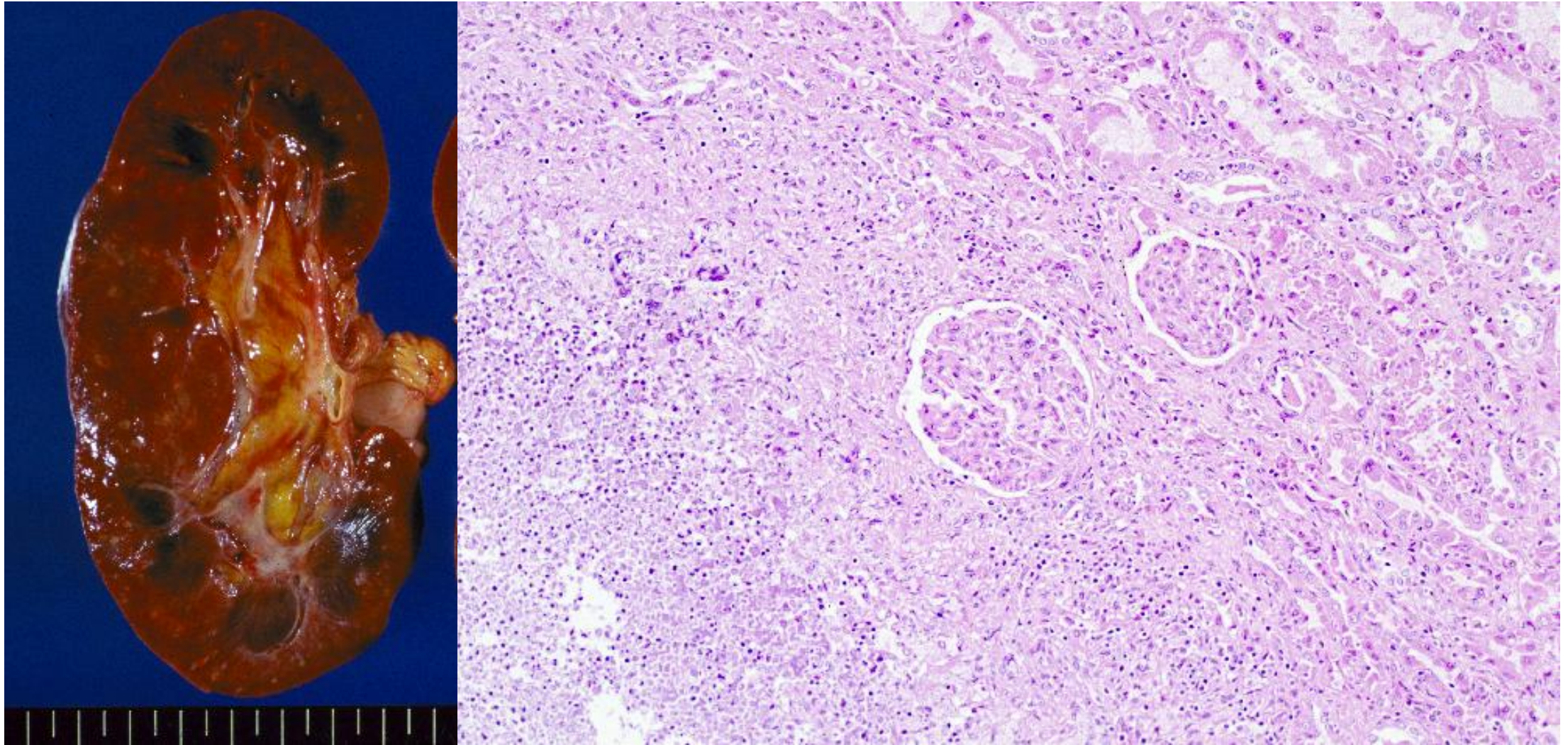
Alcoholic cardiomyopathy seen in a 48 y-o male patient. Diffuse interstitial fibrosis is observed in the myocardial layer. Focal accumulation of neutrophils (abscess formation) represents mucormycosis (H&E).



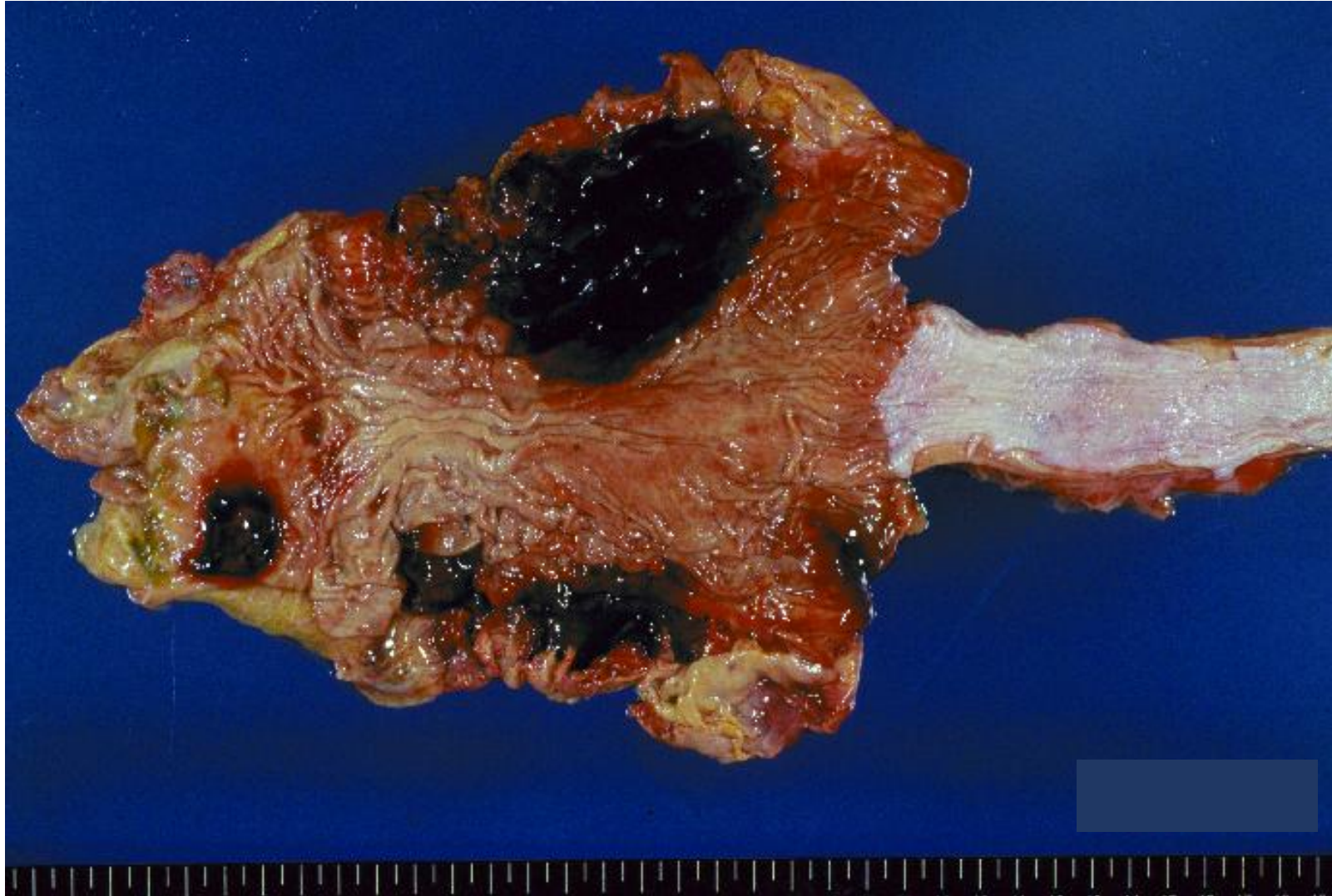
Mucormycosis of the heart seen in a 48 y-o male patient. Growth of hypha-forming fungi is seen in the abscess lesion (Grocott stain).



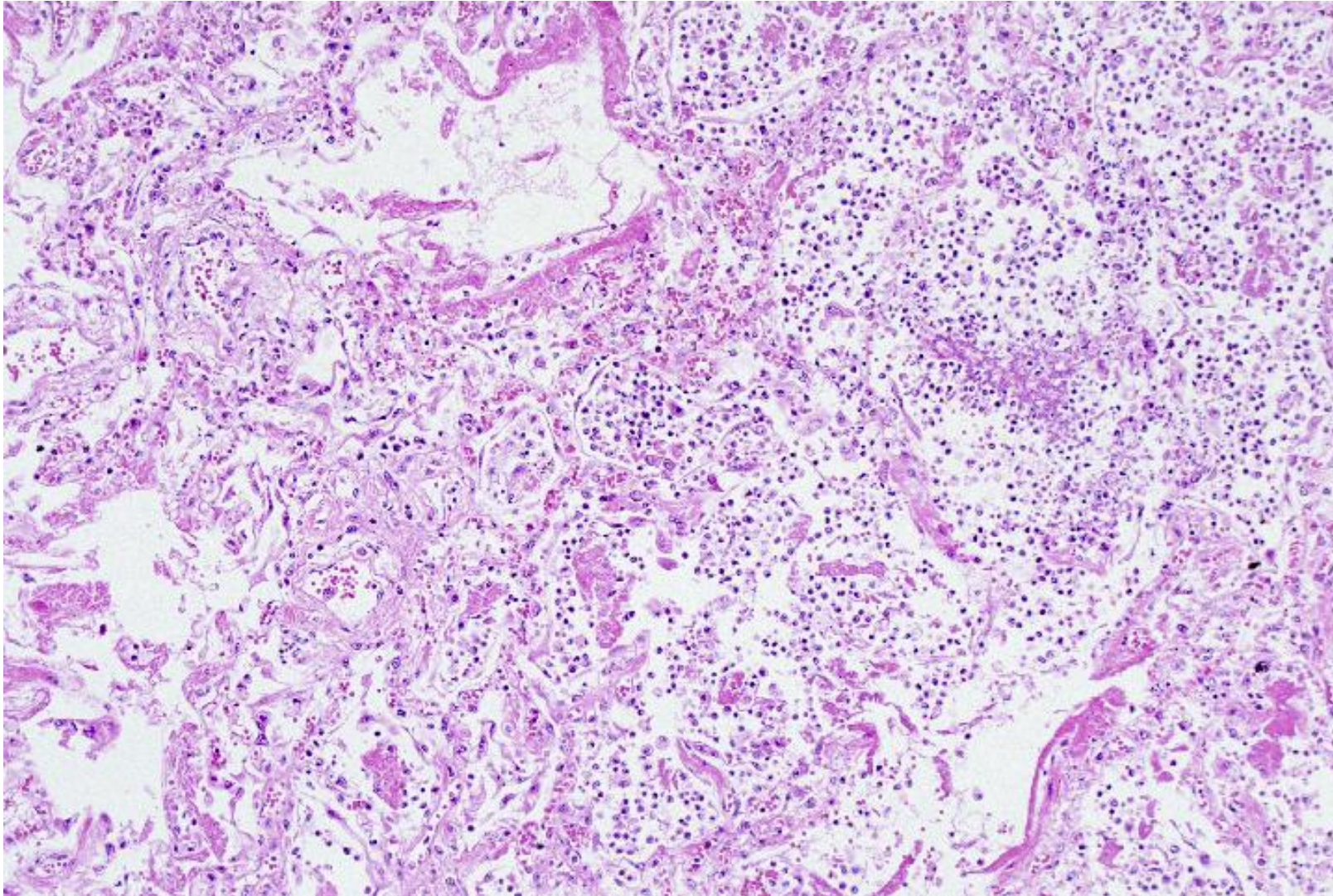
Acute splenitis seen in a 48 y-o male patient with chronic alcoholic liver disease. The enlargement of the spleen (350 g) is caused by both chronic passive congestion by portal hypertension and septicemia. Hemorrhagic change is associated.



Mucormycosis of the kidney seen in a 48 y-o male patient with alcoholism. Grossly, white spots of infection are multifocally seen in the renal cortex (left). Microscopically, neutrophilic accumulation is focally observed (right: H&E).



Mucormycosis of the stomach seen in a 48 y-o male patient with chronic alcoholic liver disease. Hemorrhagic lesions are multifocally formed in the gastric wall, representing mucormycosis involving the vascular space (gross appearance).



Bronchopneumonia with interstitial lung reaction seen in a 48 y-o male patient with alcoholism. Neutrophilic infiltration and hyaline membrane formation with interstitial reaction are observed (H&E).

# Final anatomical diagnoses (48 y-o male)

- 1) Alcoholic liver cirrhosis (micronodular type, liver weight: 970 g)
    - a) Portal hypertension: splenomegaly 350 g, pleural effusion (left: 200 mL, right: 200 mL), ascites (6,550 mL)
    - b) Alcoholic organ failure (alcoholic encephalopathy: mamillary body atrophy, chronic pancreatitis, alcoholic cardiomyopathy and testicular atrophy)
    - c) Jaundice
  - 2) Septicemia (blood culture: *Enterobacter cloacae* + *Klebsiella pneumoniae*)
    - a) Phlegmonous inflammation of both upper arms
    - b) Systemic mucormycosis (heart muscle, lung, brain, kidney, GI tract and thyroid gland)
    - c) Infectious spleen (350 g)
    - d) DIC with petechiae (the oral mucosa, intestinal mucosa and urinary bladder)
- # Direct cause of death: septicemia