МИНИСТЕРСТВО ЗА ЗДРАВСТВО
РЕПУБЛИКА МАКЕДОНИЈА

Ултрасонографија кај ХепатоБилијарни Заболувања

Завод за Кардиоваскуларни Заболувања - Охрид

Клиника за Гастроентреологија – Љубљана (Септември, 2015)

Ристе Секулоски

Датум на презентација: 07,10,2015

МИНИСТЕРСТВО ЗА ЗДРАВСТВО
РЕПУБЛИКА МАКЕДОНИЈА

Вовед

1. Ultrasound waves

- **They are waves of very high frequency ranging between 3.5 – 10 MHz and up to 20 MHz in endosonography.**
- **Frequency is the number of waves occurring in one second.**
- **When the frequency increases the resolution increases and penetration decreases.**

- Frequencies used in diagnosis ranges between 3-10 MHz.
- Frequency used in abdominal sonography is 3-5 MHz.
  - In adults the frequency used 3.5 MHz.
  - In children the frequency used 5 MHz.
  - In small parts 7MHz.
  - In endosonography 7.5-20 MHz.

2. Echopattern

It means the reflection of waves, which depends on the material which in penetrated by US.

Echofree :

When ultrasound waves pass through fluids (ascites- simple cyst- blood vessels) no reflection occurs and these areas appears as black areas with posterior enhancement .

Echogenic :

When ultrasound waves pass through solids (bones – stone) all waves are reflected and appears as white color with posterior shadow .

Liver

Size:

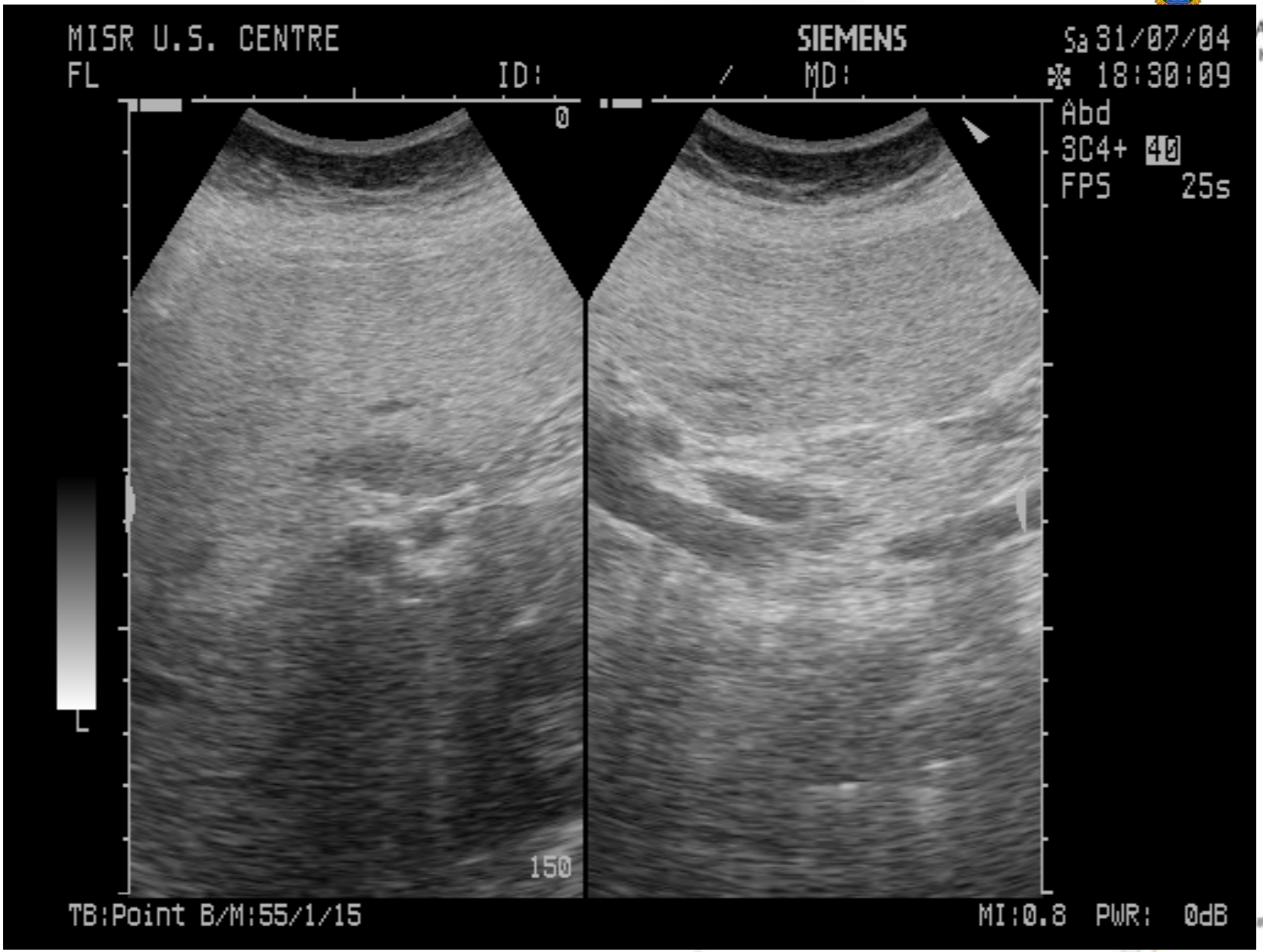
Lt. Lobe span (5-10 cm).

Rt. Lobe span (8-15 cm).

1. Size .
2. Focal lesion .
3. Diffuse liver disease .
4. Hepatic vasculature . (portal vein & hepatic veins)
5. Intrahepatic biliary radicles .

Focal lesions

1. Single or Multiple
2. Size
3. Site (segmental anatomy)
4. Echopattern
    a. Echofree e.g. hepatic simple cyst, hydatid cyst.
    b. Hypoechoic e.g. amoebic liver abscess, lymphoma.
    c. Hyperechoic (echogenic) e.g. haemangioma .
    d. Hetergenous e.g. cancer, secondary metastasis.
5. Differential diagnosis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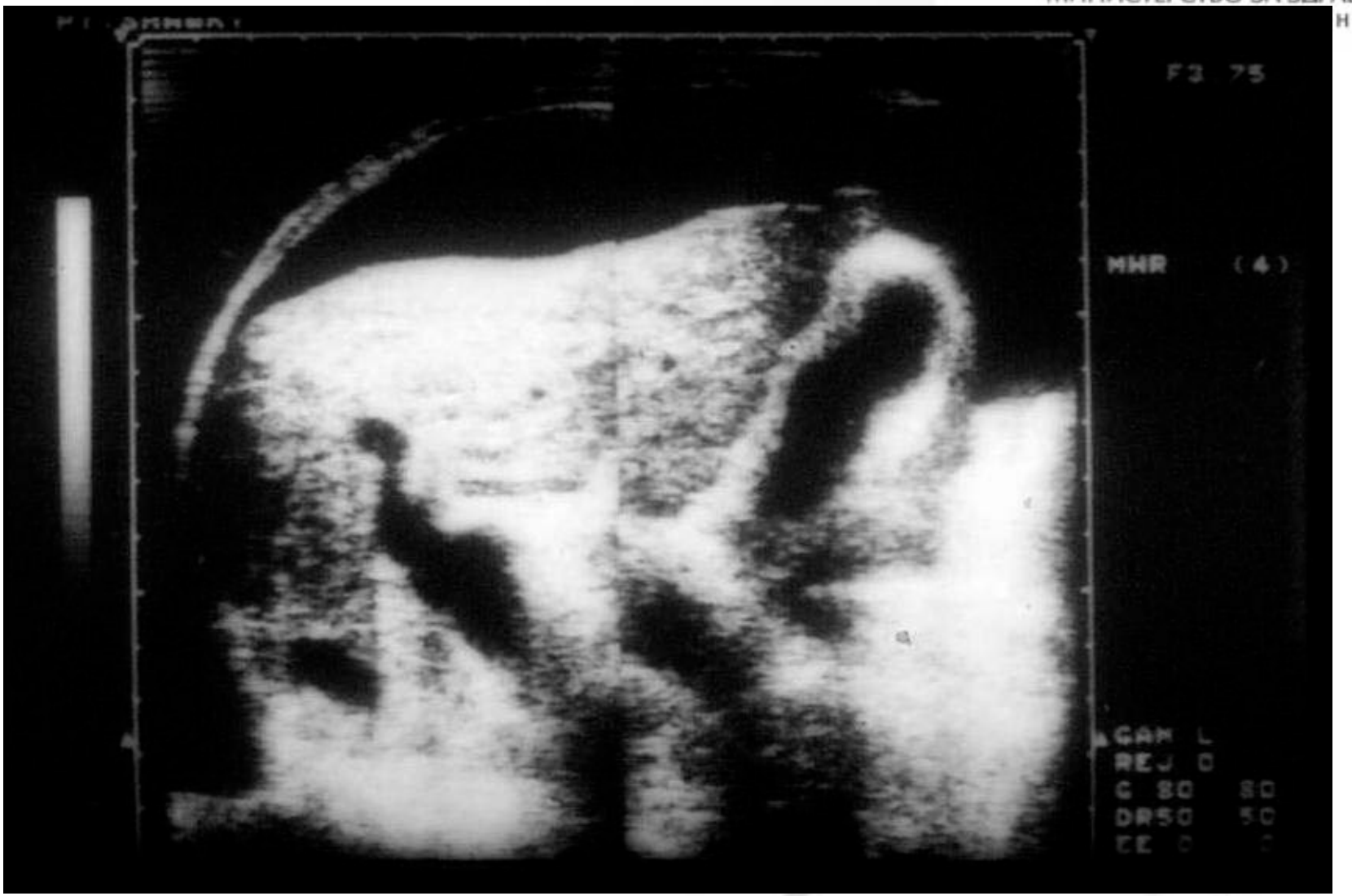
LIVER CENTER CAIRO UNIV.

1. Size.
2. Focal lesion.
3. Diffuse liver disease.
4. Hepatic vasculature. (portal vein & hepatic veins)
5. Intrahepatic biliary radicles.

Diffuse liver disease

- ***Liver cirrhosis: coarse echopattern with: (Miliary =echogenic fine liver dots).***
  - Irregular surface.
  - Large caudate lobe
  - Attenuated hepatic veins.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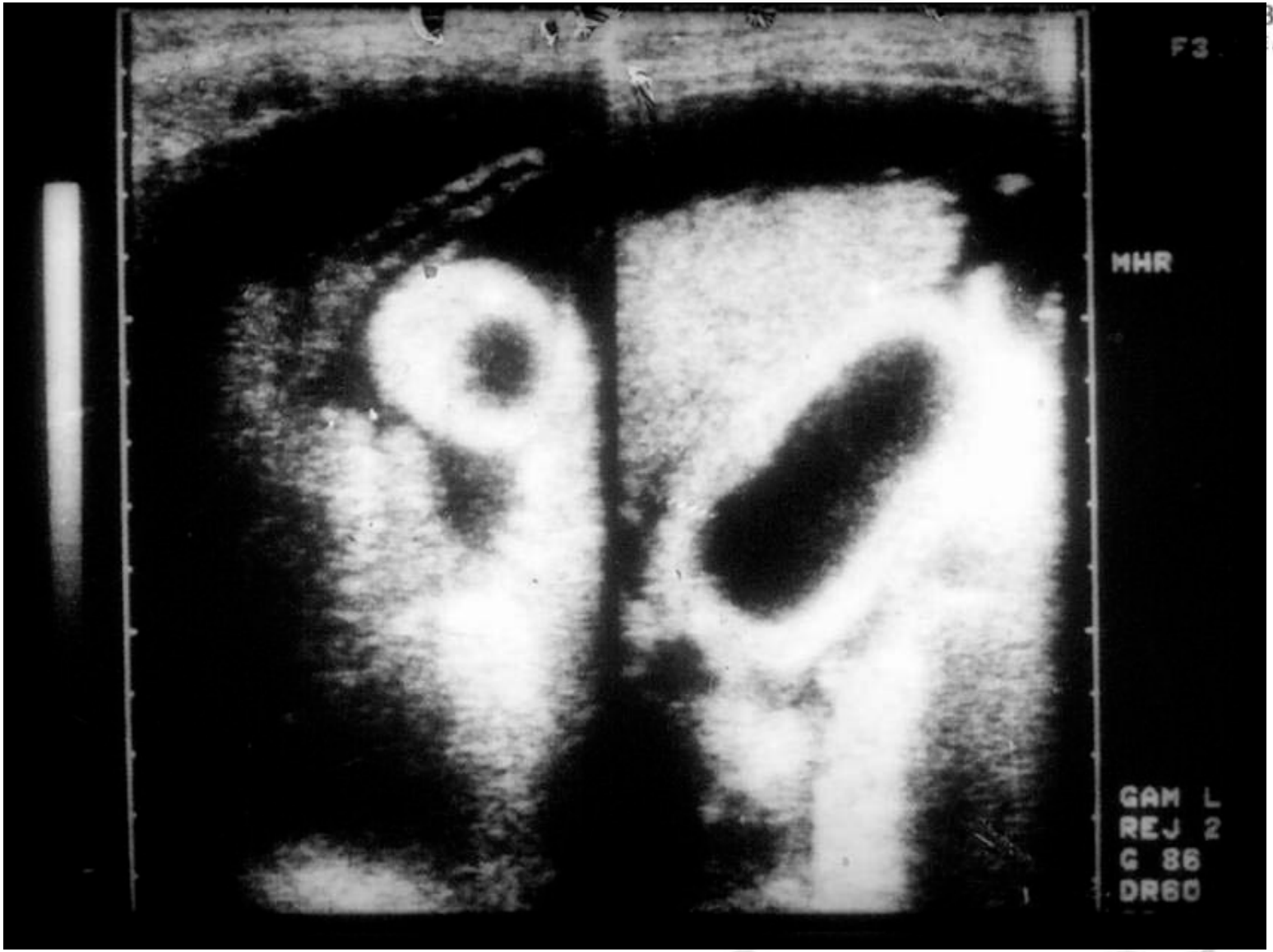
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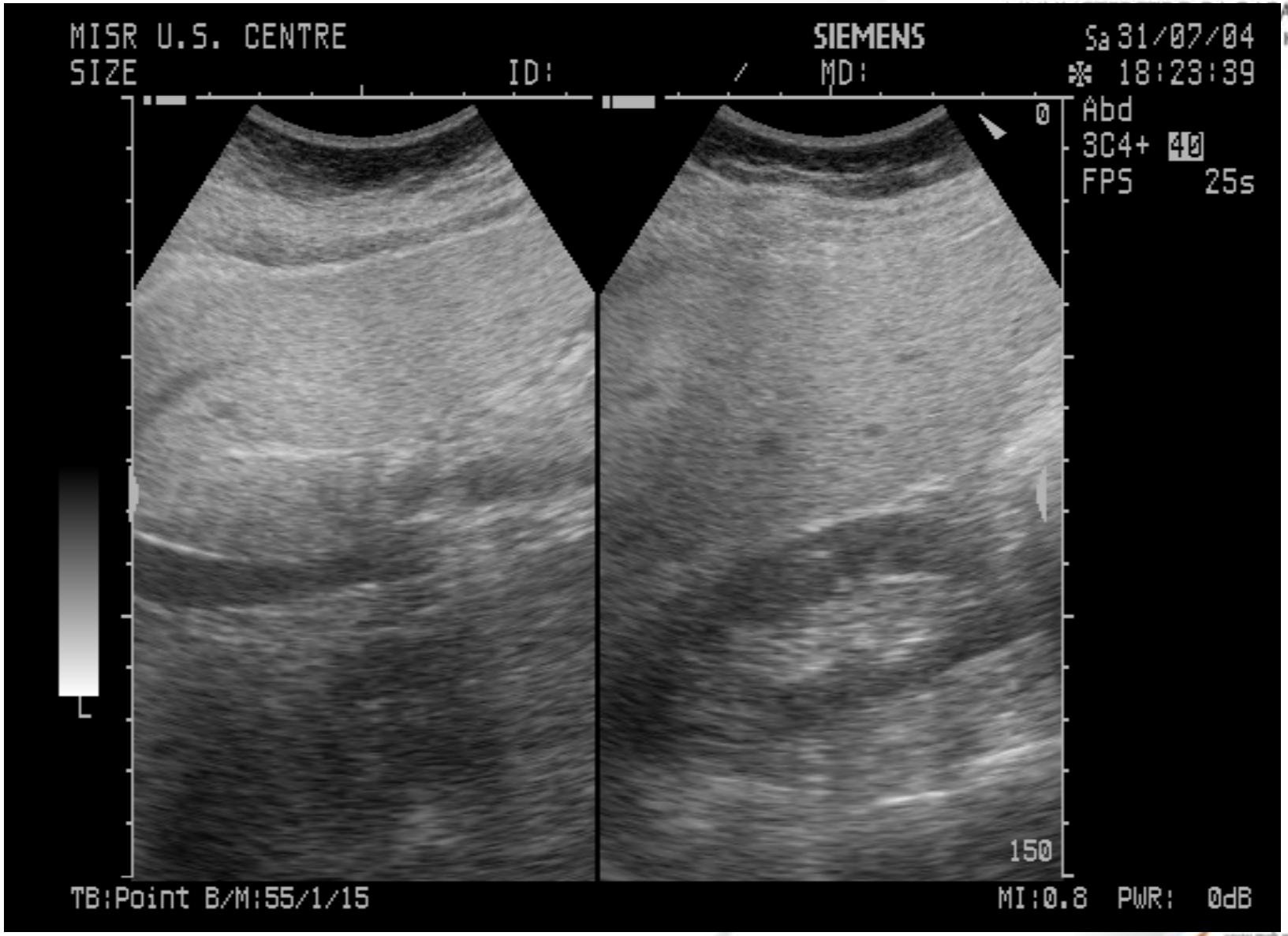
Diffuse liver disease

- ***Bright liver: Increase brightness "less dark".***
  - Normally, the echopattern of the liver is slightly brighter than the renal parenchyma.
  - D.D of Bright liver .
    - **Fatty liver (D.M.–Hyperlipidemia-obese patients)**
    - **Chronic hepatitis**
    - **Liver cirrhosis**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1. Size.
2. Focal lesion.
3. Diffuse liver disease.
4. Hepatic vasculature. (portal vein & hepatic veins)
5. Intrahepatic biliary radicles.

Hepatic Vasculature

A- Portal Vein:

- **The diameter is normally up to 12mm, in fasting adults.**
- **From 13-17mm in suspected cases of portal hypertension.**
- **>17 it is sure portal hypertension.**
- **In some cases of portal hypertension the P.V diameter is within normal due to the presence of collaterals.**

Portal Vein Thrombosis

Occurs in association with:

- H.C.C.
- After sclerotherapy.
- After splenectomy


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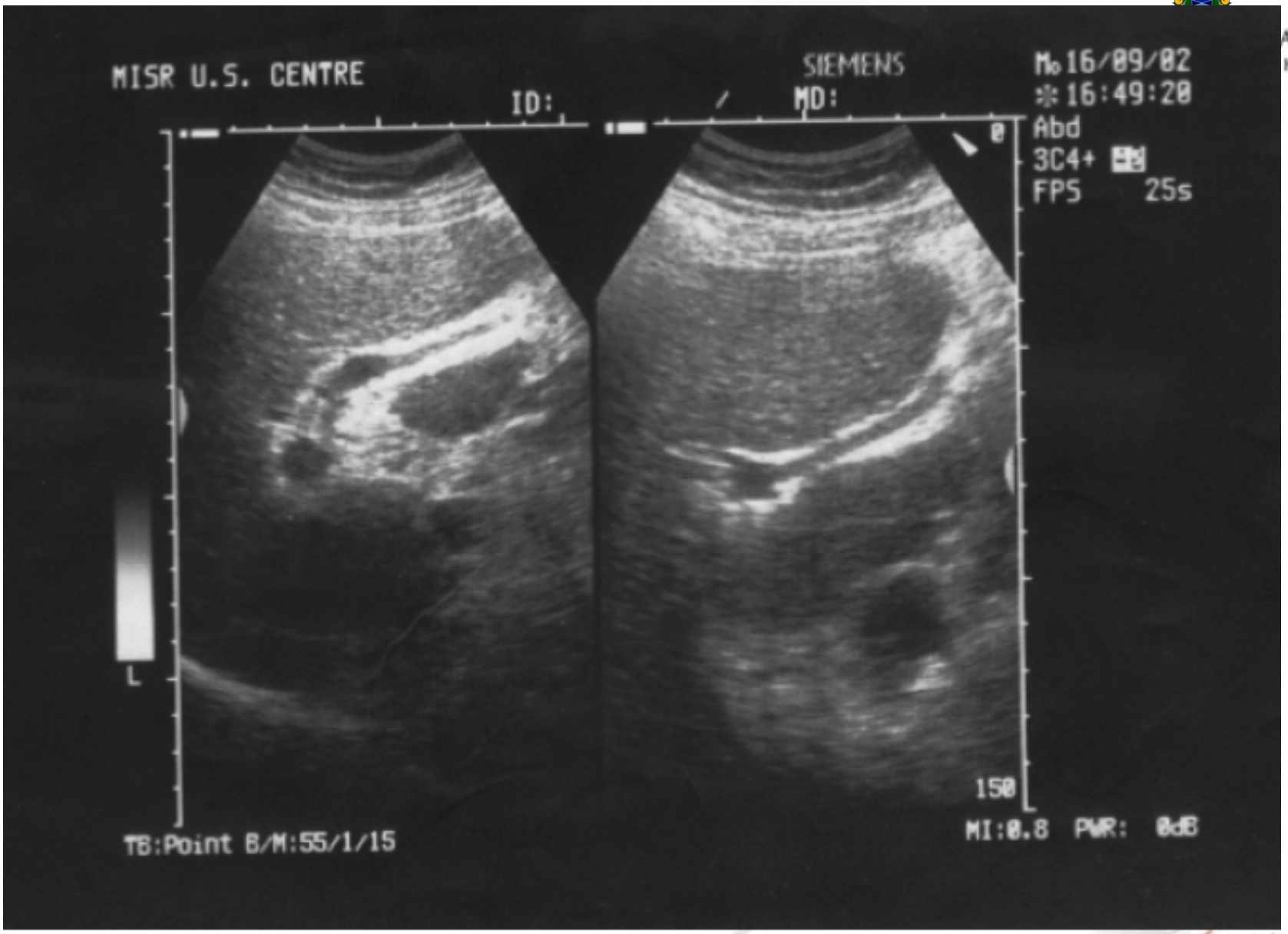
Collaterals

The presence of any collaterals is a sure sign of Portal Hypertension

1. *Para umbilical vein :* seen in the falciform ligament.
2. *Coronary vein :* seen in the inferior surface of the left lobe.
   Normally less than 5 mm.
   It is related to oesophageal varices.
3. *Splenic hilum collaterals: around splenic vein*
   Directed to the kidney lienorenal collaterals (benign)
   Directed to stomach lienogastric: it is related to fundal varices.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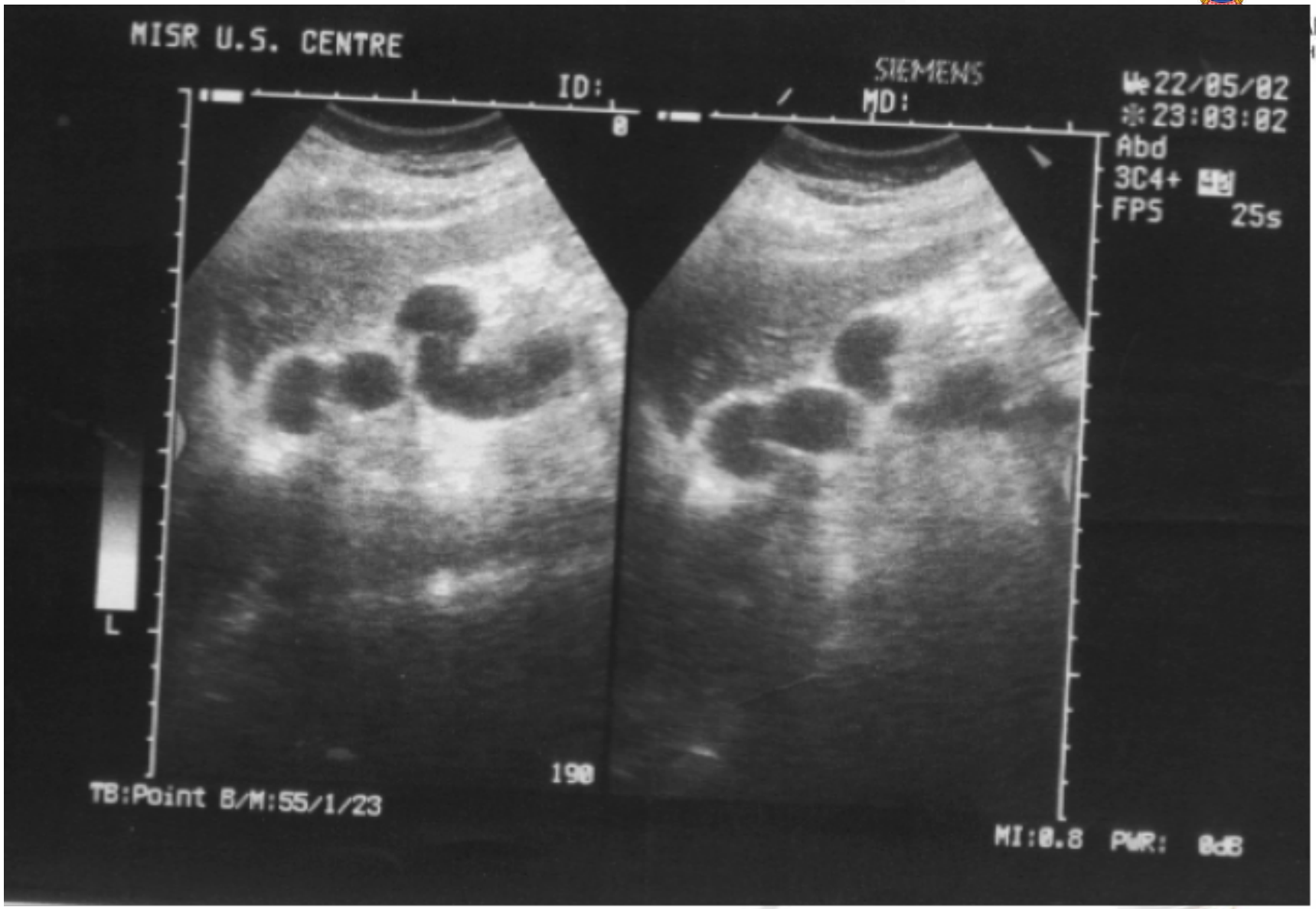
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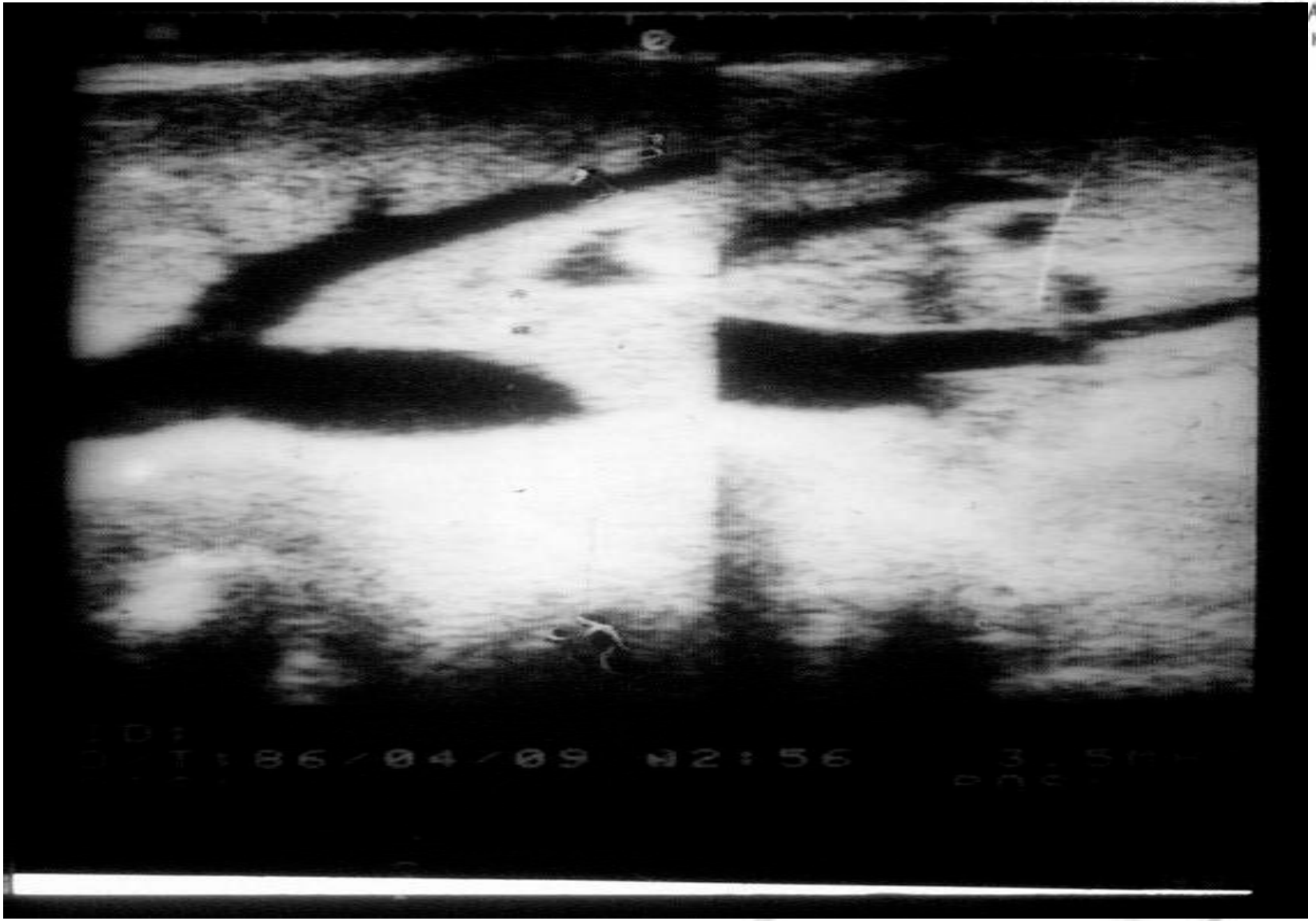
Hepatic Veins

Importance of hepatic veins:

- Attenuated in Liver cirrhosis and veno-occlusive disease.
- Dilated in congested hepatomegaly.
- In segmented Anatomy.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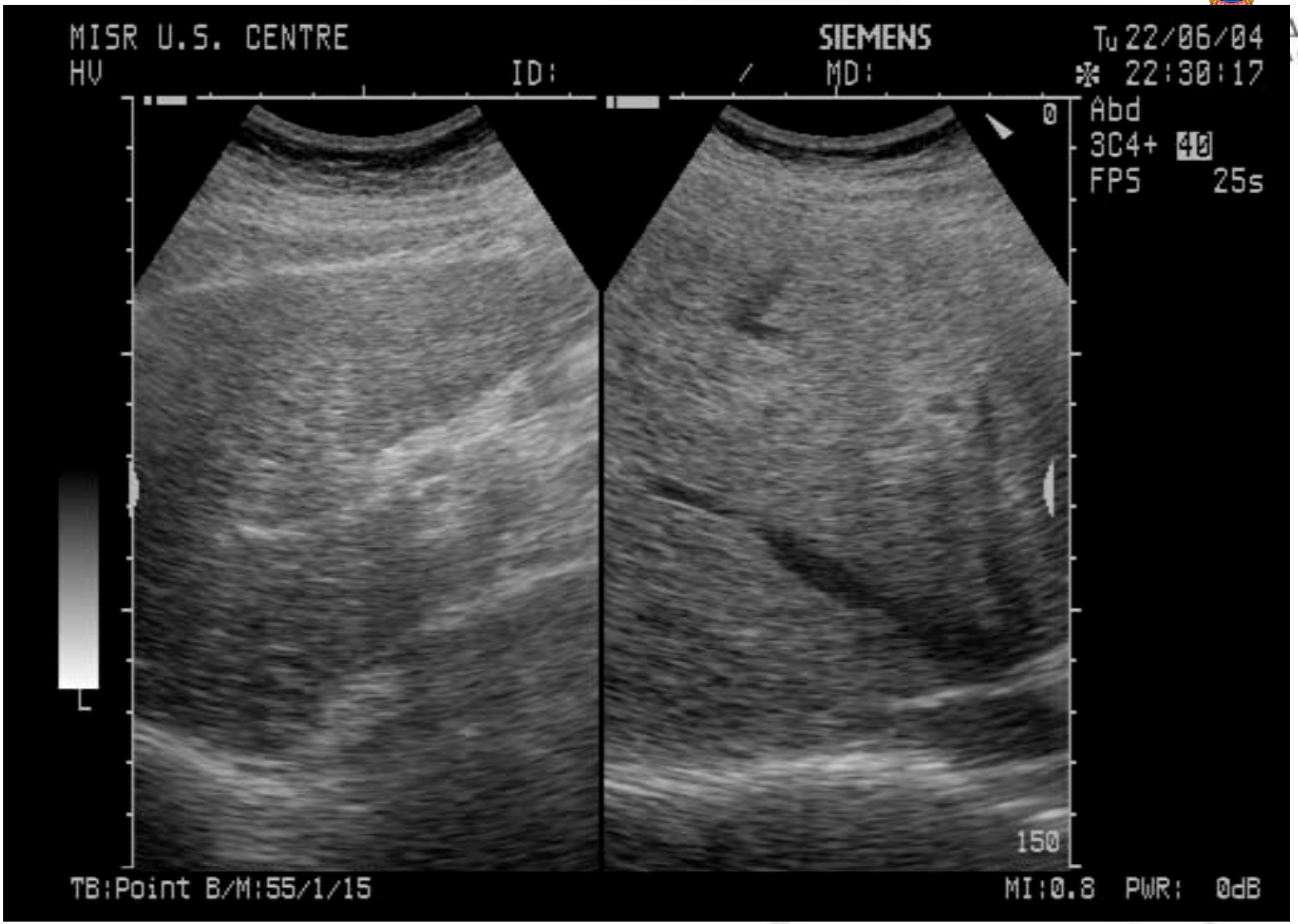
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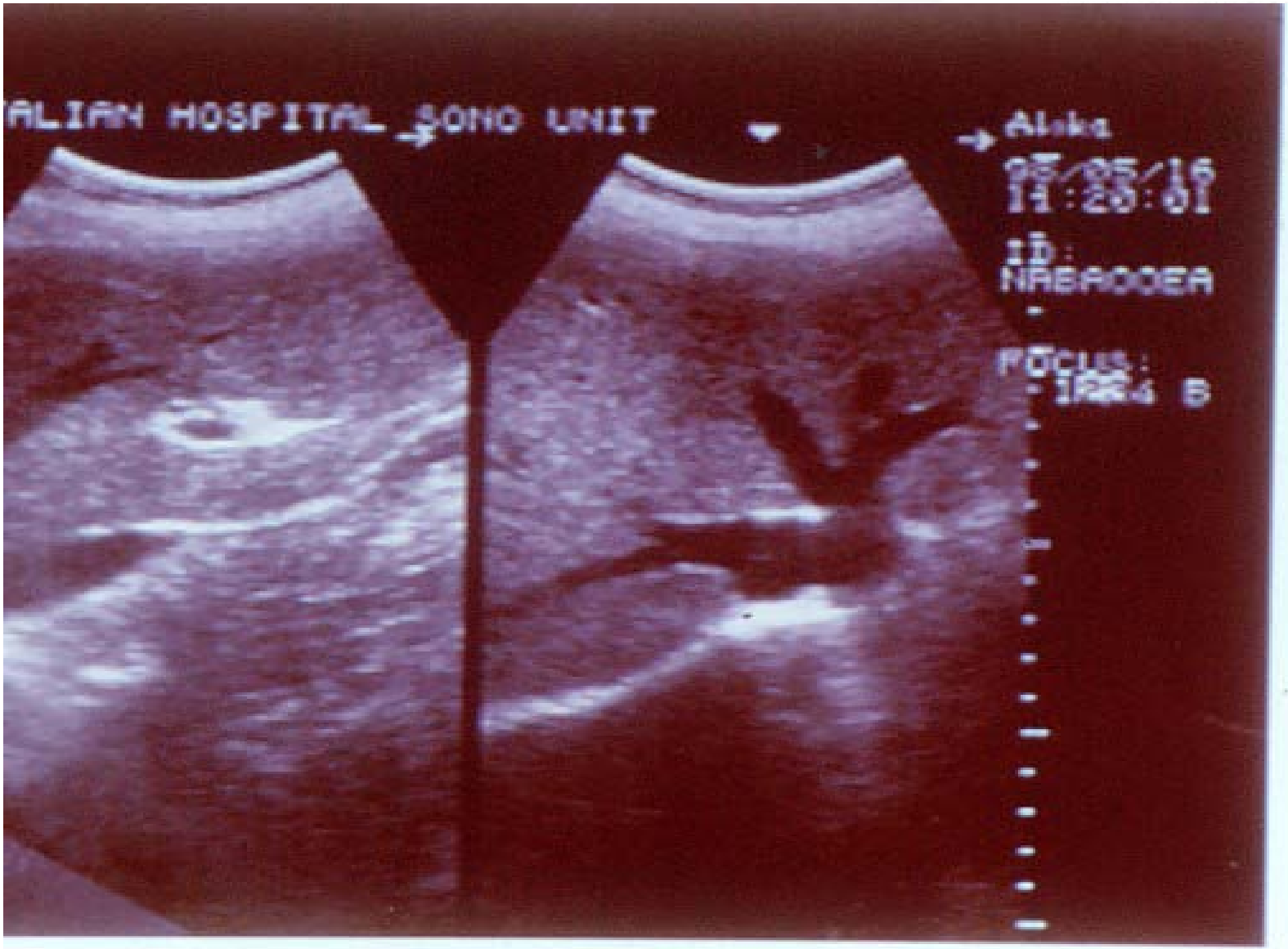
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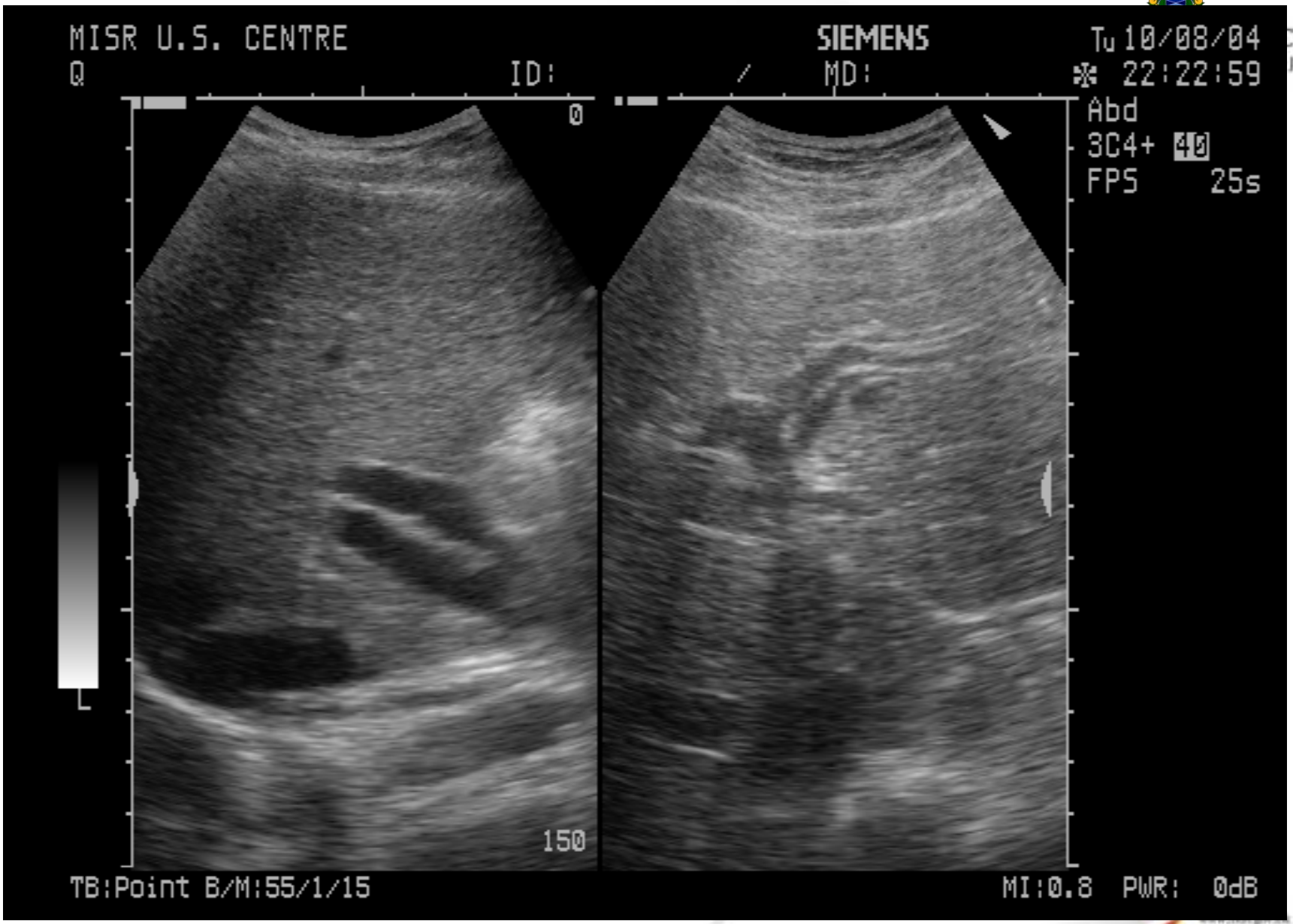
1. Size.
2. Focal lesion.
3. Diffuse liver disease.
4. Hepatic vasculature. (portal vein & hepatic veins)
5. Intrahepatic biliary radicles .

Intrahepatic Biliary Radicles

- Normally they are not seen, when dilated as in Obstructed Jaundice →“double barrel sign” (portal vein tributary and intrahepatic bile radicle).
- When the obstruction is intrahepatic (e.g hilar cholangiocarcinoma) there is no dilatation of C.B.D but when the obstruction is extra hepatic there is dilatation of C.B.D. more than 8 mm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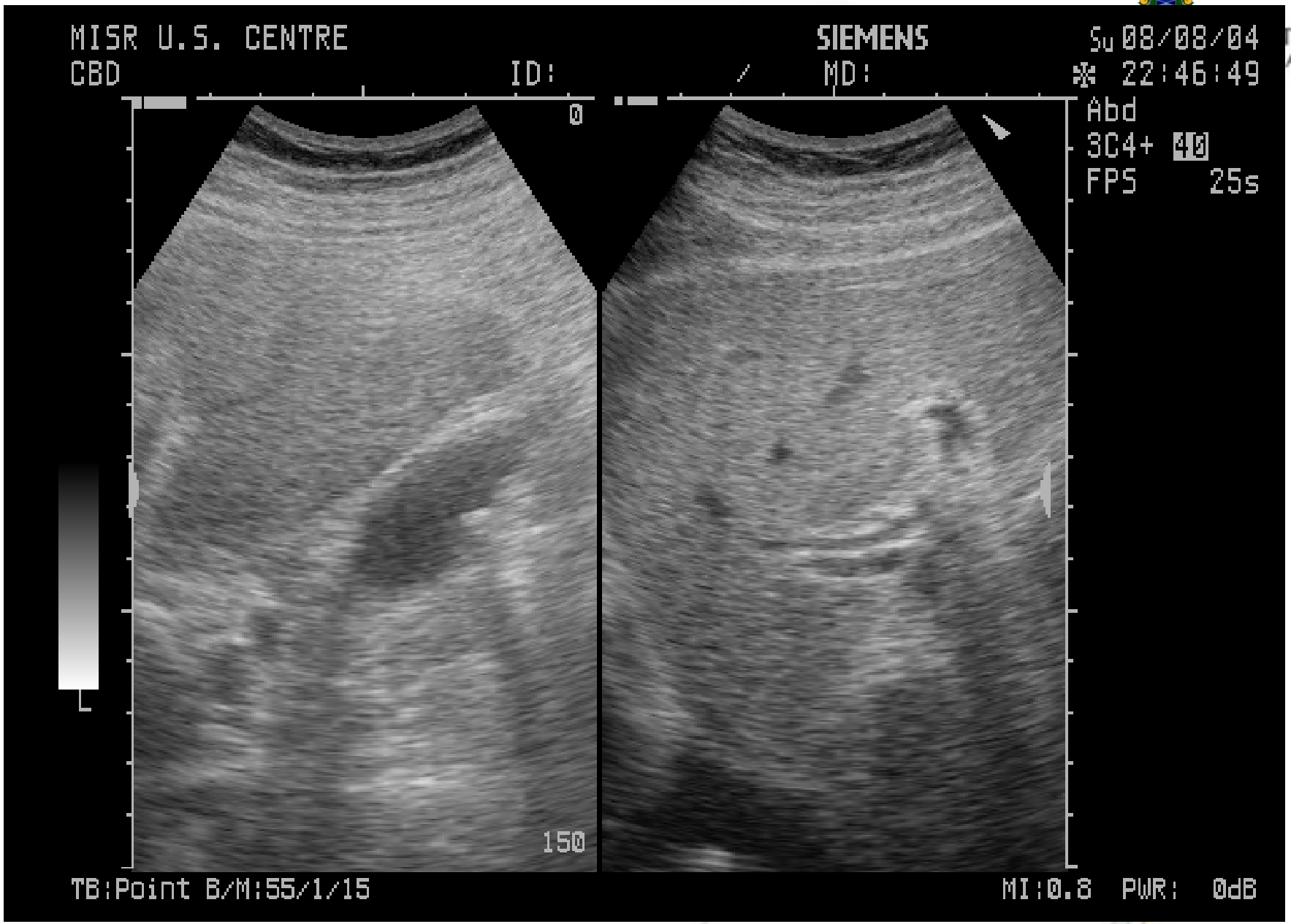
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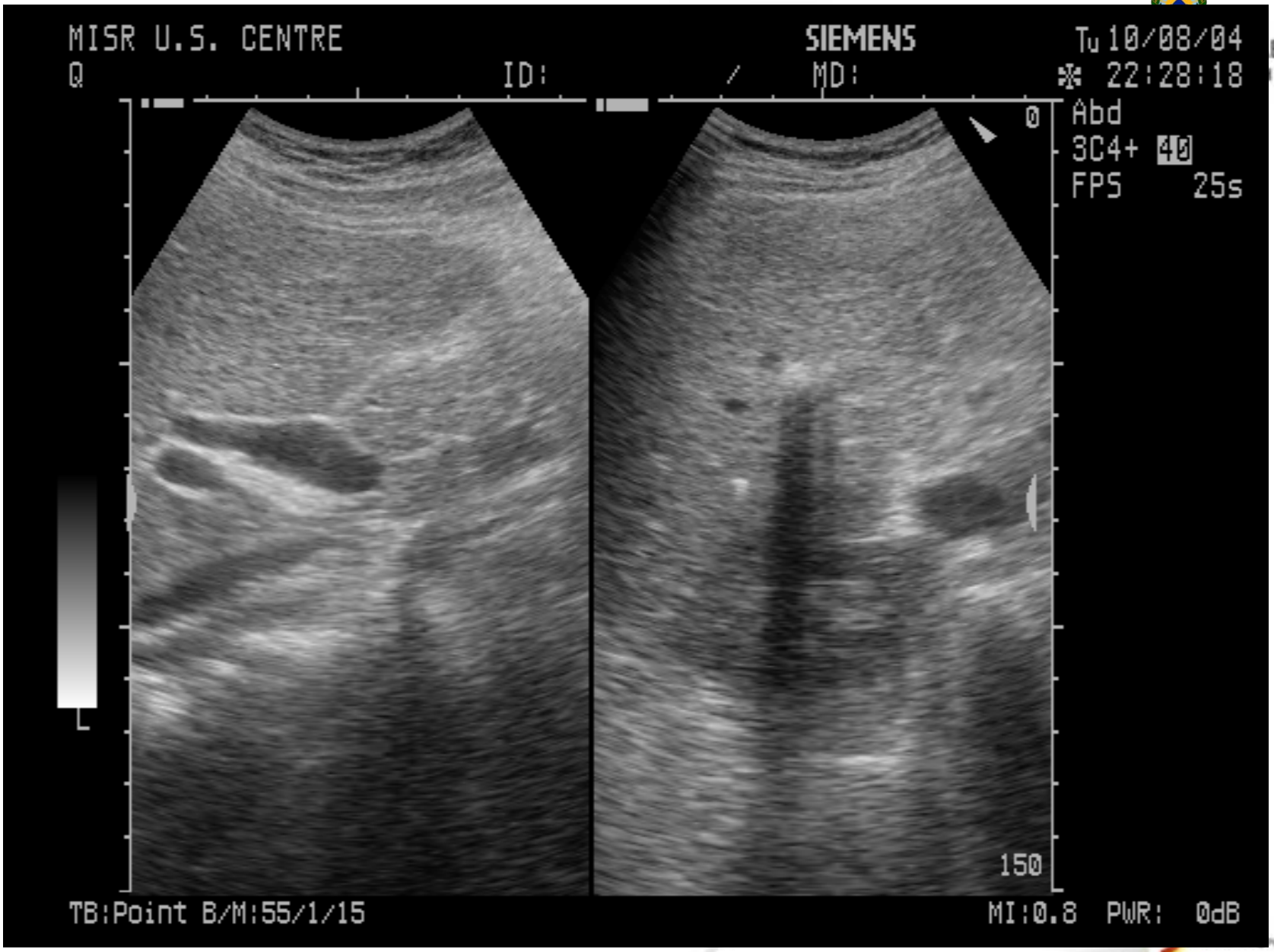
Causes of bile duct obstruction

- Stones in the CBD, hepatic duct, or ampulla of vater
- Cancer head of pancreas, ampulla of vater, cholangiocarcinoma.
- Lesions in the porta hepatis as porta hepatis lymph node enlargement.
- Fasciola or ascaris.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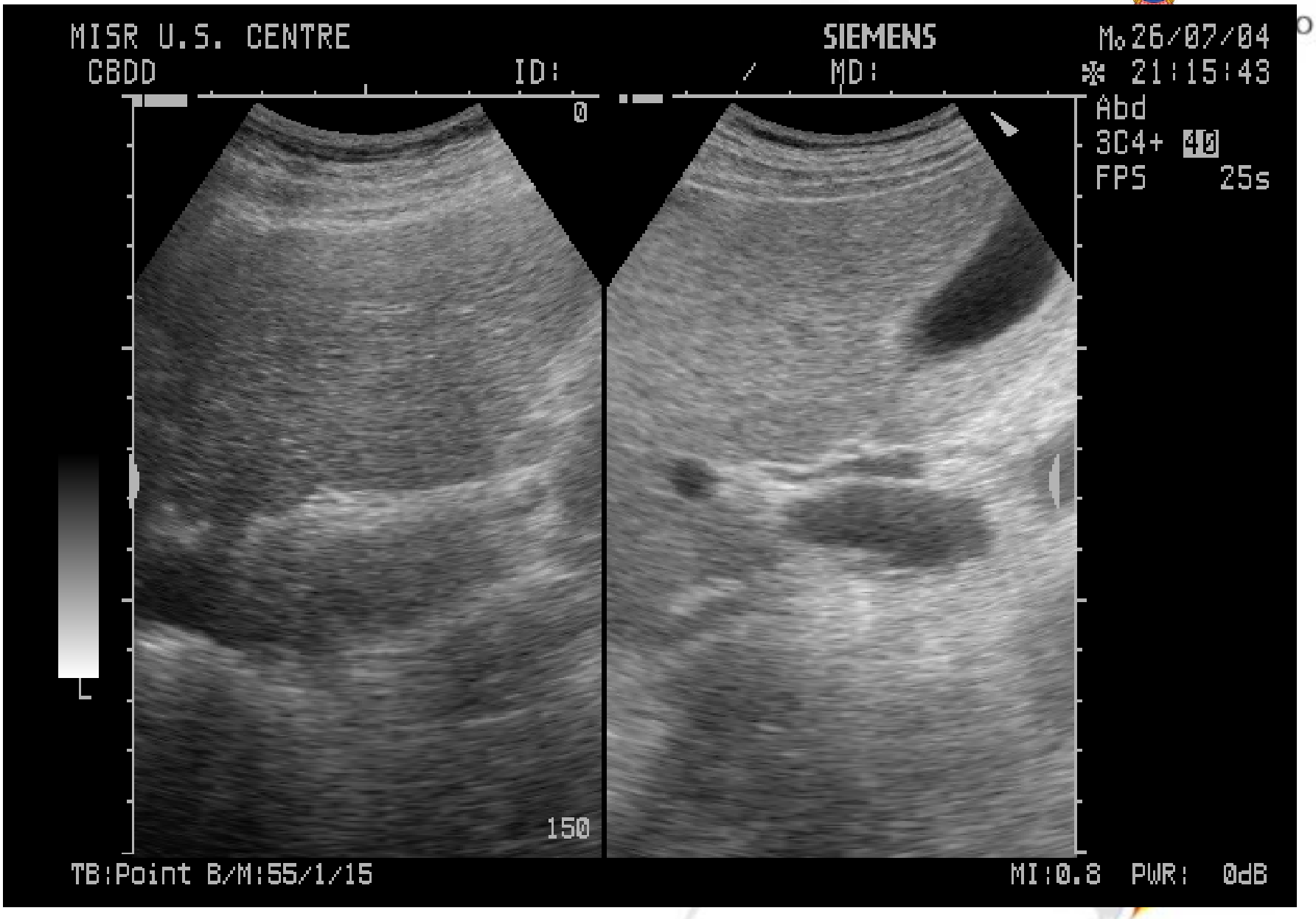
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Segmental anatomy of the live

Liver

Caudate lob

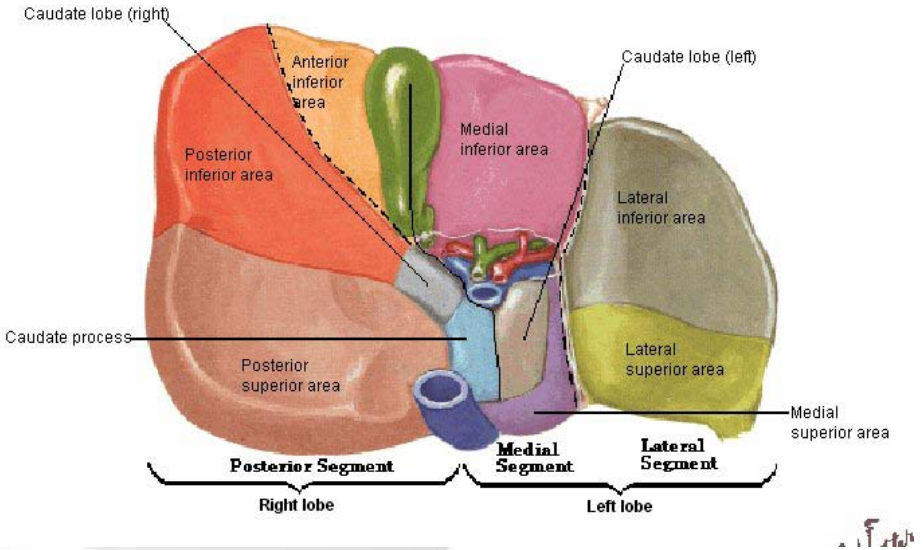
seg 1

Left H.V and hep. Margi

seg 2

Left H.V and falciform lig.

seg 3



Quadrate lobe

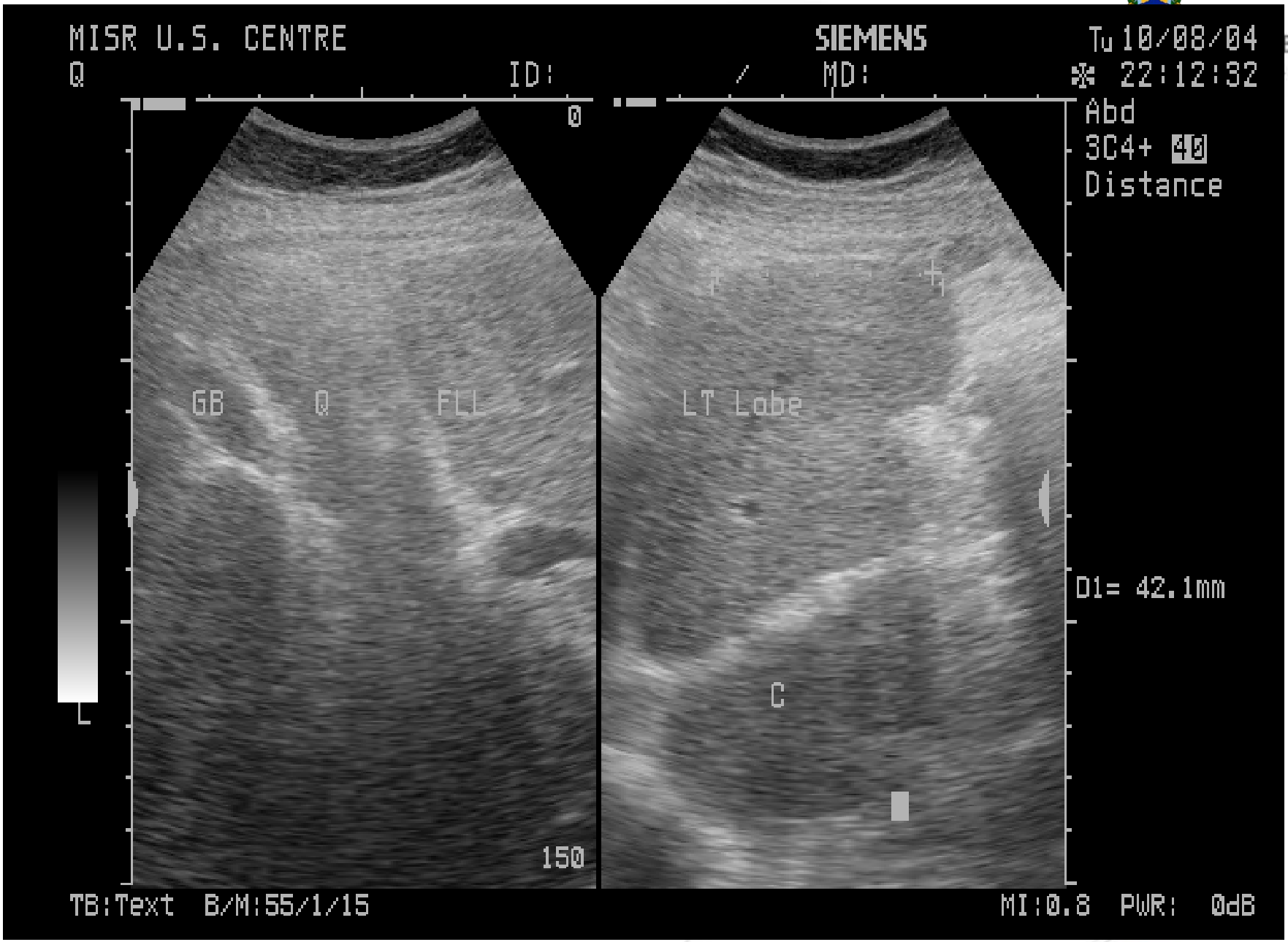
seg 4

G.B and right hep. V

seg 5,8

Rt hep. V. and margin of the liv

seg 6,7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Gall Bladder

Gall Bladder

- Size
- Wall thickness.
- Contents
    - **Stone.**
    - **Parasites.**
    - **Mud.**
- Masses polyp cancer

Size

Long axis 6-12 cm , short axis 3-5 cm

- **Contracted < 5 cm**
- **Distended > 12 cm when the patient is fasting**

Gall Bladder

- Size
- Wall thickness.
- Contents
    - **Stone.**
    - **Parasites.**
    - **Mud.**
- Masses polyp cancer

Wall thickness

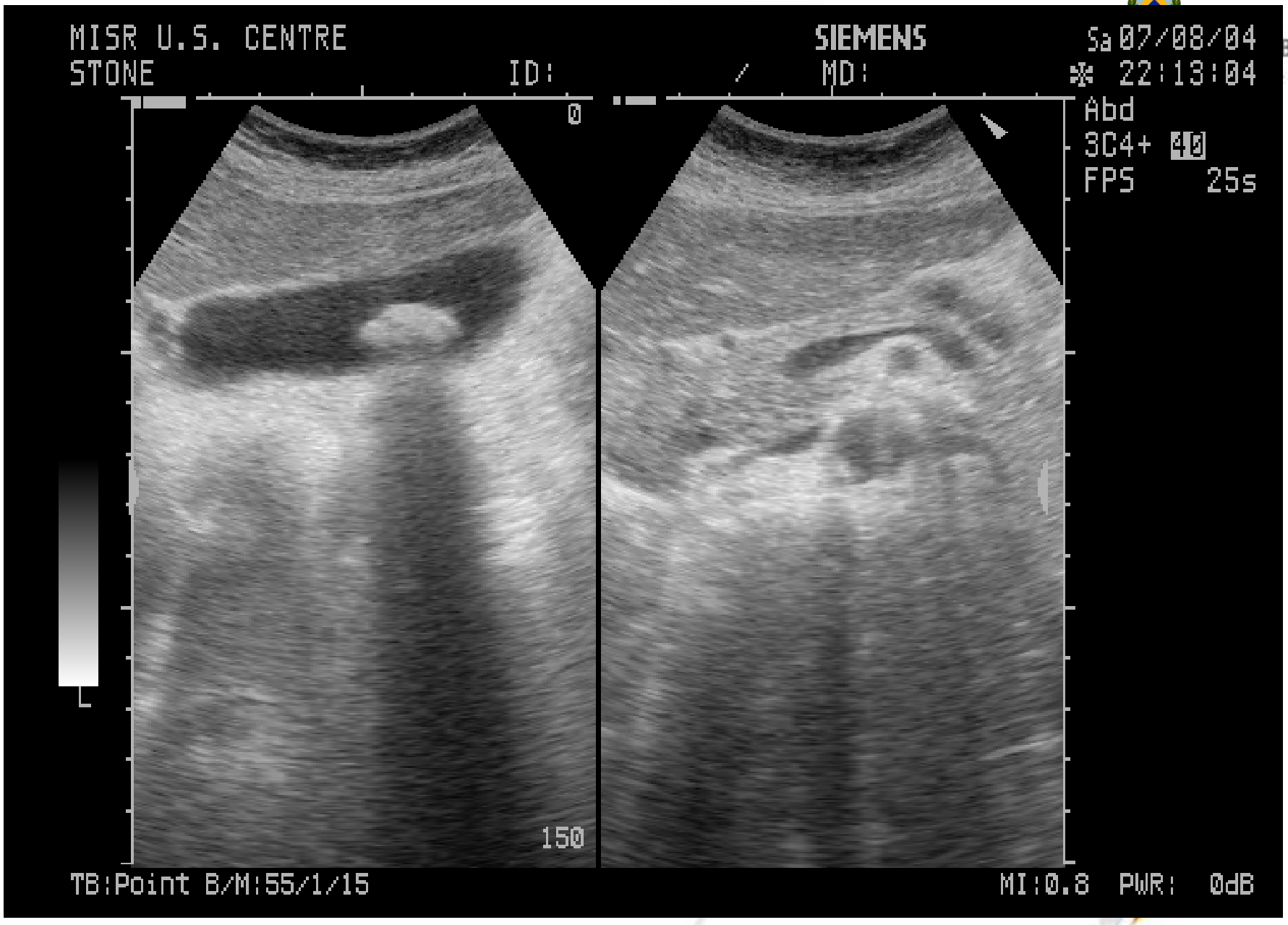
- **Measured in the side in contact with the liver.**
- **Normally it is up to 3 mm.**
- **From 3-5 mm >>> suspect thick wall**
- **More than 5 mm >>> It is a thick wall gall bladder which is seen in:**
  - **Cholecystitis (acute-chronic).**
  - **Ascites.**
  - **Hepatitis (viral).**
  - **Schistosomiasis.**

Gall Bladder

- Size
- Wall thickness.
- Contents
    - **Stone.**
    - **Parasites.**
    - **Mud.**
    - **Masses polyp cancer**

Contents

- **Stones:**
  - seen inside the gall bladder in all positions, mobile except at the neck they appear white with posterior shadow.
- **Mud (infected bile)**
- **Thick bile.**
  - Change with changing position with or without presence of stones. The picture occurs in the presence of thick bile in patients on IV fluids for 3-4 days and in inflammation.
- **Parasite:**
  - Fasciola appears pearl shape.
  - Move as a whole.
  - Ascaris rare appears as thrill inside G.B
- **Cancer & polyps:**
  - Polypoidal or heterogeneous mass.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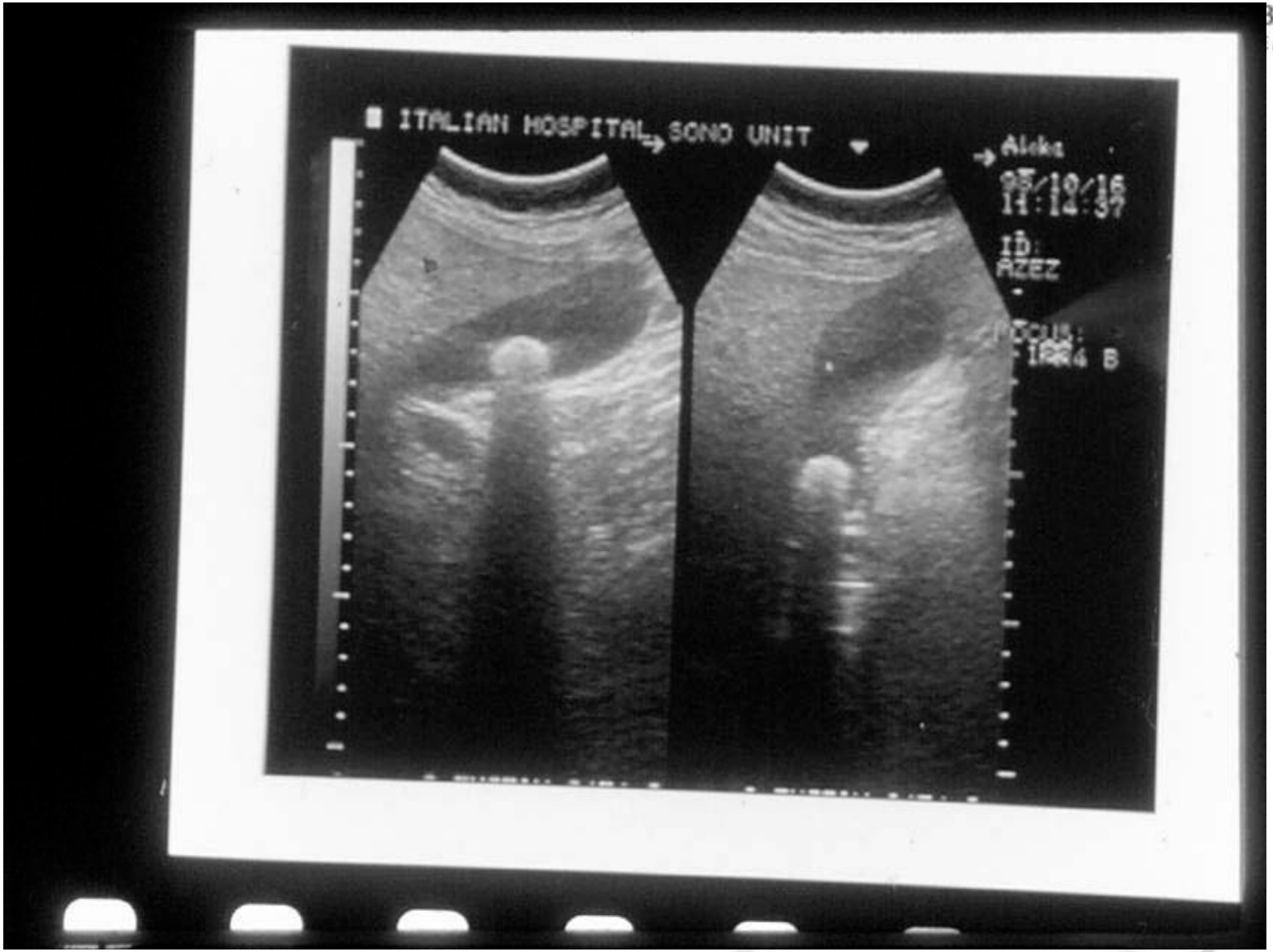
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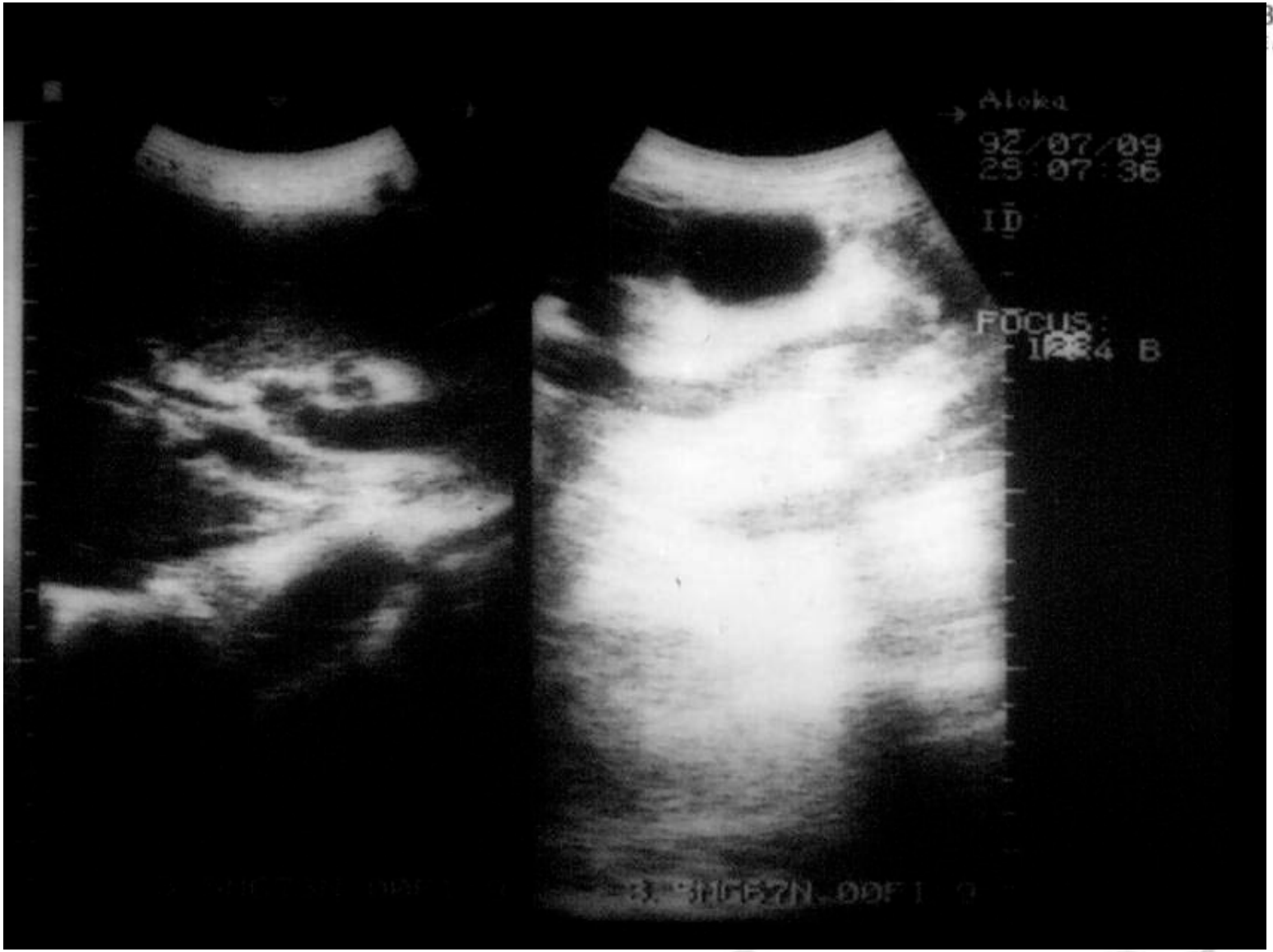
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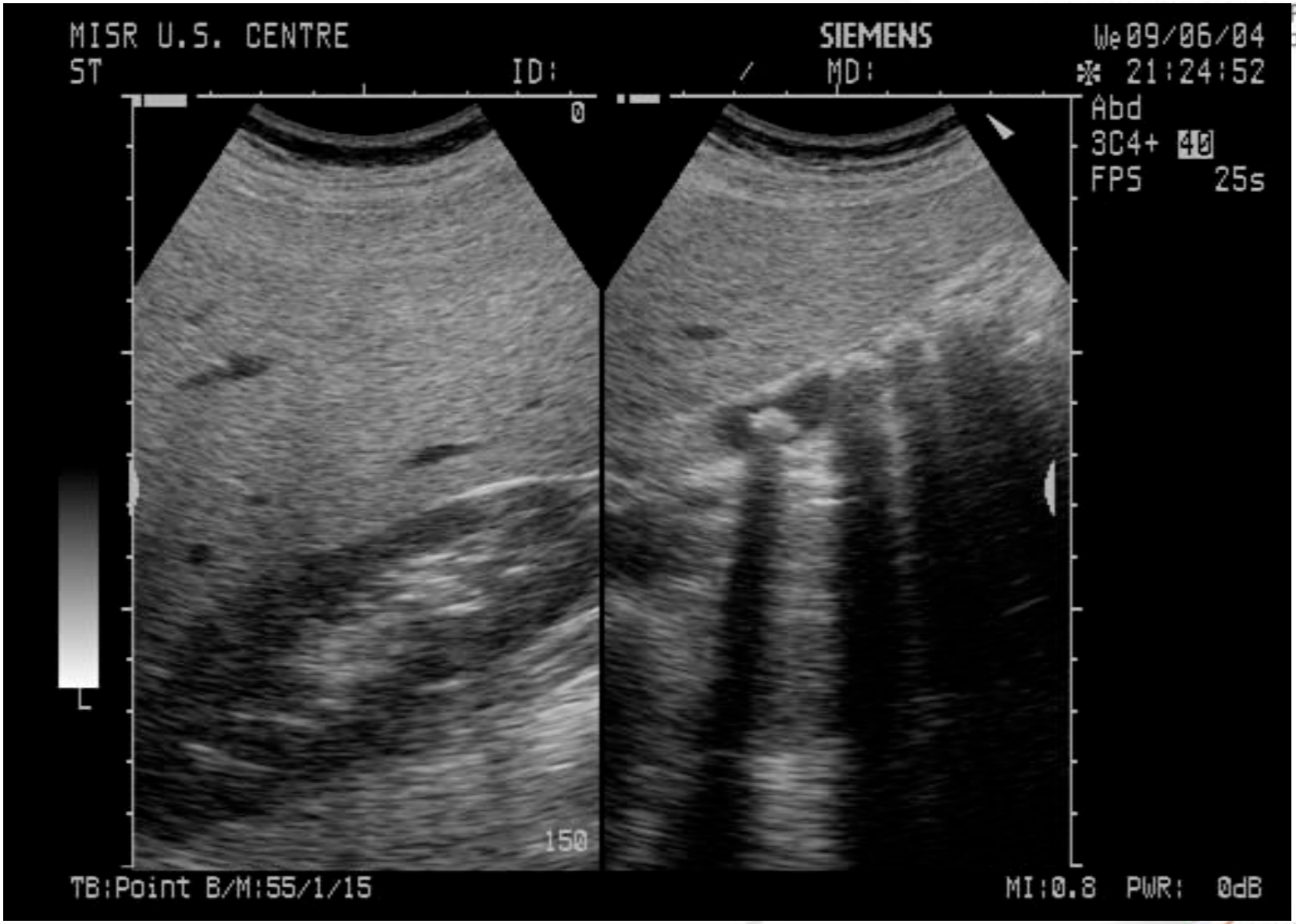
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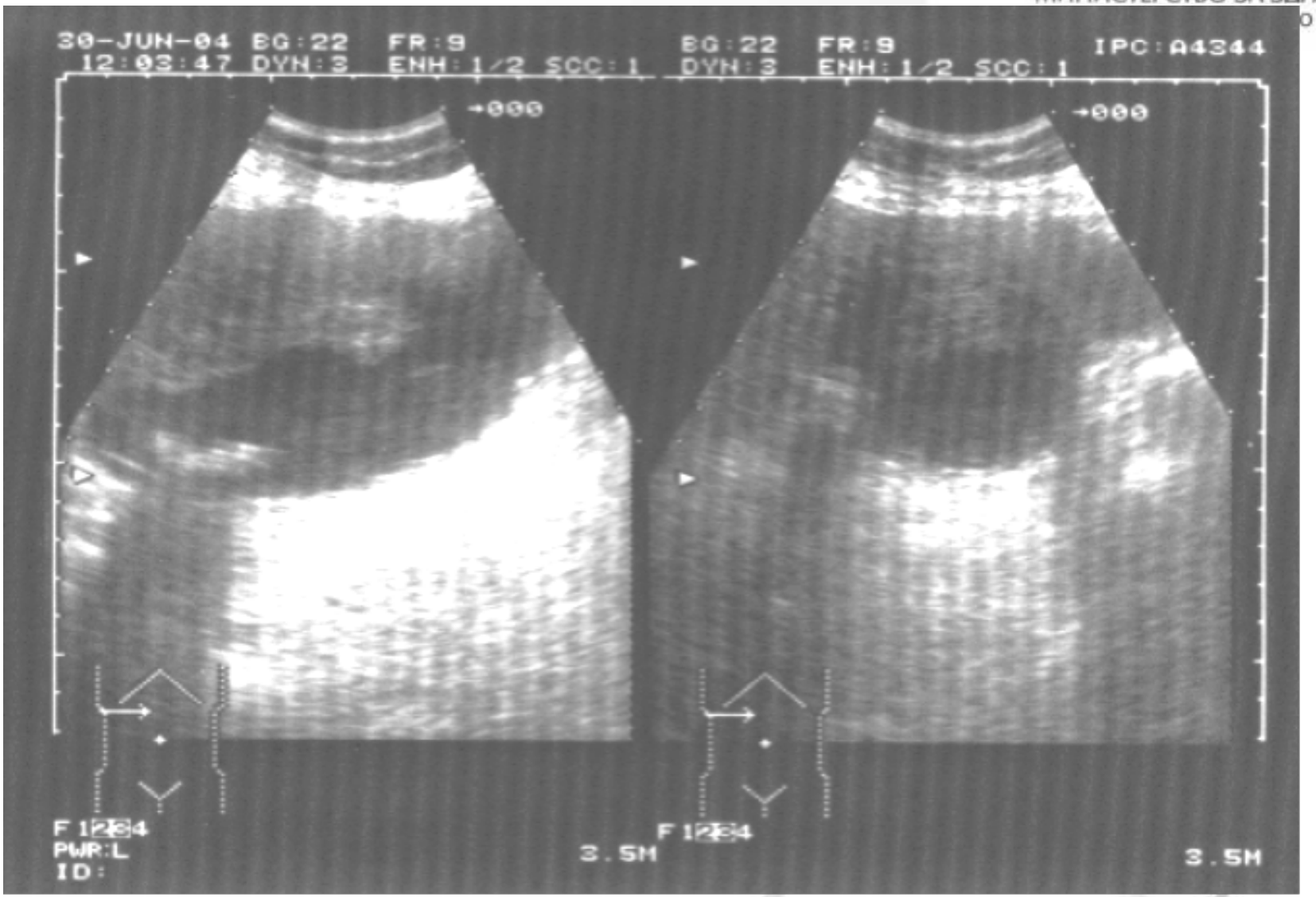
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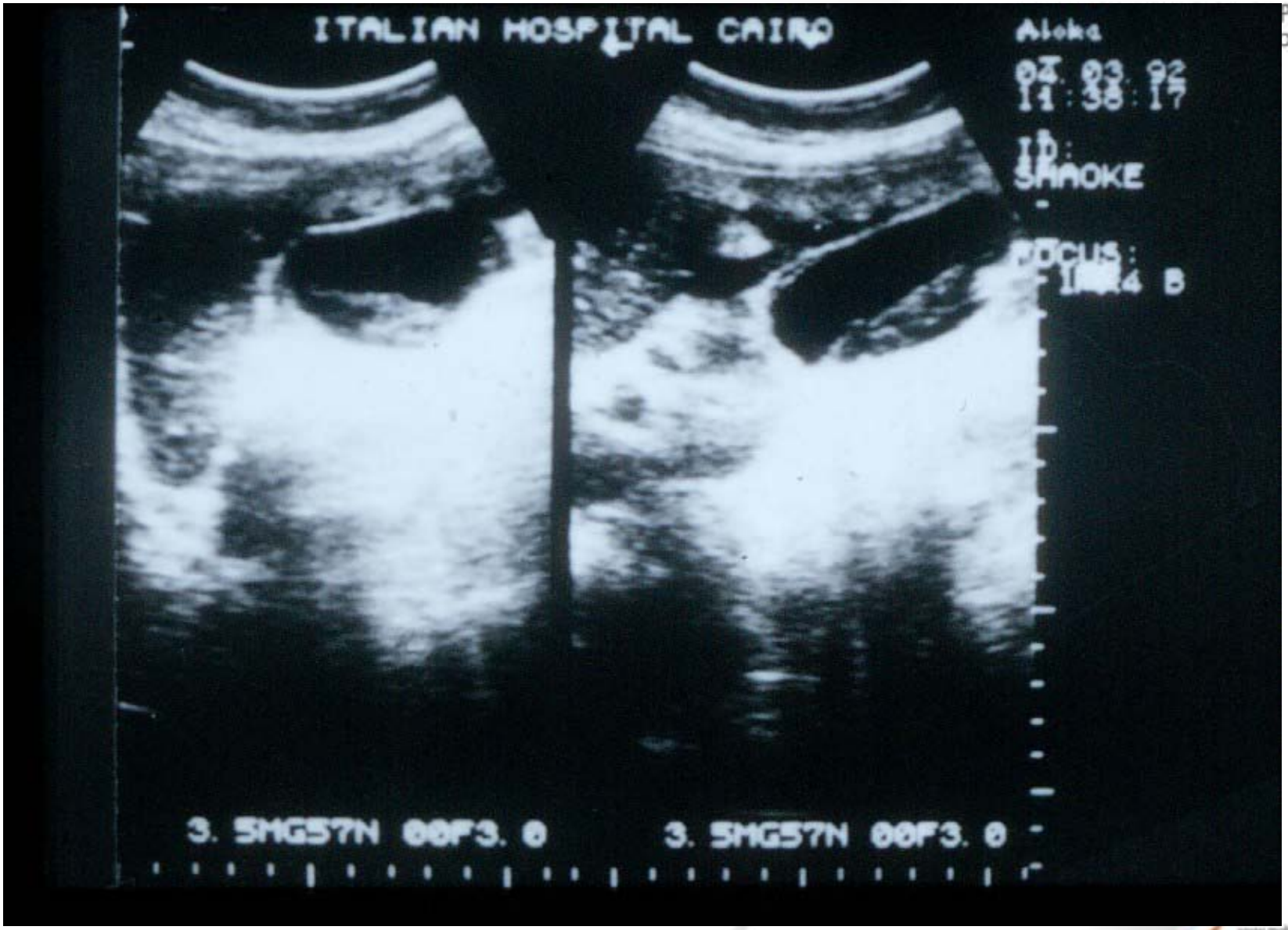
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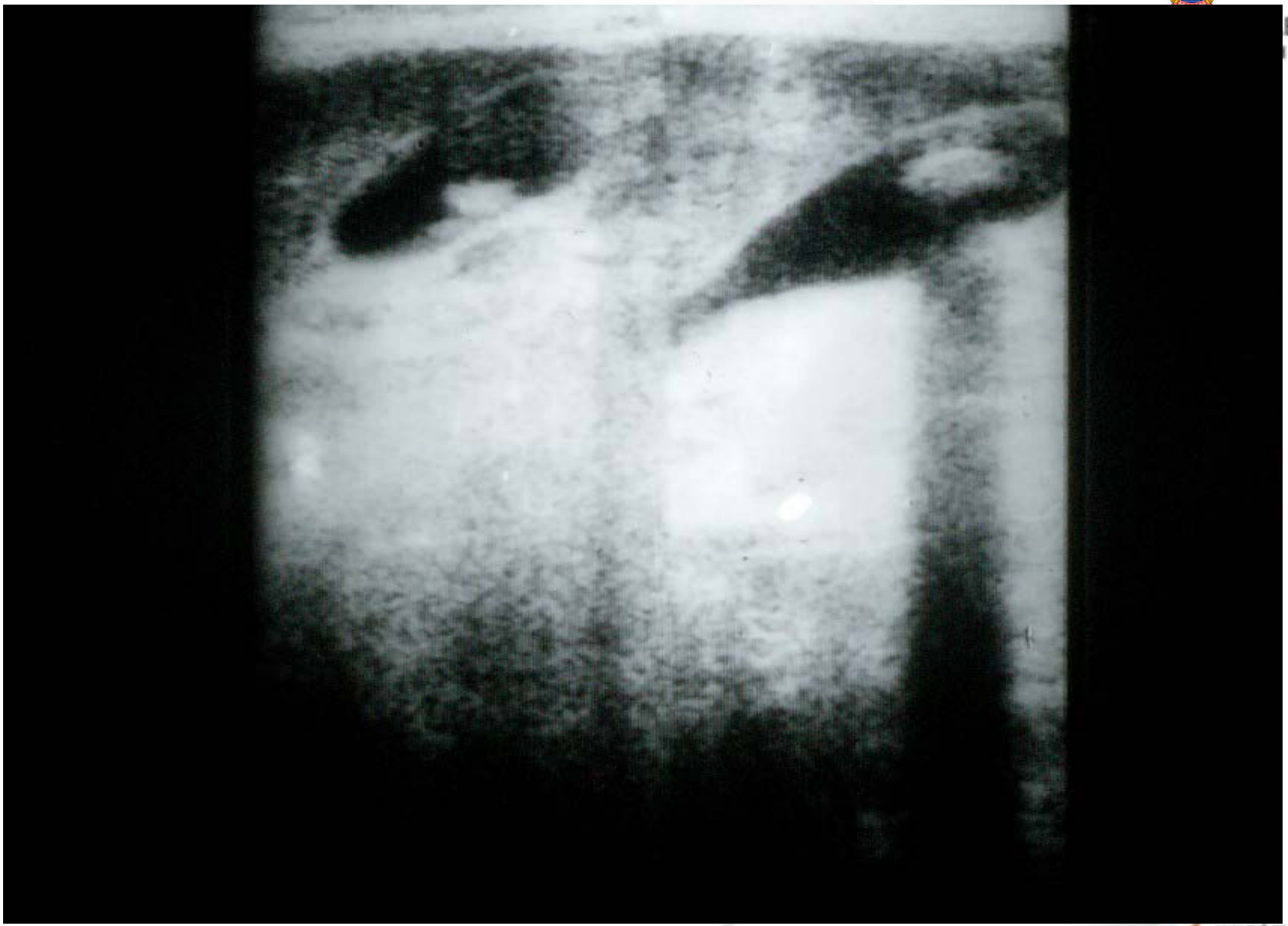


Spleen

Size

Measure the diagonal axis: Normally it covers the upper 1/3 of the left kidney.

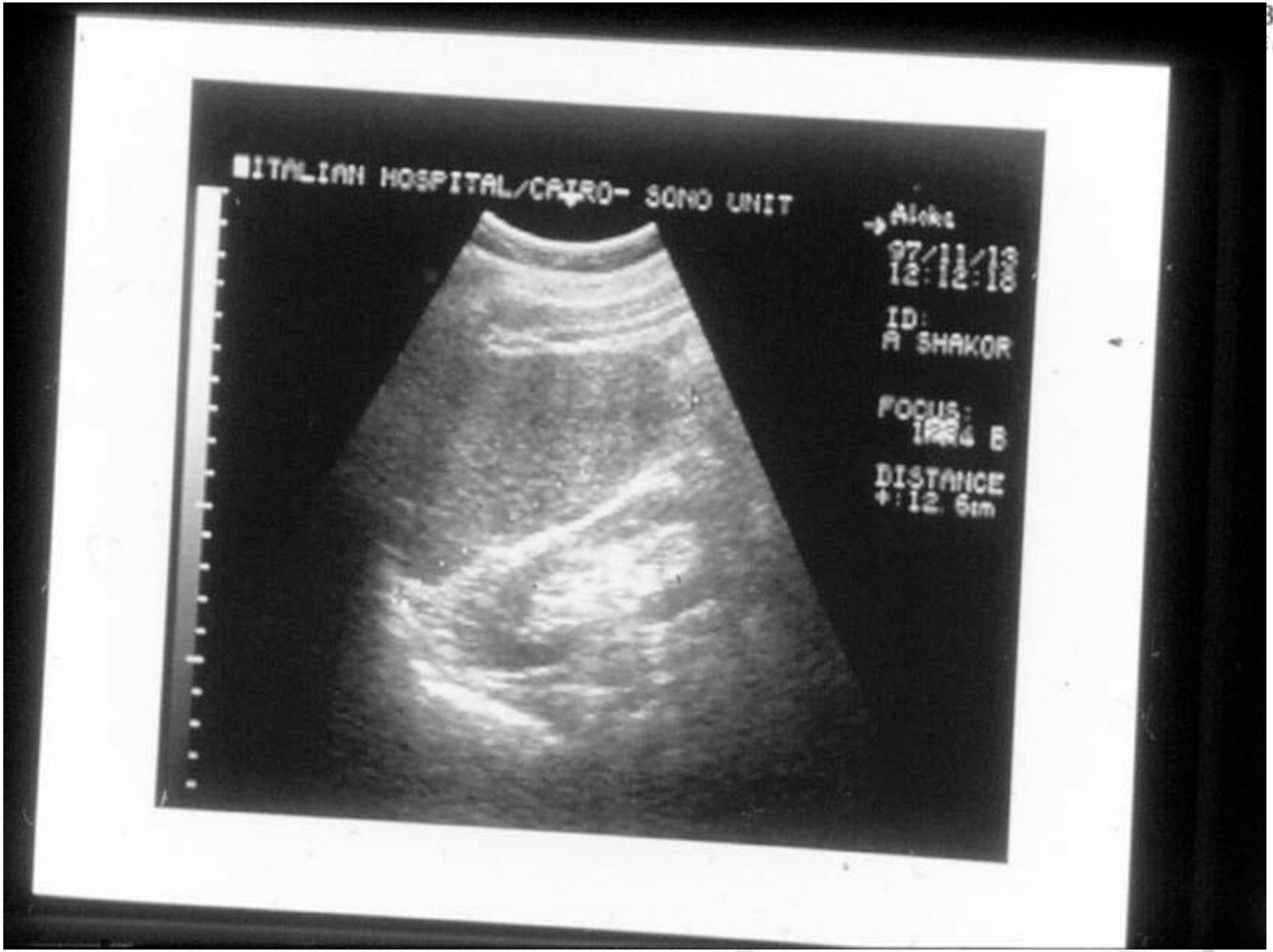
- Longest axis (diagnostic) < 12 cm.
- Relation to kidney.
- Relation to costal margin.

Focal Lesions

- Causes:
  - Lymphoma.
  - Cyst (simple-hydatid).
  - Infarction of a part (triangular area & base toward the edge).
  - Sarcoma.

- ***Diffuse disease***

- **Hemosidrosis:**
  - White dots in spleen
  - Means Portal Hypertension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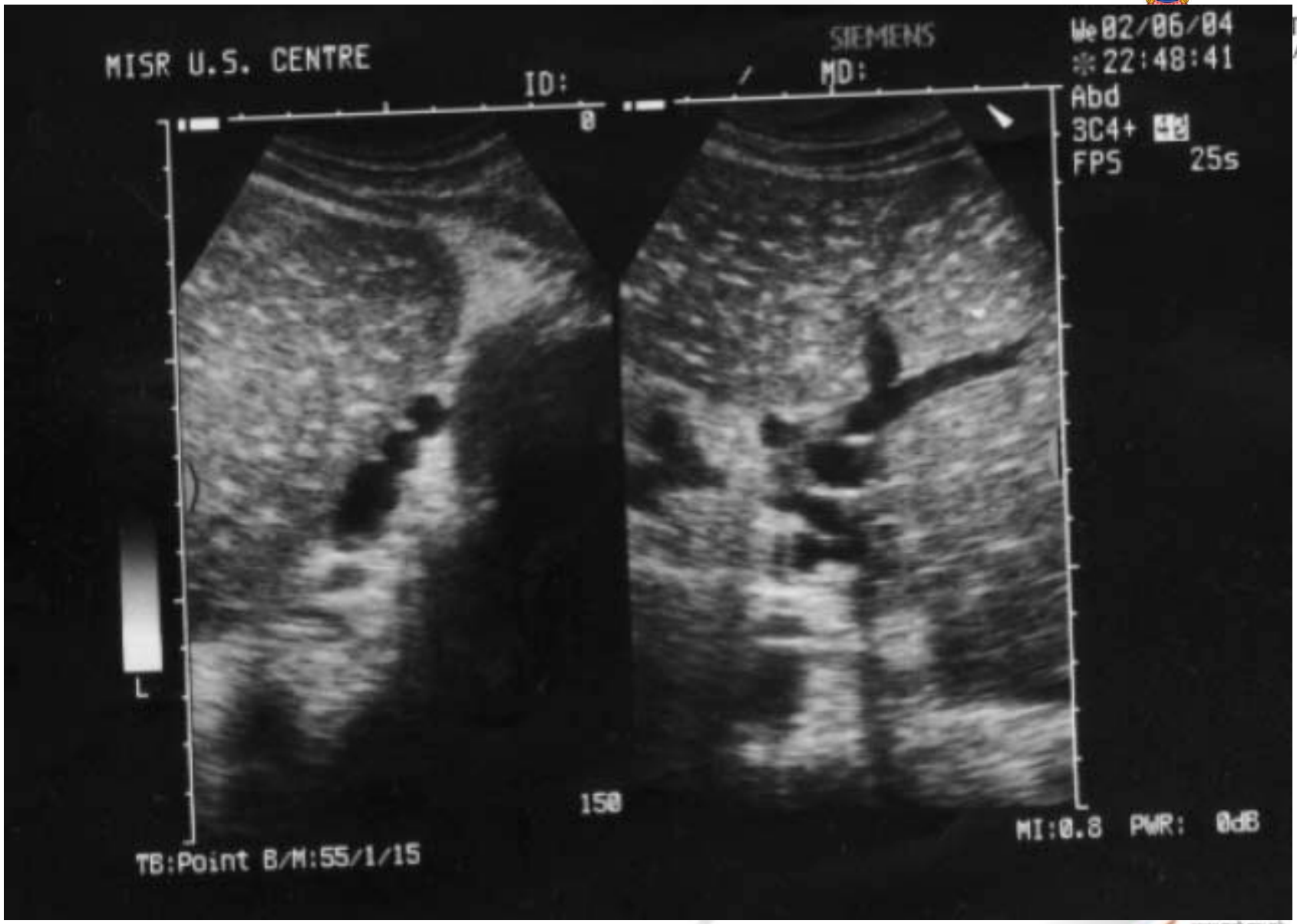
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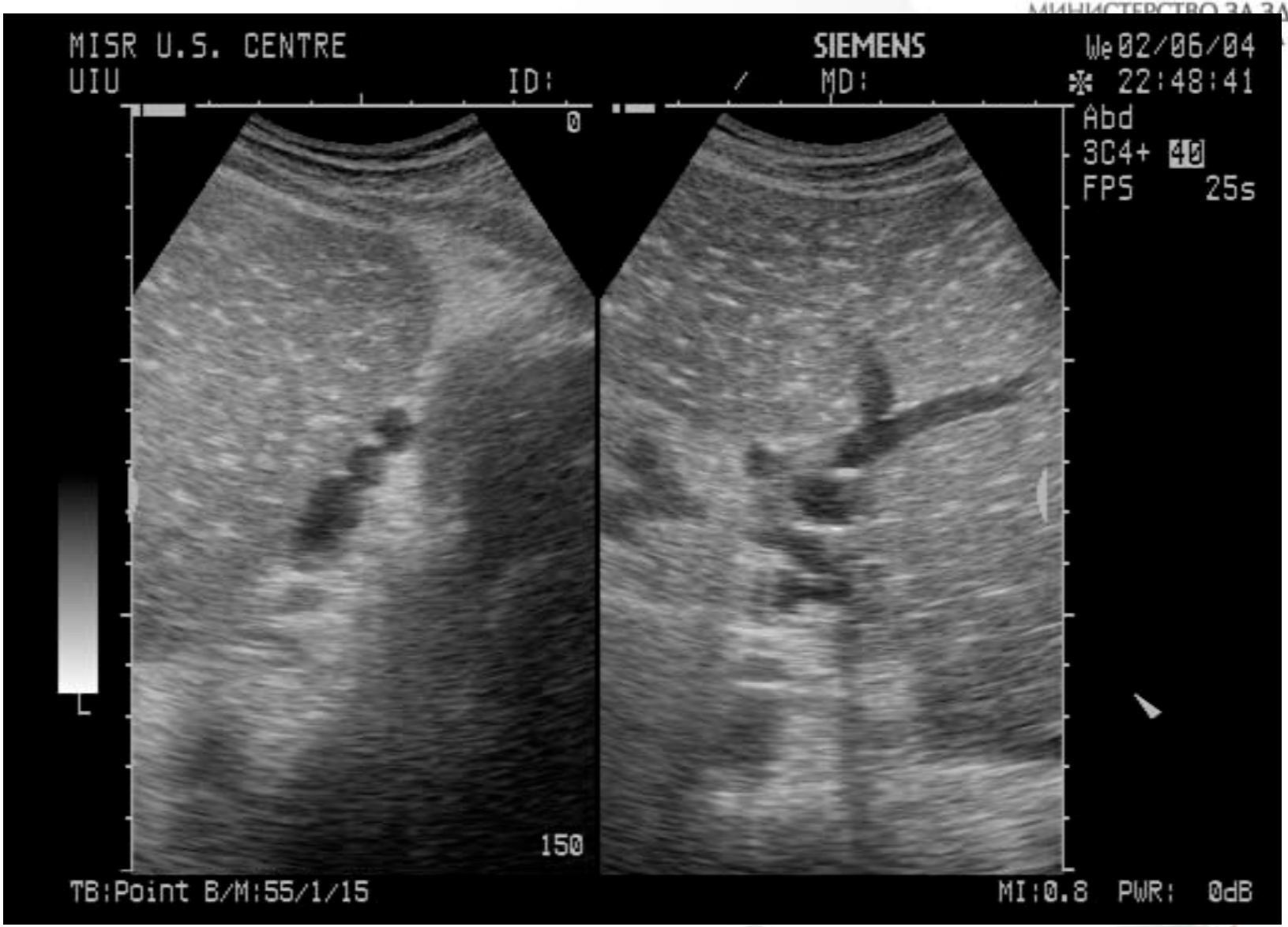
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Благодарам на вниманието