



# **Ultraschall bei Erkrankungen in den Tropen und insbesondere Tbc**

**Prof. Dr. Christoph F Dietrich, MBA**

**Gastroenterologe, Hämato-Onkologe, Pneumologe, Geriater, Arzt für Palliativmedizin**

**WFUMB Treasurer 2022 – 2025**

**Department Allgemeine Innere Medizin (DAIM)**

**Hirslanden Bern, Schweiz (Klinik Beau-Site, Klinik Permanence, Salem-Spital)**

# Conflict of interest (COI)

## Honoraria, other support

- AbbVie
- Echosens
- Falk
- Hitachi (Fuji)
- Janssen
- Mindray
- Olympus
- Pentax
- Siemens
- Youkey

## Consultancy

- Hitachi (Fuji)
- Siemens
- Mindray
- JAZZ

# Agenda

Organmanifestationen, diffus, umschrieben

1. Überblick
2. Pleura, Peritoneal
3. Omentum
4. Lymphknoten
5. Leber, HBS
6. Milz
7. Pankreas
8. Gastrointestinaltrakt
9. Urogenitaltrakt

# Introduction of tuberculosis



## Infectious diseases

Tuberculosis (TB) is one of the most common infectious diseases with approximately 9.9 million cases globally. Its most frequent presentation is pulmonary TB, nevertheless; **10–20% of TB infections are extrapulmonary.**

## Treatment

Almost half of patients are treated empirically with anti-tuberculosis drugs upon clinical suspicion only. Precise diagnosis is vital, as **different treatment approaches depend on the diagnosis.**



# Applications of ultrasound in extrapulmonary tuberculosis

## ➤ Ultrasound is a useful tool to detect signs of extrapulmonary tuberculosis

### 01 Septations

Pleural tuberculosis; Primary mediastinal lymph node tuberculosis;  
Pericardial tuberculosis

### 02 Superficial Organs & Soft Tissues

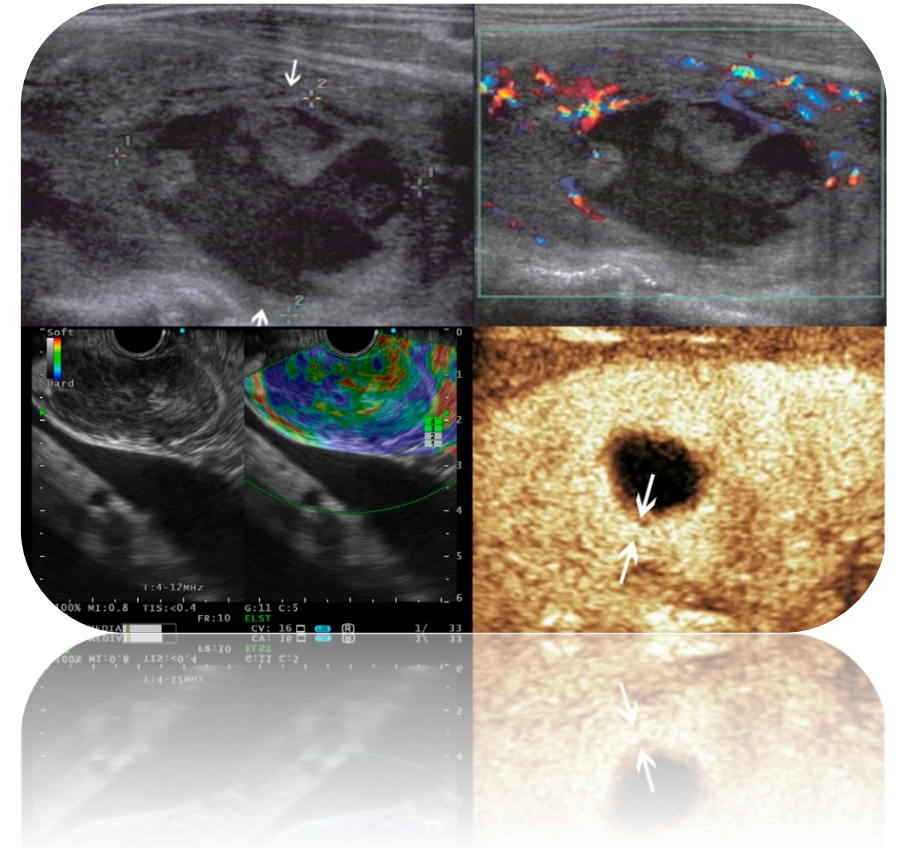
Thyroid tuberculosis; Cervical lymph node tuberculosis; Breast tuberculosis;  
Soft tissue tumors infected with mycobacterium tuberculosis

### 03 Abdomen

Esophageal tuberculosis; Gastric tuberculosis; Intestinal tuberculosis;  
Pancreatic and peripancreatic tuberculosis; Hepatosplenic tuberculosis;  
Biliary tuberculosis; Peritoneal tuberculosis

### 04 Genitourinary Systems

Renal tuberculosis; Ureteral tuberculosis; Prostate tuberculosis;  
Tuberos vas deferens tuberculosis; Female genital tuberculosis





# Septations

# Pleural tuberculosis

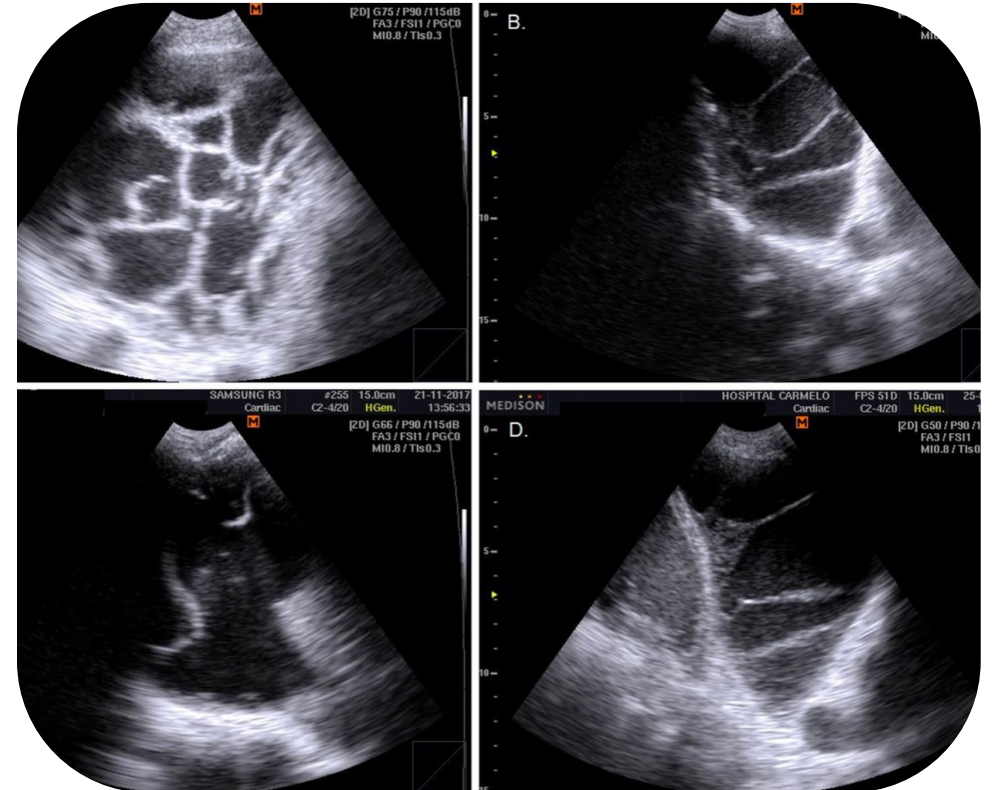
- Pleural TB is the most common manifestation of extrapulmonary tuberculosis.

## Holistic diagnostic approach

- Patients' signs and symptoms
- Risk factors (immunocompromised state and residents of high-burden countries)
- Tuberculin skin test
- Relevant radiological
- Laboratory investigations

## Ultrasound features

- Pleural thickening adjoining a complex pleural effusion.
- Multiple thin septations and fibrinous strands in the pleural space, producing a weblike or branching appearance.



# Primary mediastinal lymph node tuberculosis

- Tuberculosis bacilli can enter the bloodstream and attack other organs, including the lymphatic system.
- One manifestation associated with lymphatic tuberculosis infiltration is the presence of **large hilar and mediastinal lymph nodes**.



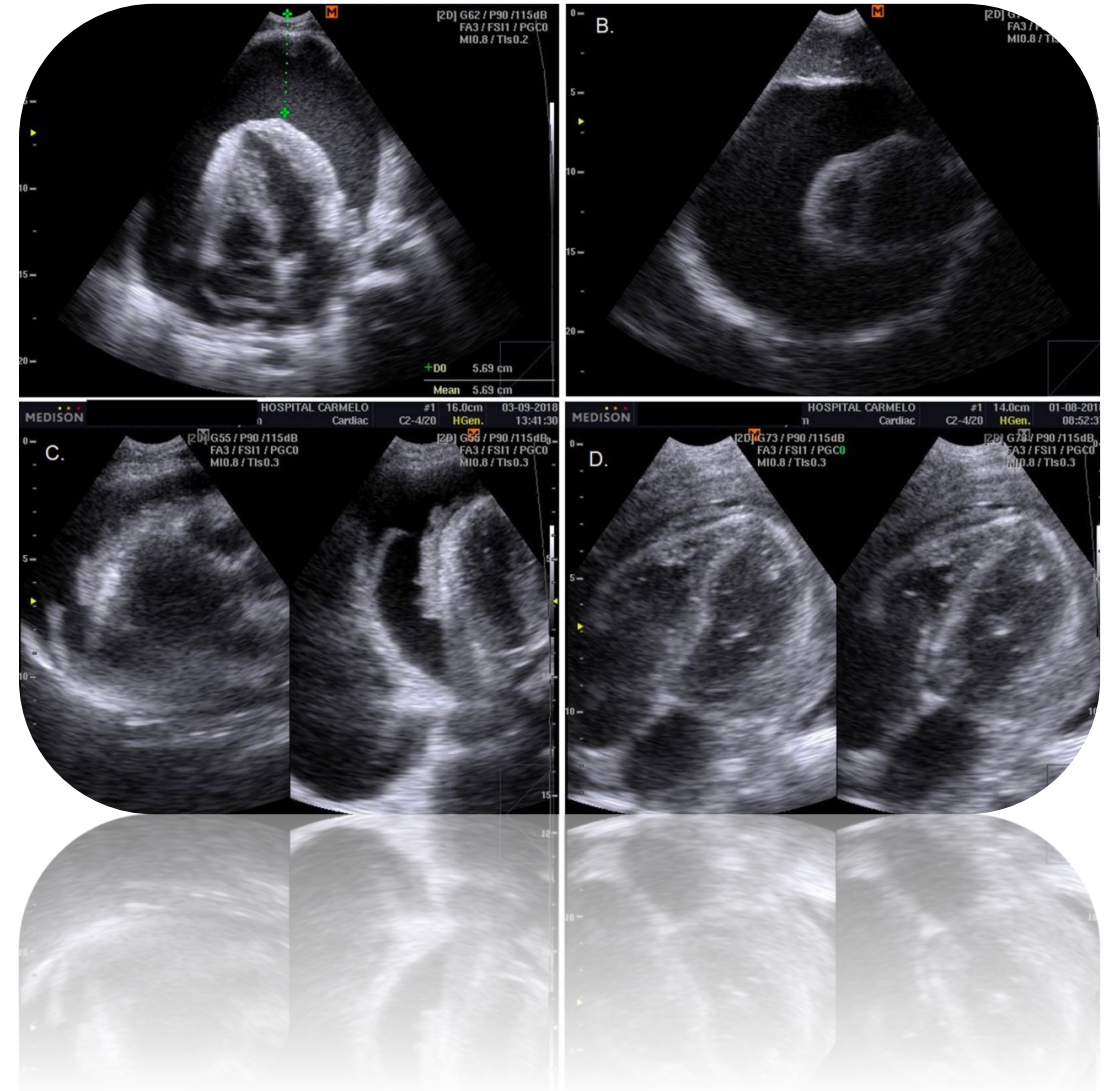
- **It is essential to emphasize the role of biopsy** of large mediastinal lymph nodes for suspected TB cases allowing for earlier definitive diagnoses.



# Pericardial tuberculosis

## Diagnosis:

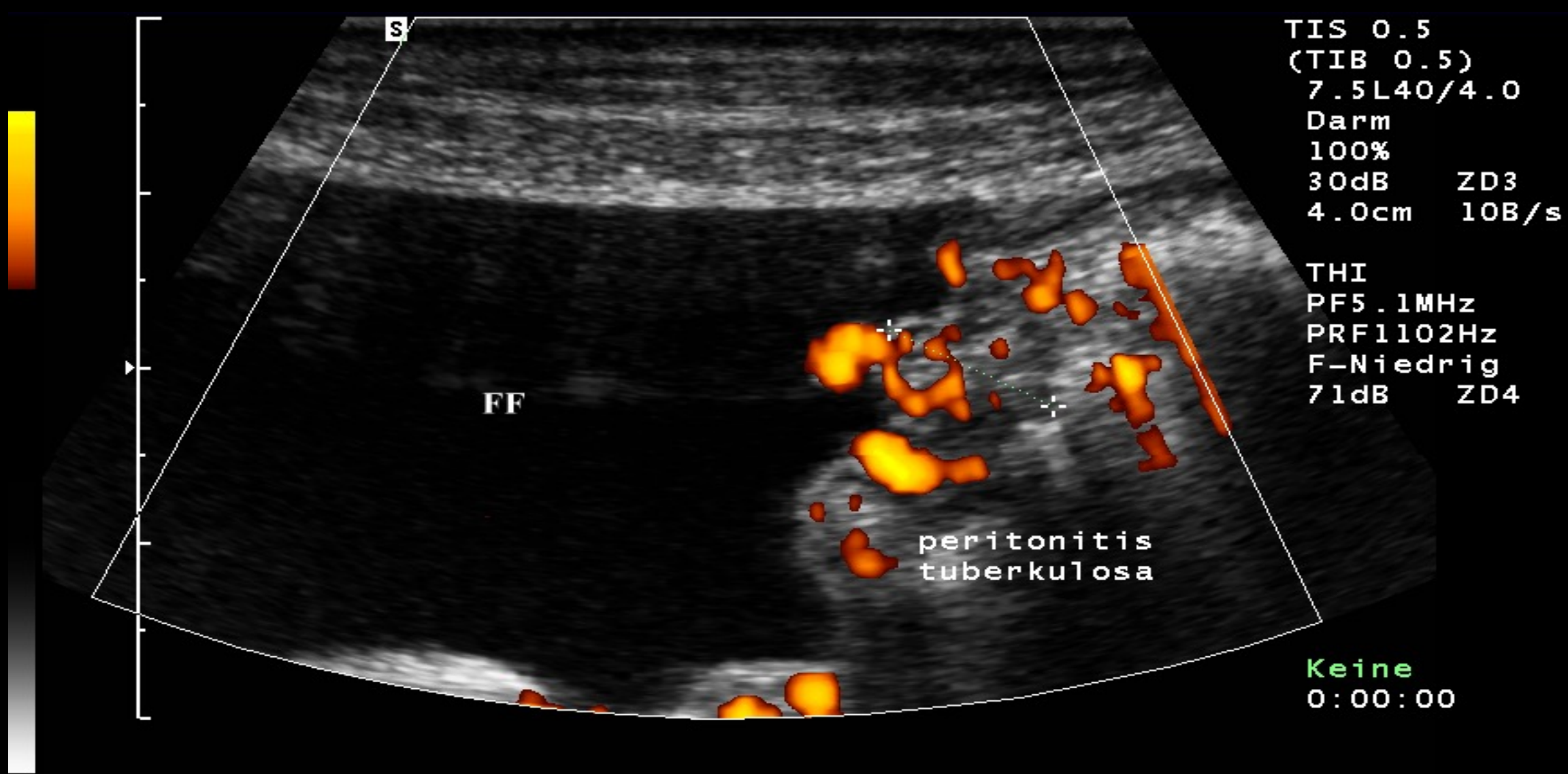
- Based on pericardial effusions with fibrinous filaments
- Pericardial thickening
- Complications (cardiac tamponade or impaired diastolic function, indicating pericardial constriction)



A close-up photograph of a metal surgical instrument, possibly a scalpel blade, showing a serrated edge. The blade is positioned diagonally across the frame. The background is a plain, light-colored surface.

**Peritoneal (Omentum) / Pleural**

... we might be familiar with peritoneal and pleural tuberculosis ...



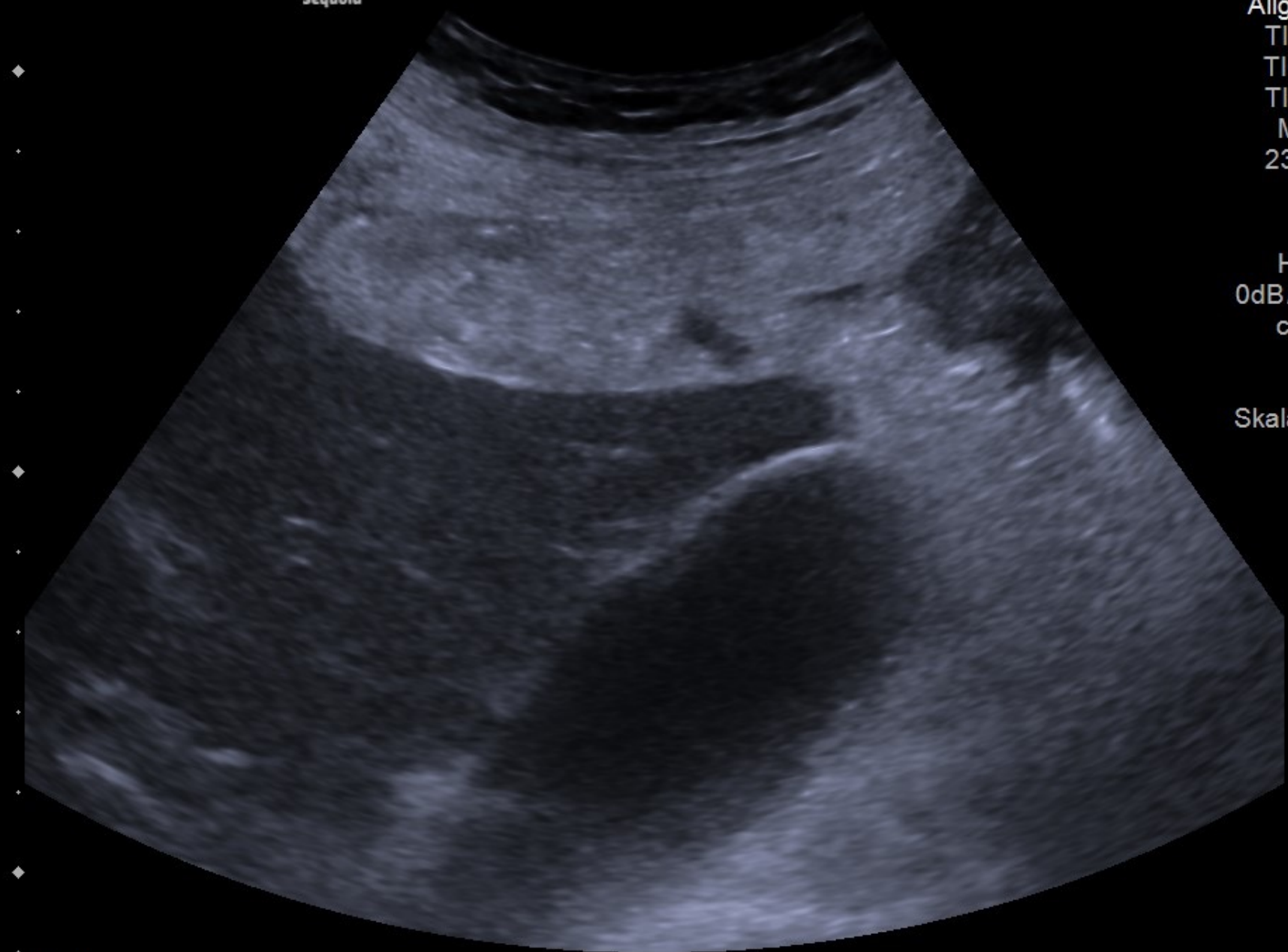
Barreiros AP, Braden B, Schieferstein-Knauer C, Ignee A, Dietrich CF. Characteristics of intestinal tuberculosis in ultrasonographic techniques. Scand J Gastroenterol 2008; 43(10):1224-1231

Sri Lanka, severely ill

IR



Sequoia



11cm

5C1  
Allgemein  
TIB:0,90  
TIC:4,90  
TIS:0,90  
MI:1,34  
23B/Sek  
98%  
**2D**  
H Mittel  
0dB/DB60  
c=1540  
LD 2  
UA 2  
SkalaC/T5  
D3

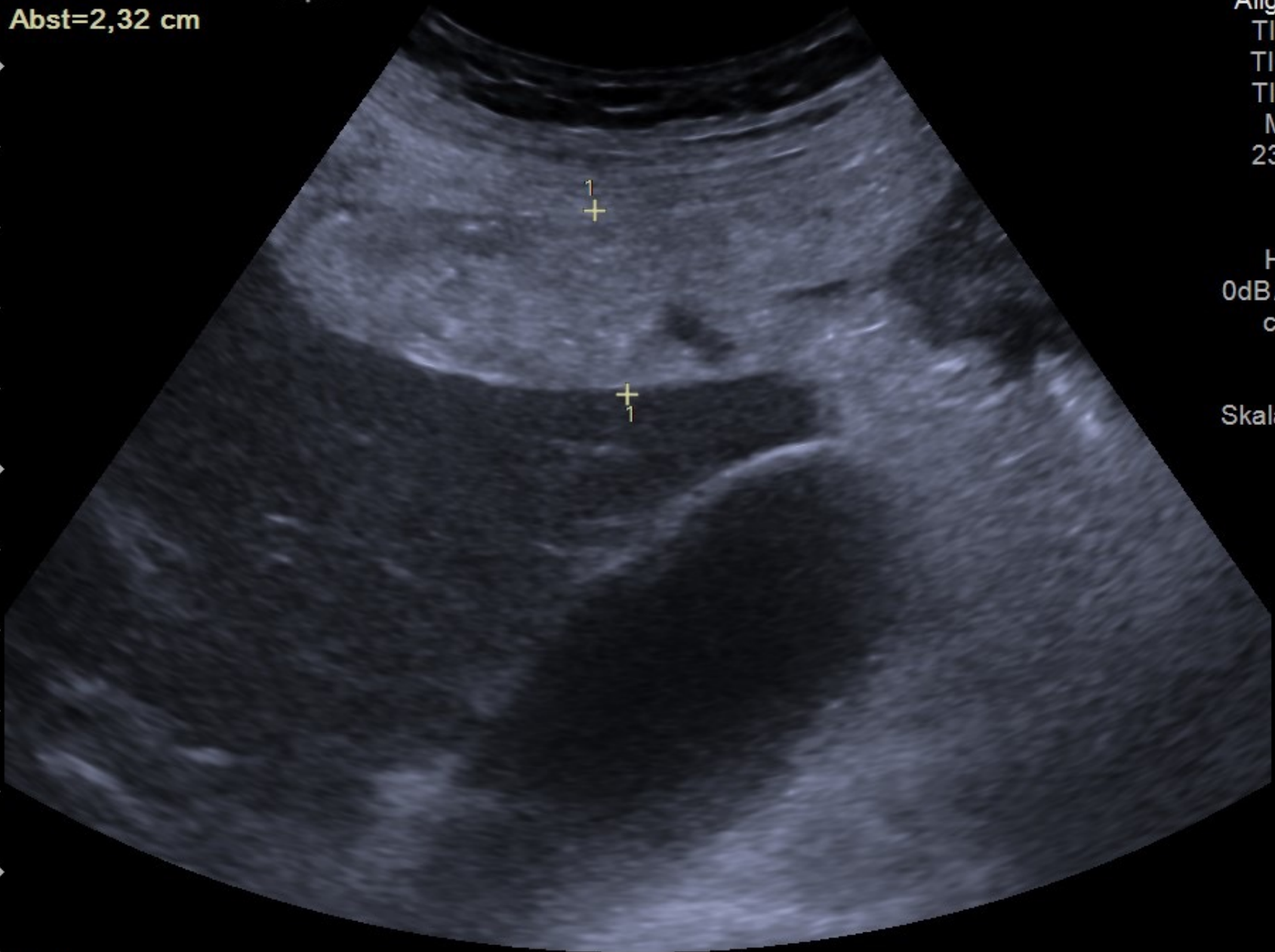
04:06

IR



Sequoia

1 Abst=2,32 cm



11cm

5C1  
Allgemein  
TIB:0,90  
TIC:4,90  
TIS:0,90  
MI:1,34  
23B/Sek  
98%  
**2D**  
H Mittel  
0dB/DB60  
c=1540  
LD 2  
UA 2  
SkalaC/T5  
D3

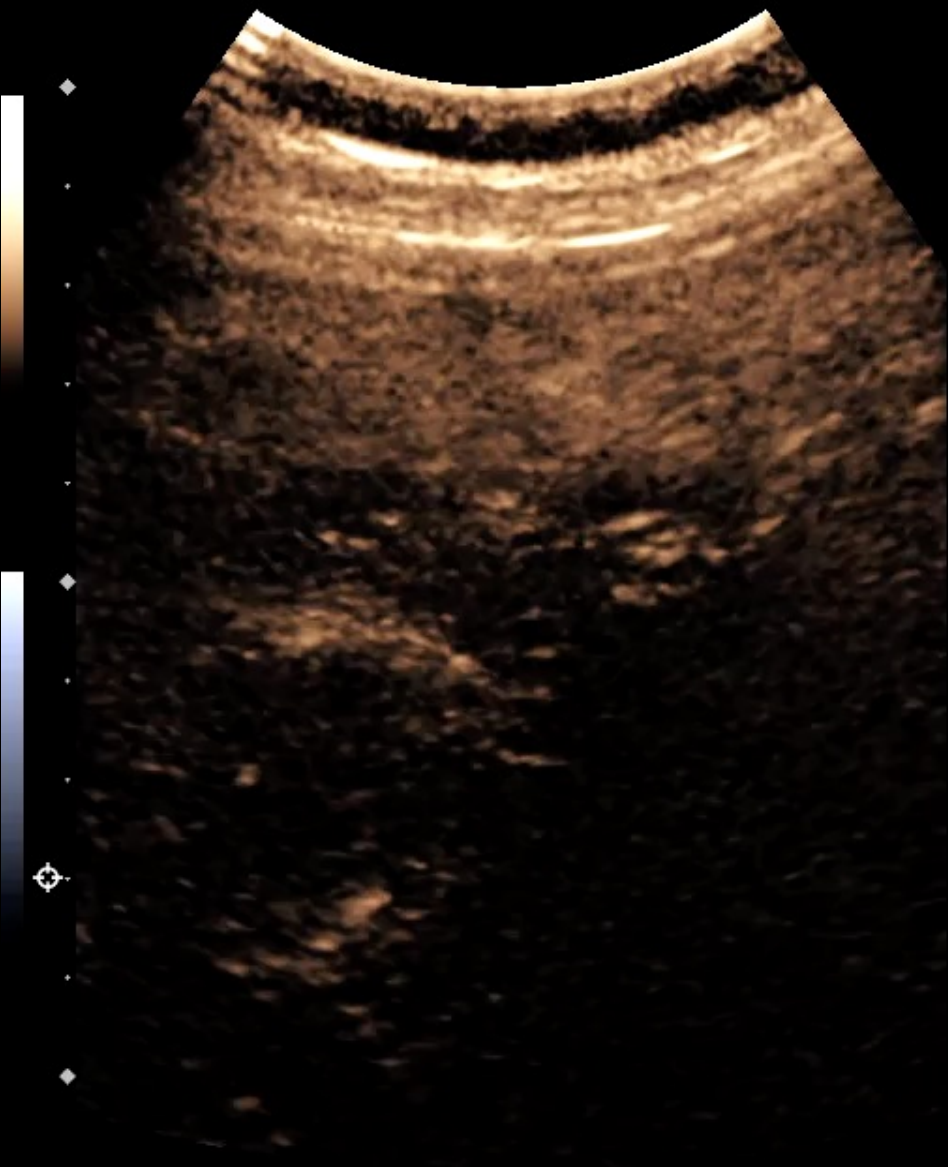
04:06

**Video**



IR

Sequoia



11cm

5C1  
Allgemein  
TIB:0,00  
TIC:0,01  
TIS:0,00  
MI:0,15  
11B/Sek  
0,5%

**2D**  
Mittel  
0dB/DB60  
c=1540  
LD 1  
UA 2  
SkalaD/T5  
D3

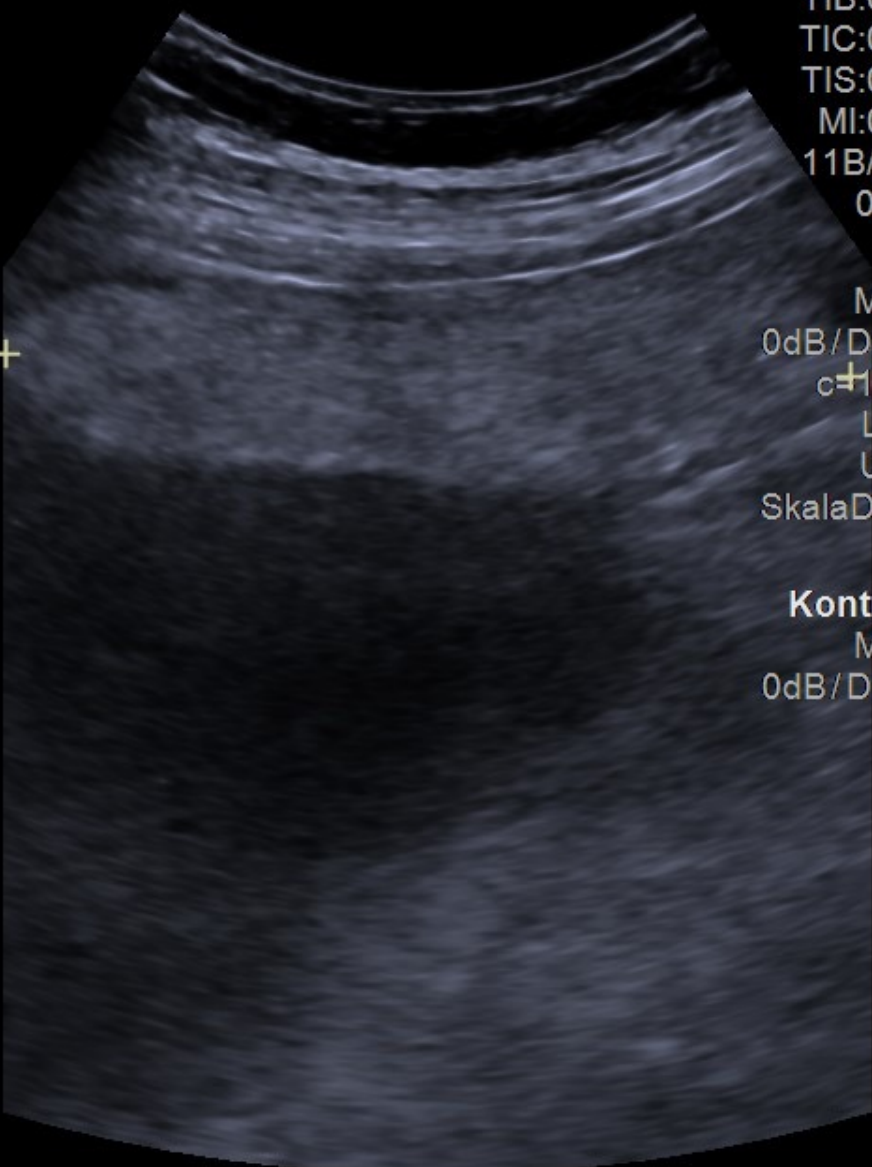
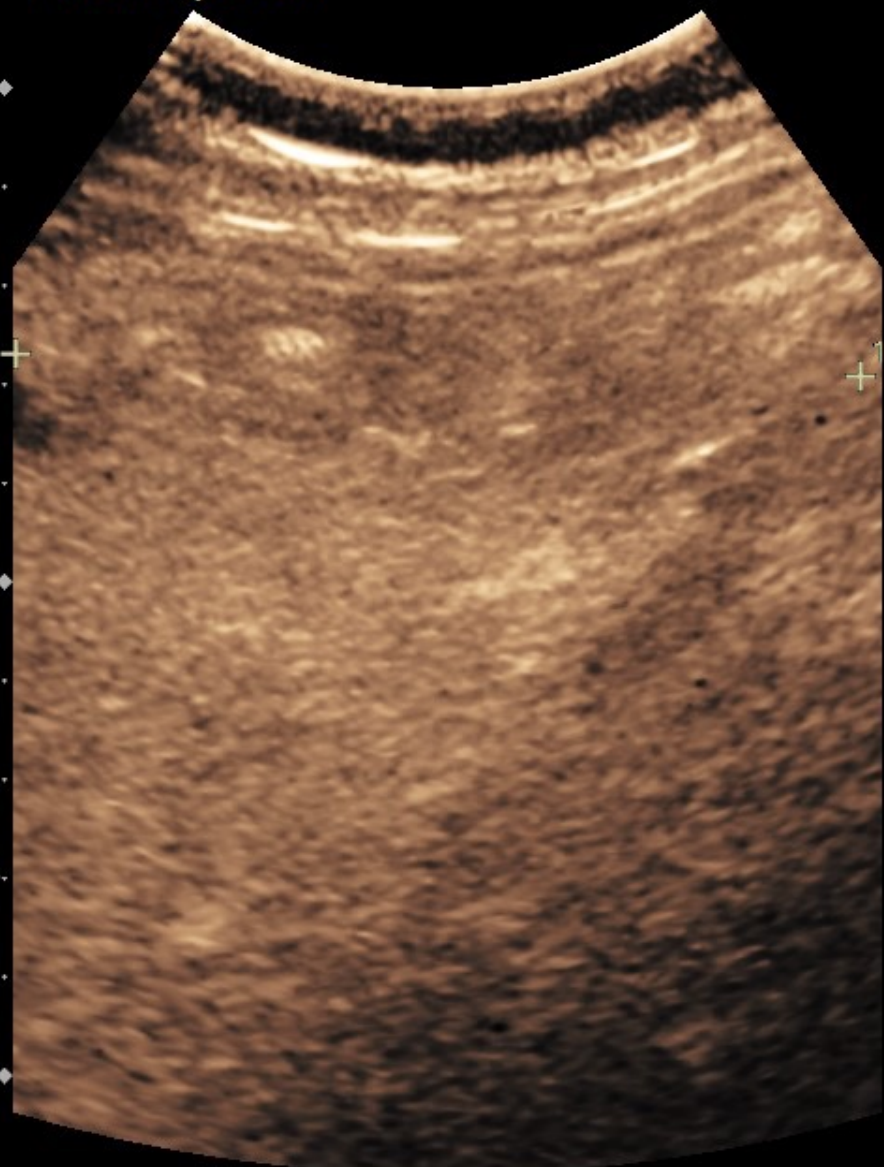
**Kontrast**  
Mittel  
0dB/DB70  
D2

00:12

IR



1 Abst=8,55 cm



5C1  
 Allgemein  
 TIB:0,00  
 TIC:0,01  
 TIS:0,00  
 MI:0,15  
 11B/Sek  
 0,5%

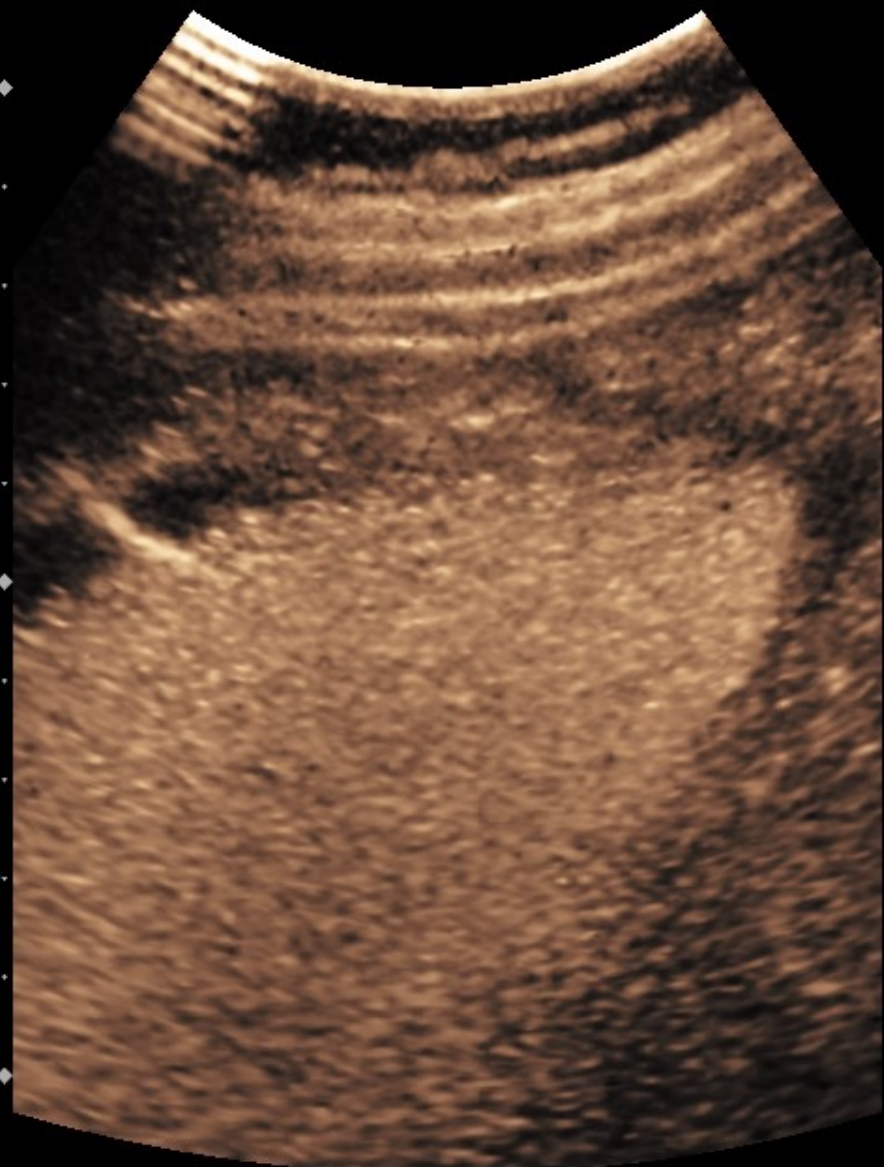
**2D**  
 Mittel  
 0dB/DB60  
 c=1540  
 LD 1  
 UA 2  
 SkalaD/T5  
 D3

**Kontrast**  
 Mittel  
 0dB/DB70  
 D2

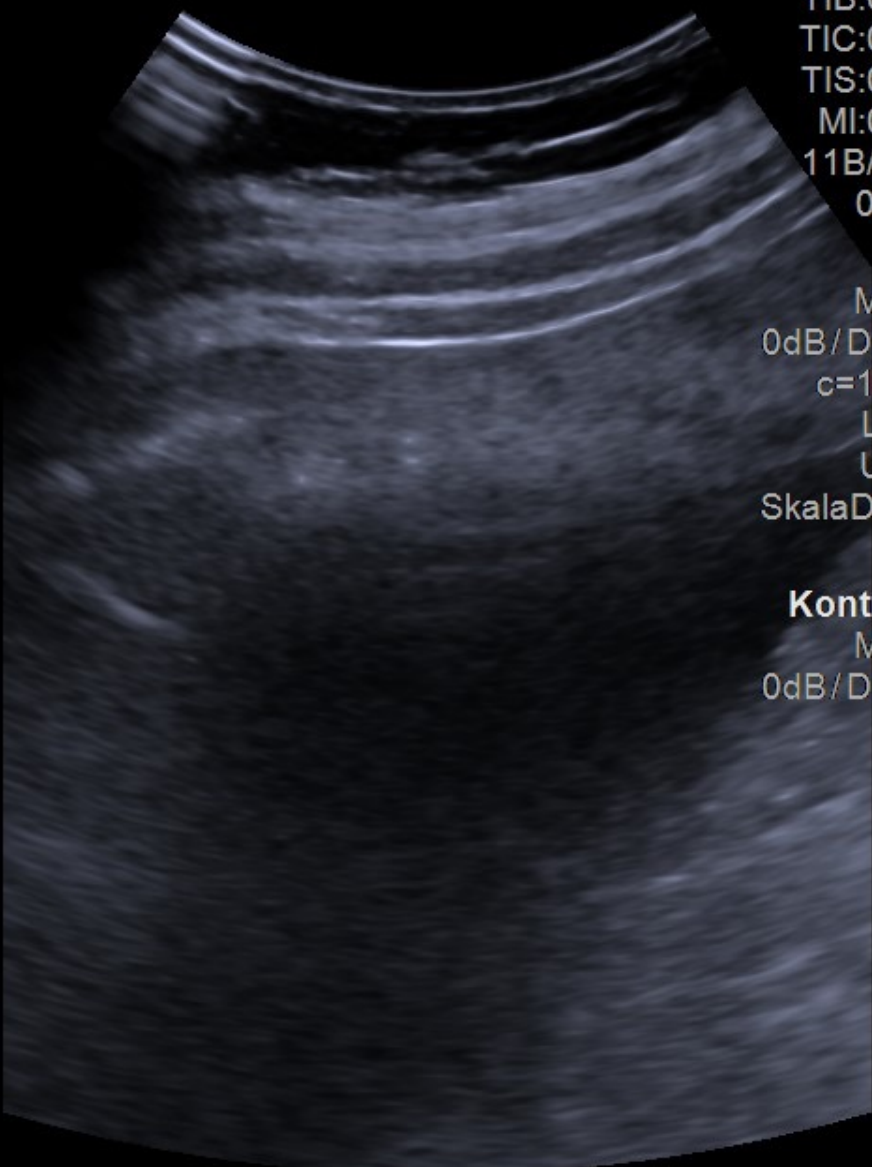
11cm

00:24

IR



11cm



5C1  
Allgemein  
TIB:0,00  
TIC:0,01  
TIS:0,00  
MI:0,15  
11B/Sek  
0,5%

**2D**  
Mittel  
0dB/DB60  
c=1540  
LD 1  
UA 2  
SkalaD/T5  
D3

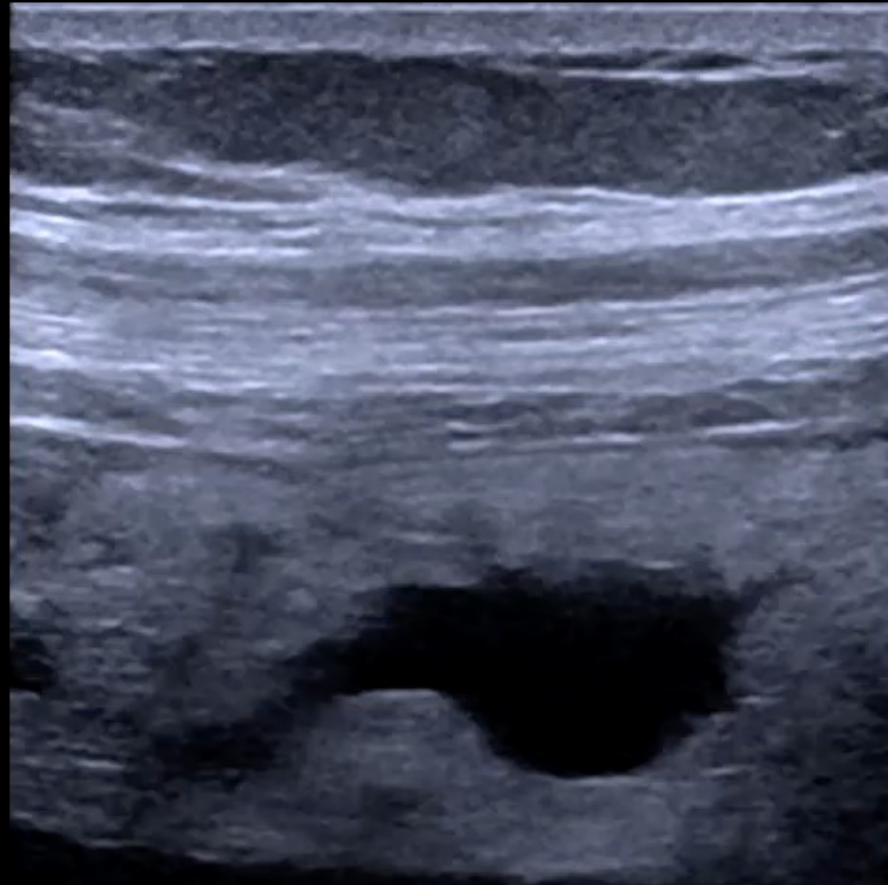
**Kontrast**  
Mittel  
0dB/DB70  
D2

01:34

**Video**



Sequoia



10L4  
Allgemein  
TIB:0,30  
TIC:0,71  
TIS:0,30  
MI:1,22  
37B/Sek  
95%

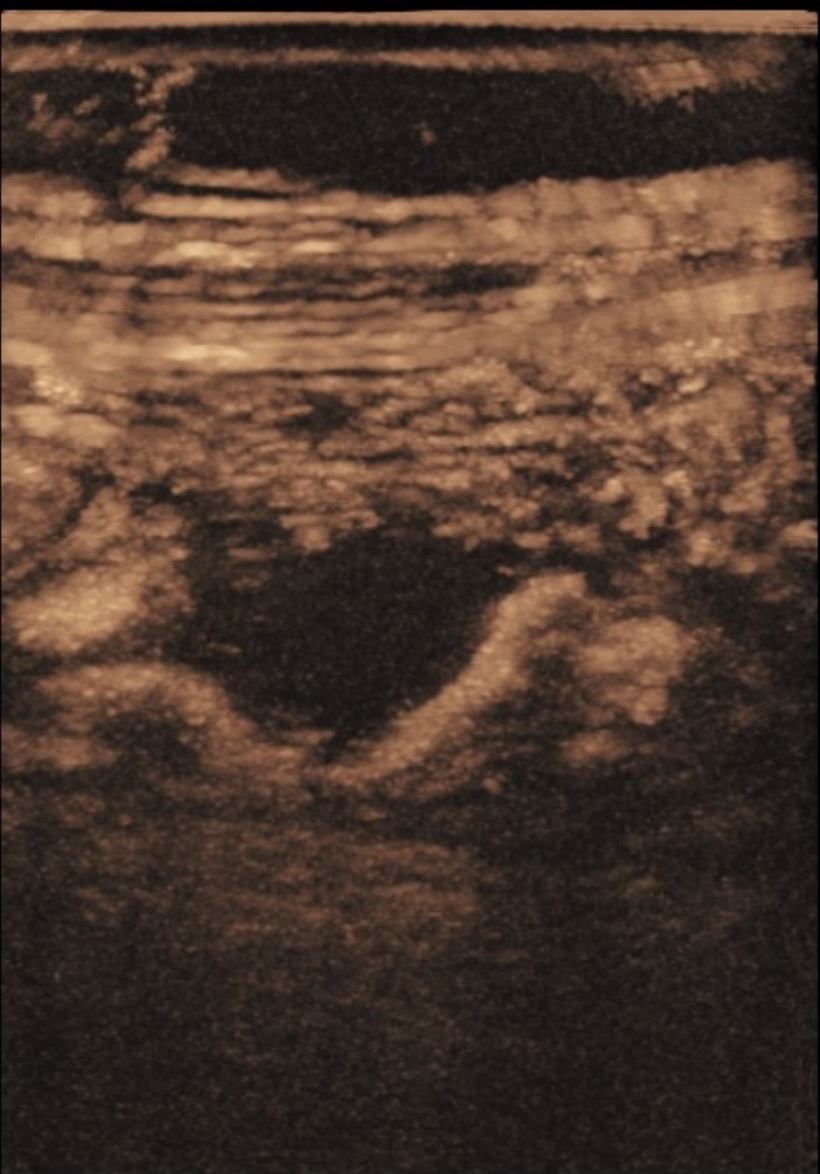
**2D**  
H Niedrig  
0dB/DB65  
c=1540  
LD 1  
UA 2  
SkalaC/T5  
D2



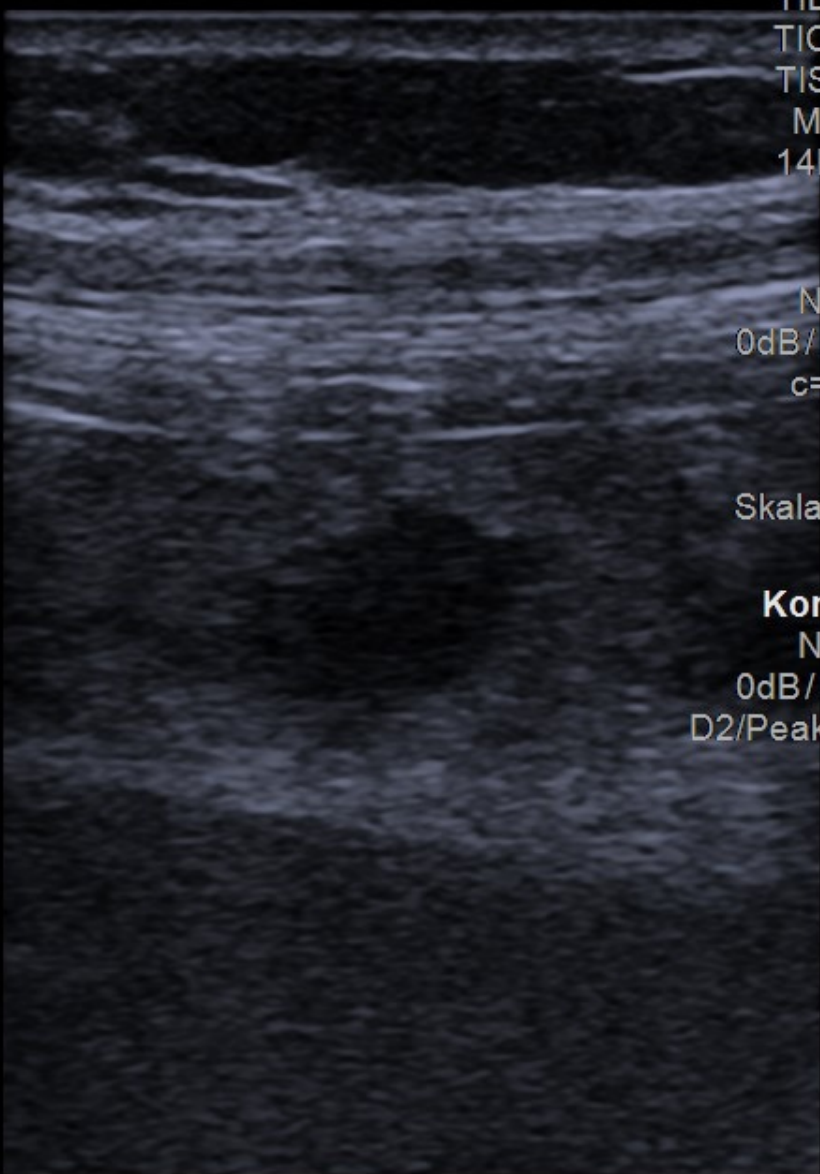
5,5cm

05:03

IR



5,5cm



10L4  
Allgemein  
TIB:0,00  
TIC:0,00  
TIS:0,00  
MI:0,15  
14B/Sek  
0,4%

**2D**  
Niedrig  
0dB/DB65  
c=1540  
LD 1  
UA 2  
SkalaC/T5  
D3

**Kontrast**  
Niedrig  
0dB/DB70  
D2/Peak Hold

00:55

# **B-mode ultrasound and contrast-enhanced ultrasound (CEUS) of histological confirmed omental lesions: retrospective analysis of n = 44 patients**

## **B-Bild Sonografie und kontrastmittelunterstützte Sonografie (CEUS) von histologisch gesicherten omentalen Raumforderungen: Eine retrospektive Analyse von n = 44 Patienten**

### Authors

Corinna Trenker<sup>1</sup>, Christoph F. Dietrich<sup>2</sup>, Elena Ziegler<sup>1</sup>, Albrecht Neesse<sup>3</sup>, Christian Görg<sup>4</sup>

In the same patient  
Peritoneal tuberculosis



IR

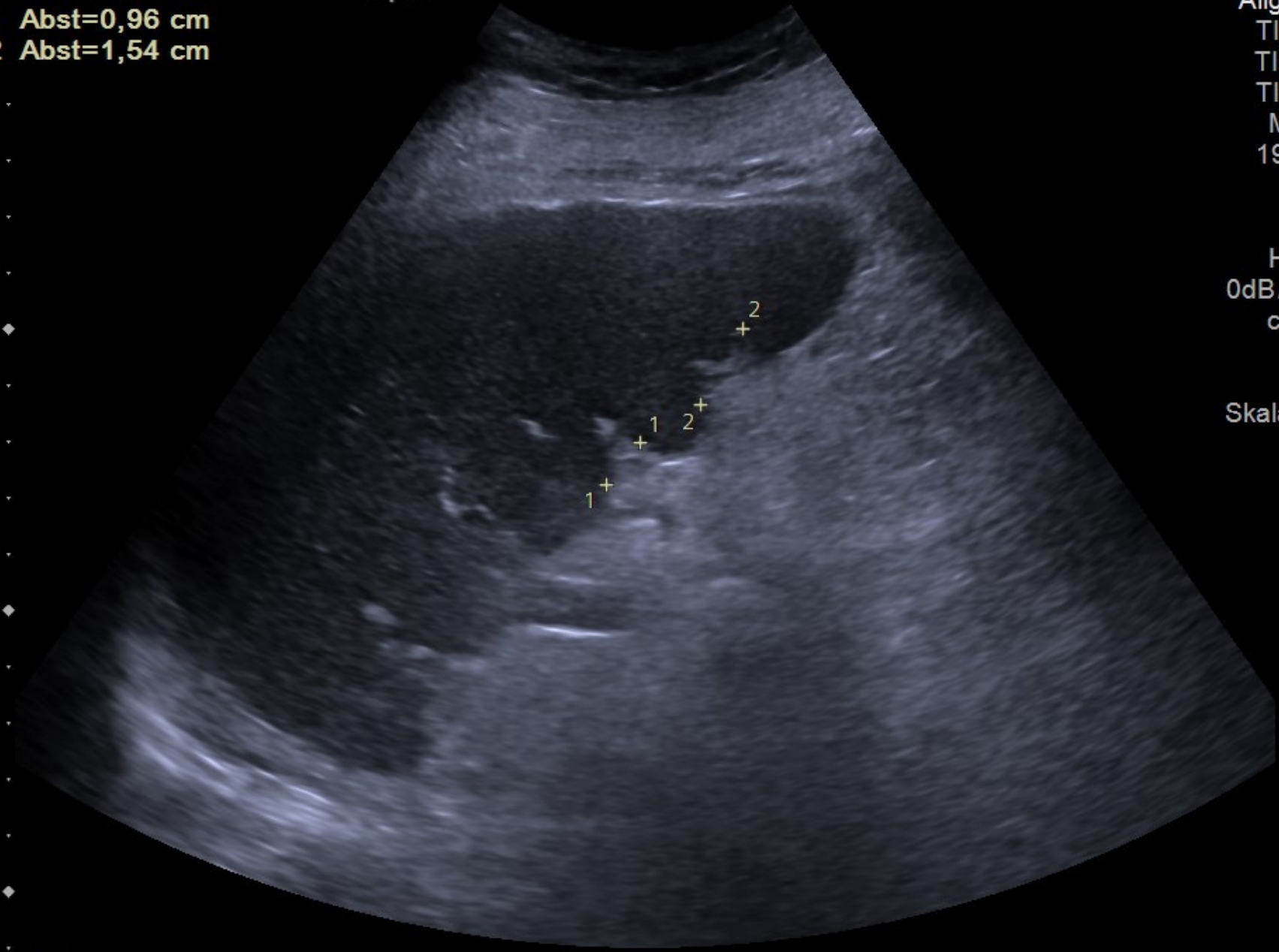


Sequoia

1 Abst=0,96 cm  
2 Abst=1,54 cm



16cm



5C1  
Allgemein  
TIB:0,73  
TIC:3,99  
TIS:0,73  
MI:1,39  
19B/Sek  
98%  
**2D**  
H Mittel  
0dB/DB60  
c=1540  
LD 2  
UA 2  
SkalaC/T5  
D3

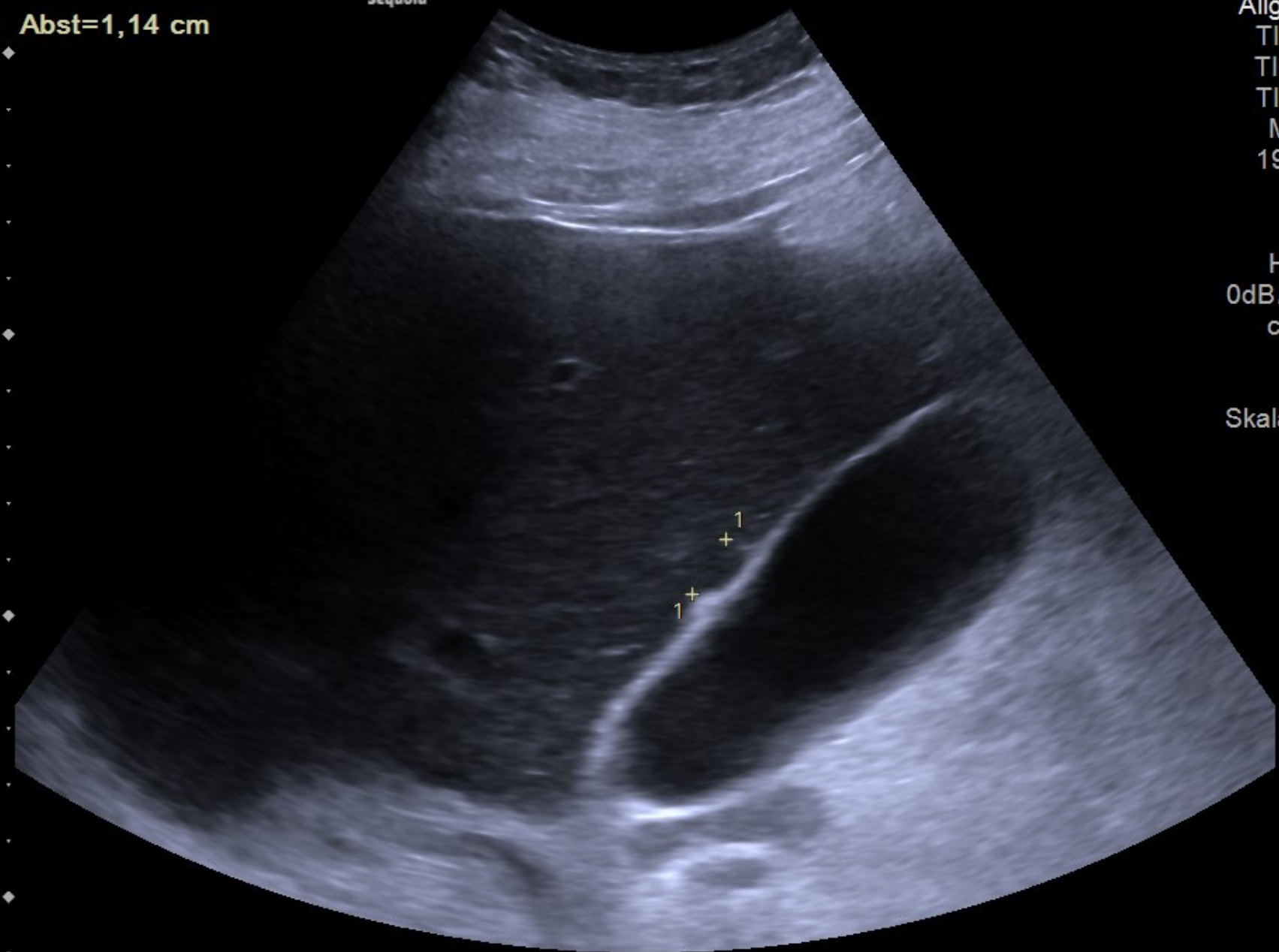


Sequoia

1 Abst=1,14 cm



16cm



5C1

Allgemein

TIB:0,73

TIC:3,99

TIS:0,73

MI:1,39

19B/Sek

98%

**2D**

H Mittel

0dB/DB60

c=1540

LD 2

UA 2

SkalaC/T5

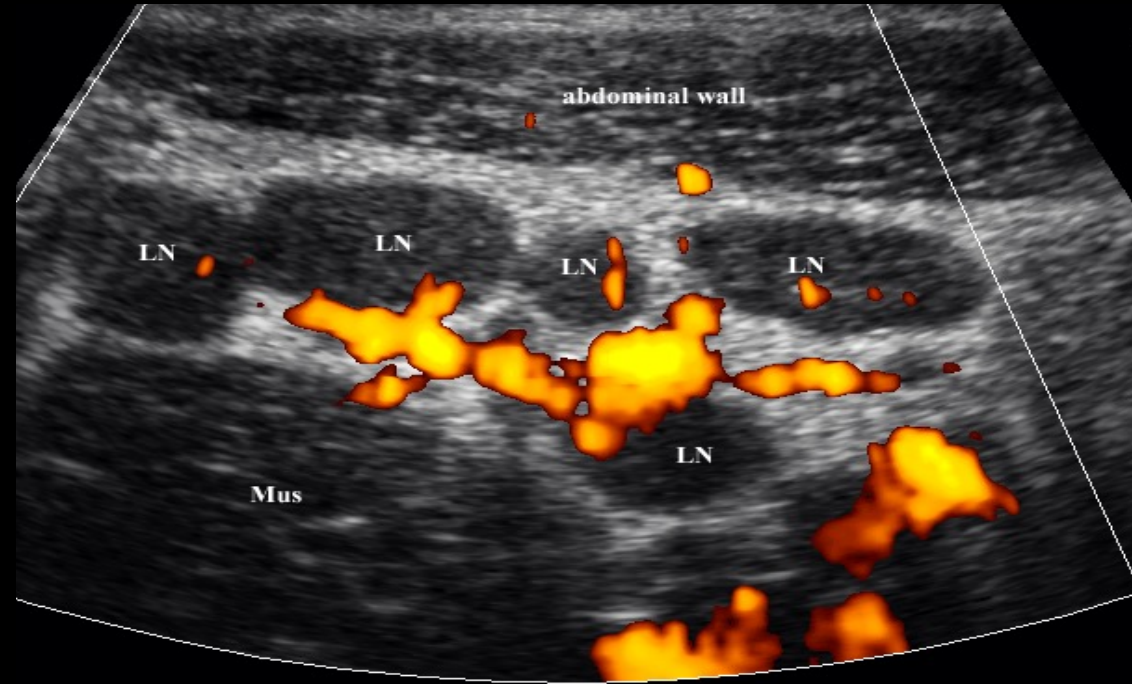
D3

A close-up photograph of a metal specimen, possibly a piece of metal or a biological sample, showing a series of small, raised, circular features along its length. The features are arranged in a line and appear to be small, rounded protrusions. The background is a light, neutral color. The text "Lymph nodes" is overlaid on the image, centered horizontally and vertically.

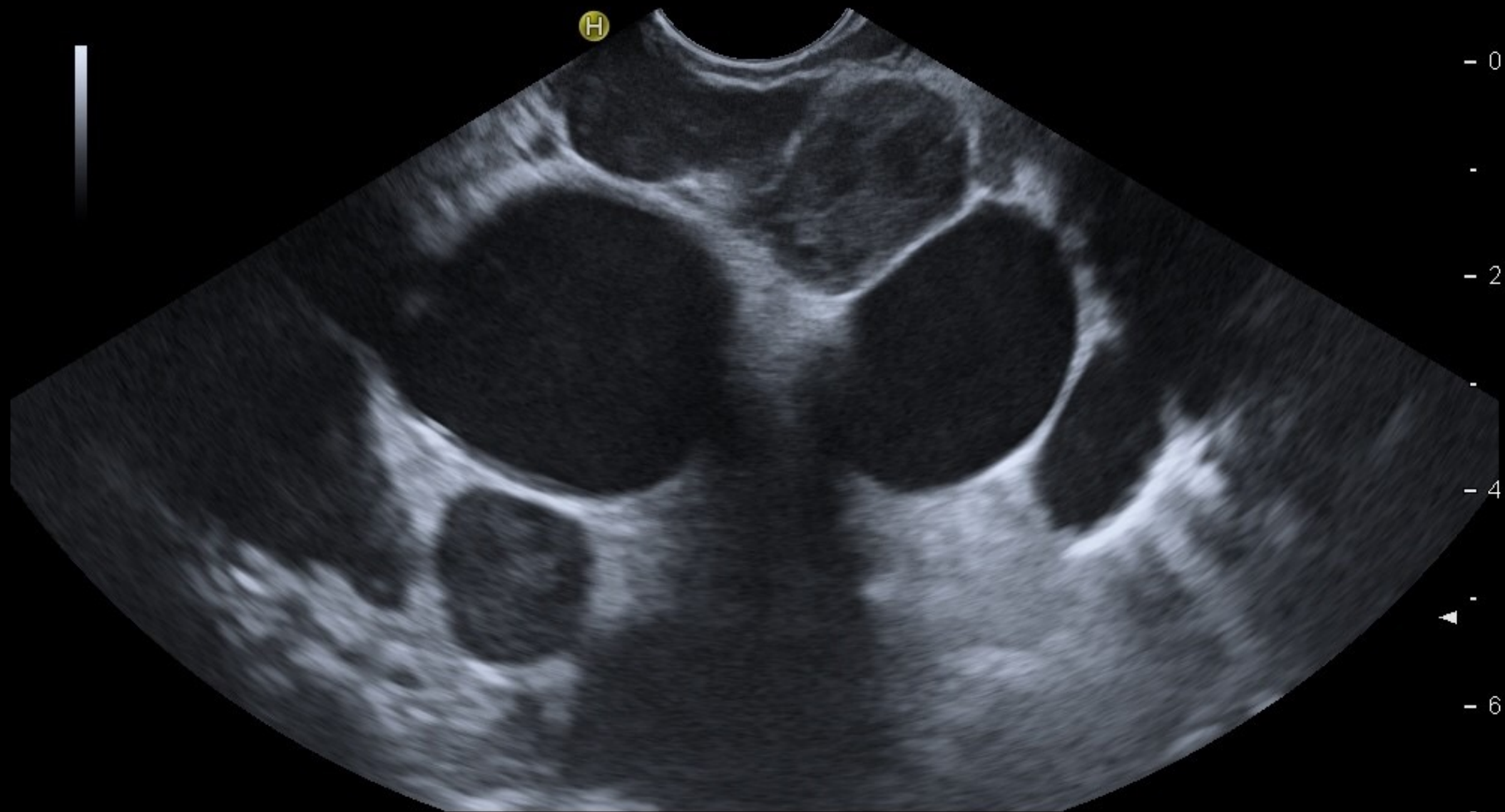
**Lymph nodes**

... we might be familiar with LN tuberculosis ...

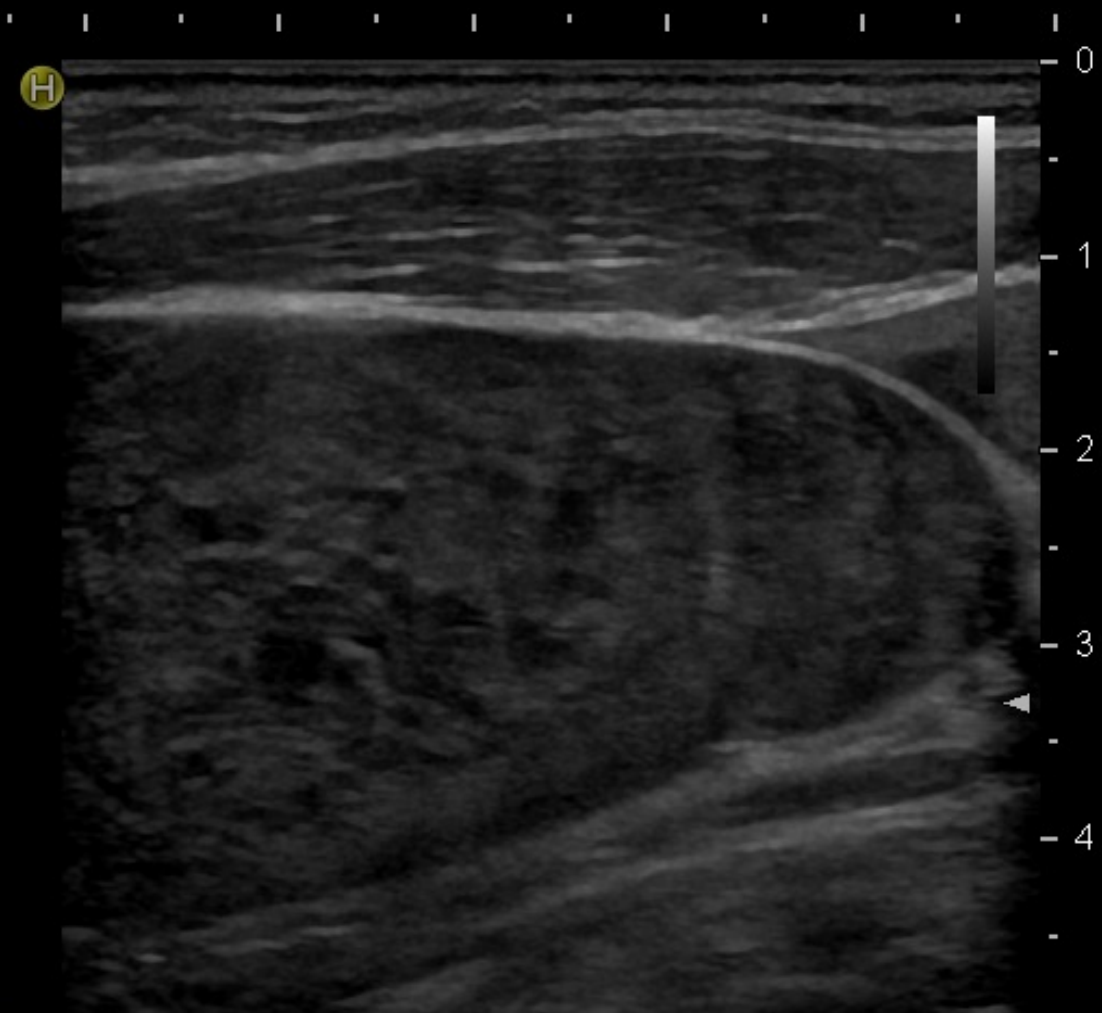
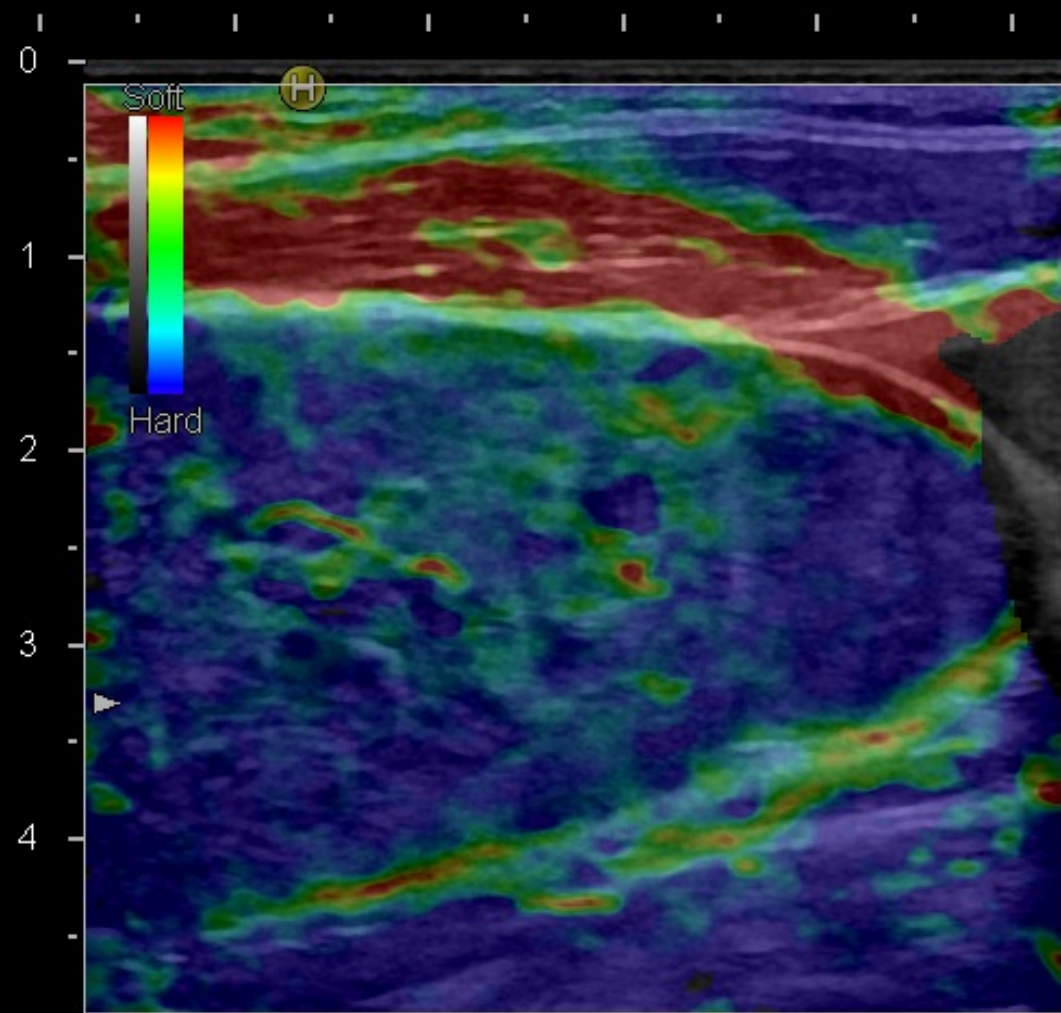
# Tuberculosis



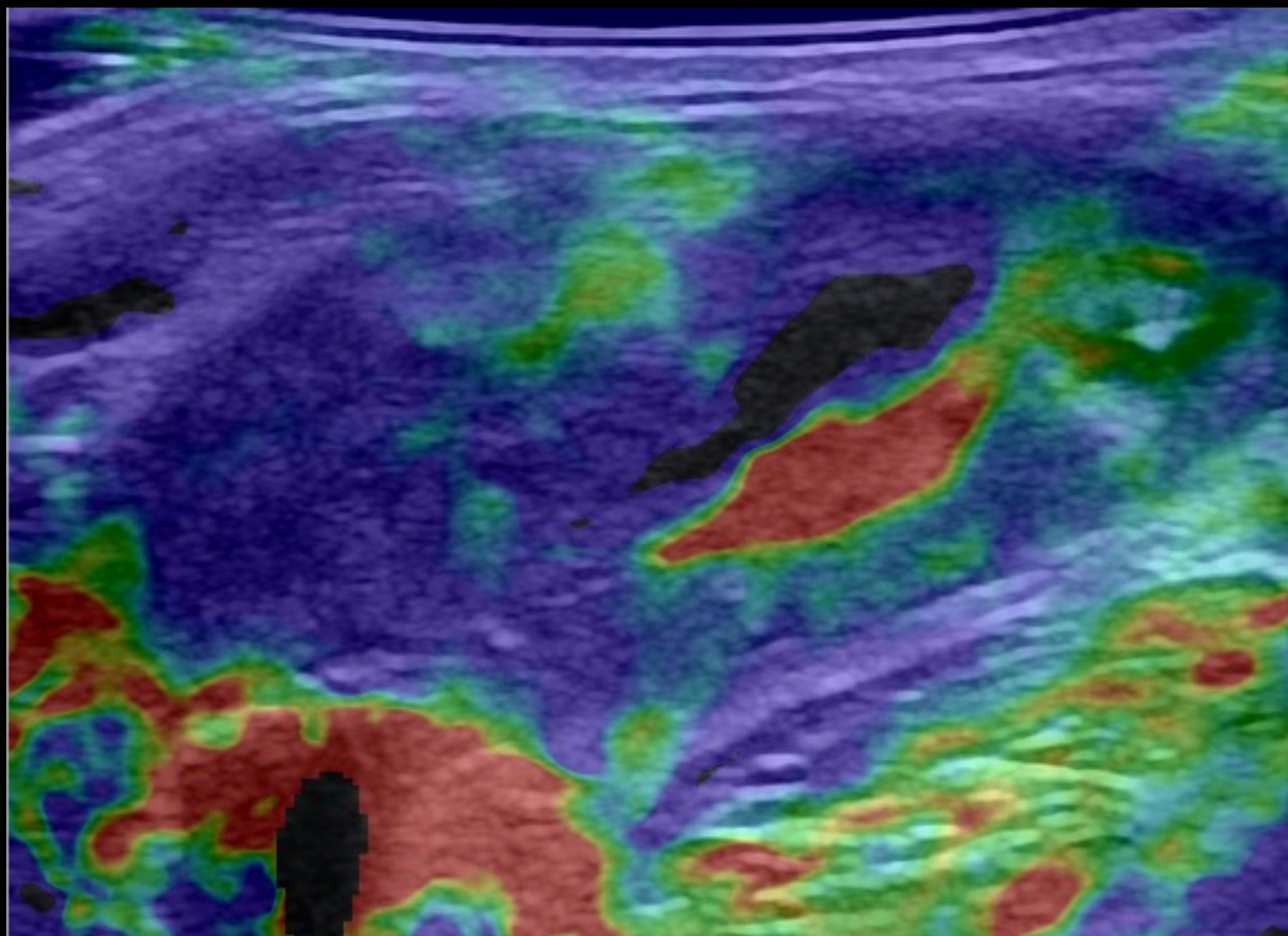
Barreiros AP, Braden B, Schieferstein-Knauer C, Ignee A, Dietrich CF. Characteristics of intestinal tuberculosis in ultrasonographic techniques. Scand J Gastroenterol 2008; 43(10):1224-1231

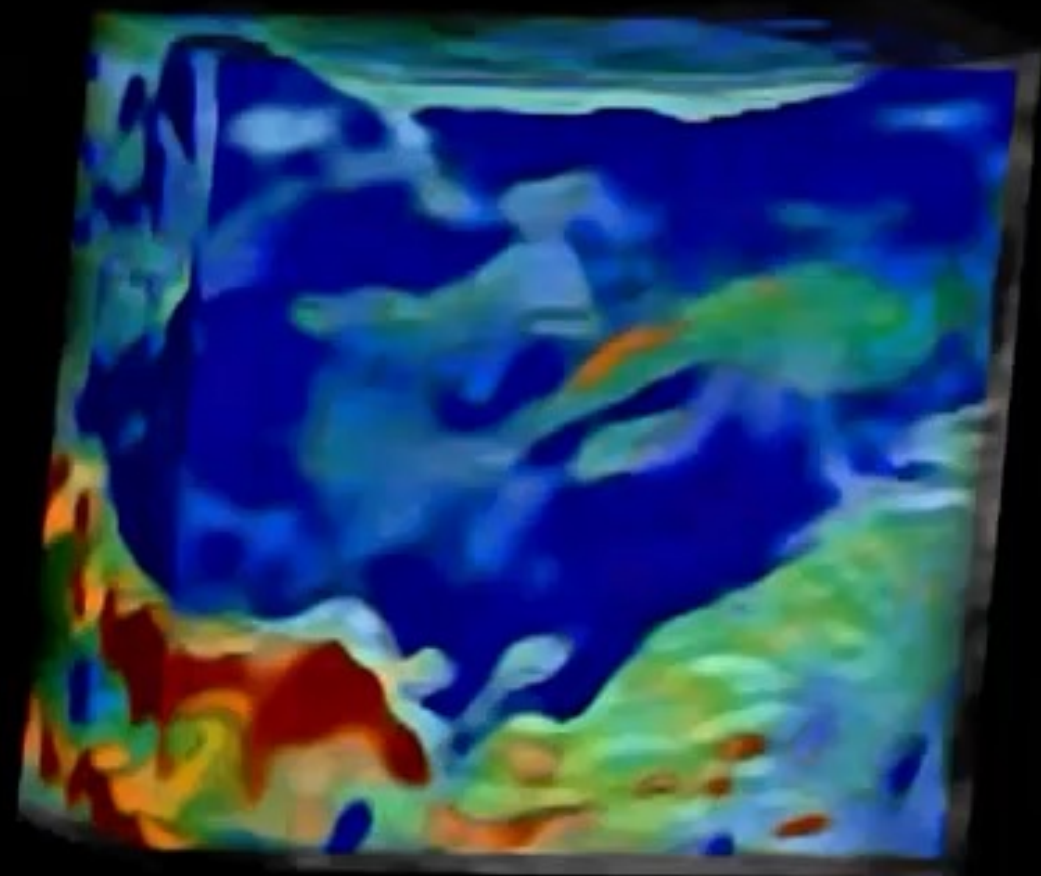


Central Africa









Perihepatic lymphadenopathy (necrosis)

# Tuberculosis



André Ignee, Kathleen Möller, Ruth Thees-Laurenz, Ehsan Safai Zadeh, Christian Görg, Jean Michel Correas, Nitin Chaubal, Vito Sansone, Christian Jenssen, Yi Dong, Manuela Götzberger, Maria Franca Meloni, Xin Wu Cui, Christoph Klinger, Chiara DeMolo, Serra Carla, Adrian Lim, Pintong Huang, Nathally Espinosa Montagut, Christoph Frank Dietrich. Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesions – infectious (bacterial). Med Ultrason 2023, epub in advance.



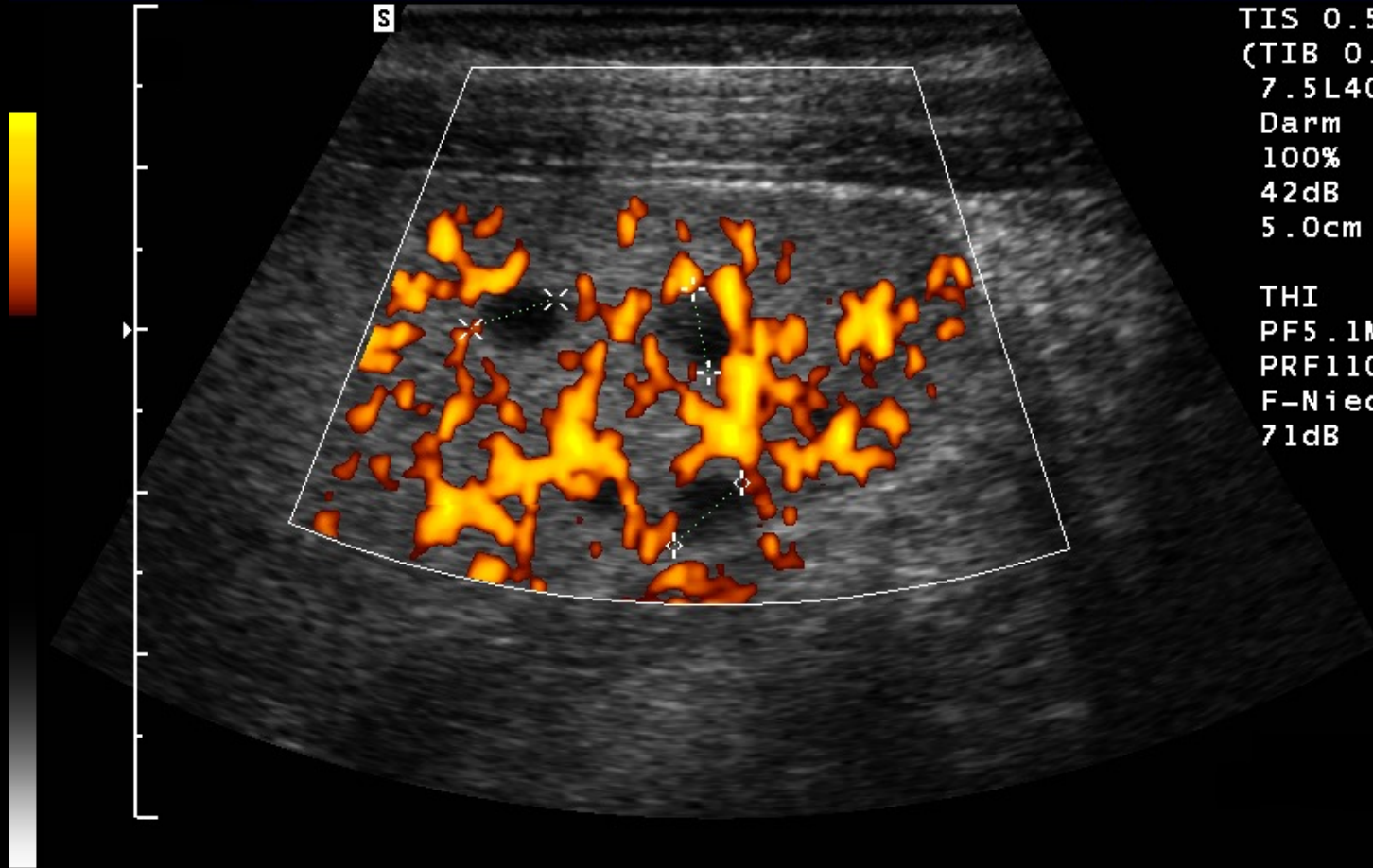
**Spleen**

SIEMENS

UNI Frankfurt II.Med.  
14.59.36 11.12.00

TIS 0.5  
(TIB 0.5)  
7.5L40/4.0  
Darm  
100%  
42dB ZD3  
5.0cm 12B/s

THI  
PF5.1MHz  
PRF1102Hz  
F-Niedrig  
71dB ZD4



⊕ D= 5.2mm  
× D= 5.5mm  
◇ D= 5.7mm

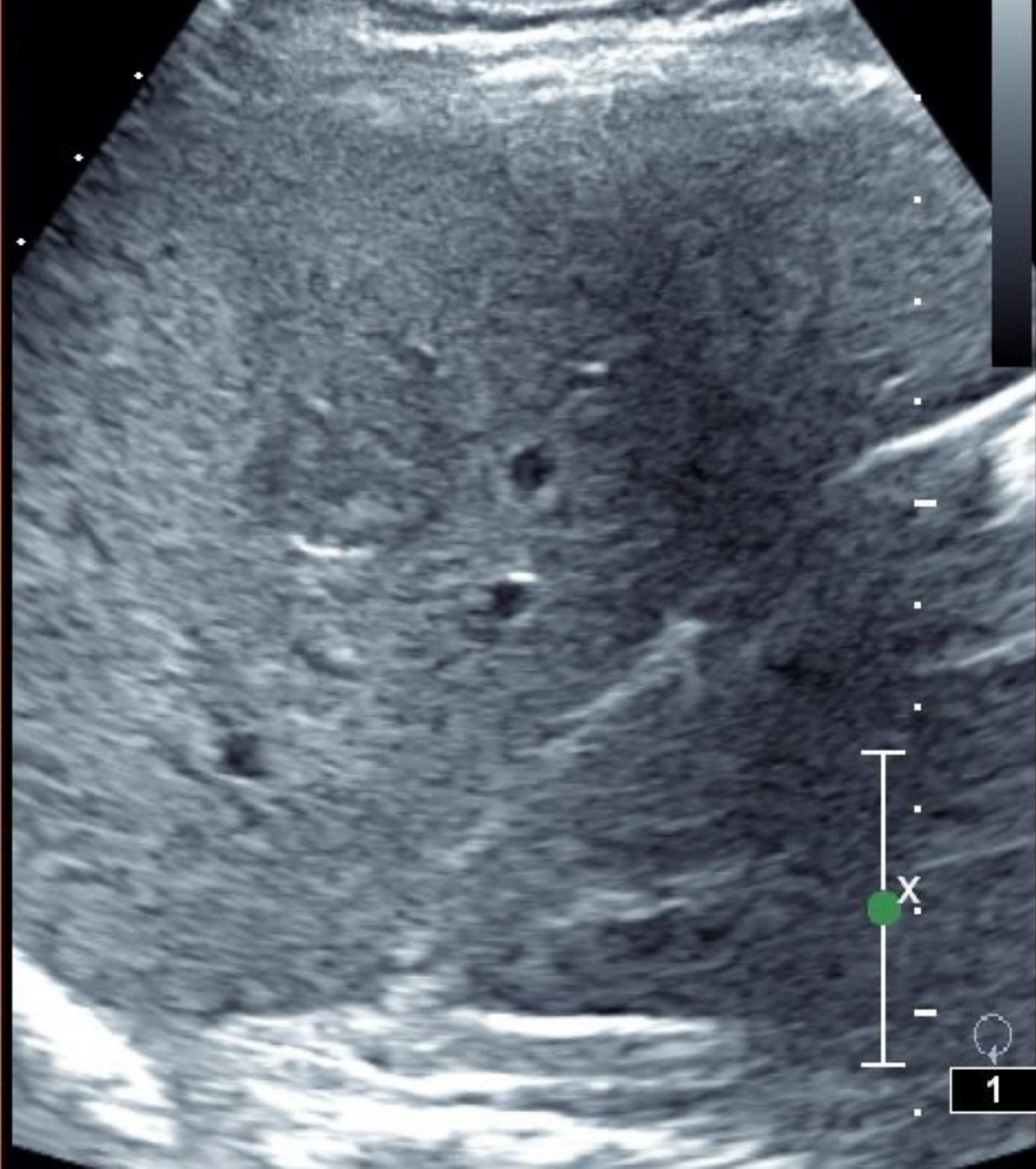
> 100 FSL

A close-up photograph of a metal part, possibly a liver, showing a textured surface. The word "Liver" is overlaid in the center of the image. The part is metallic and has a rough, granular texture. The background is a plain, light-colored surface.

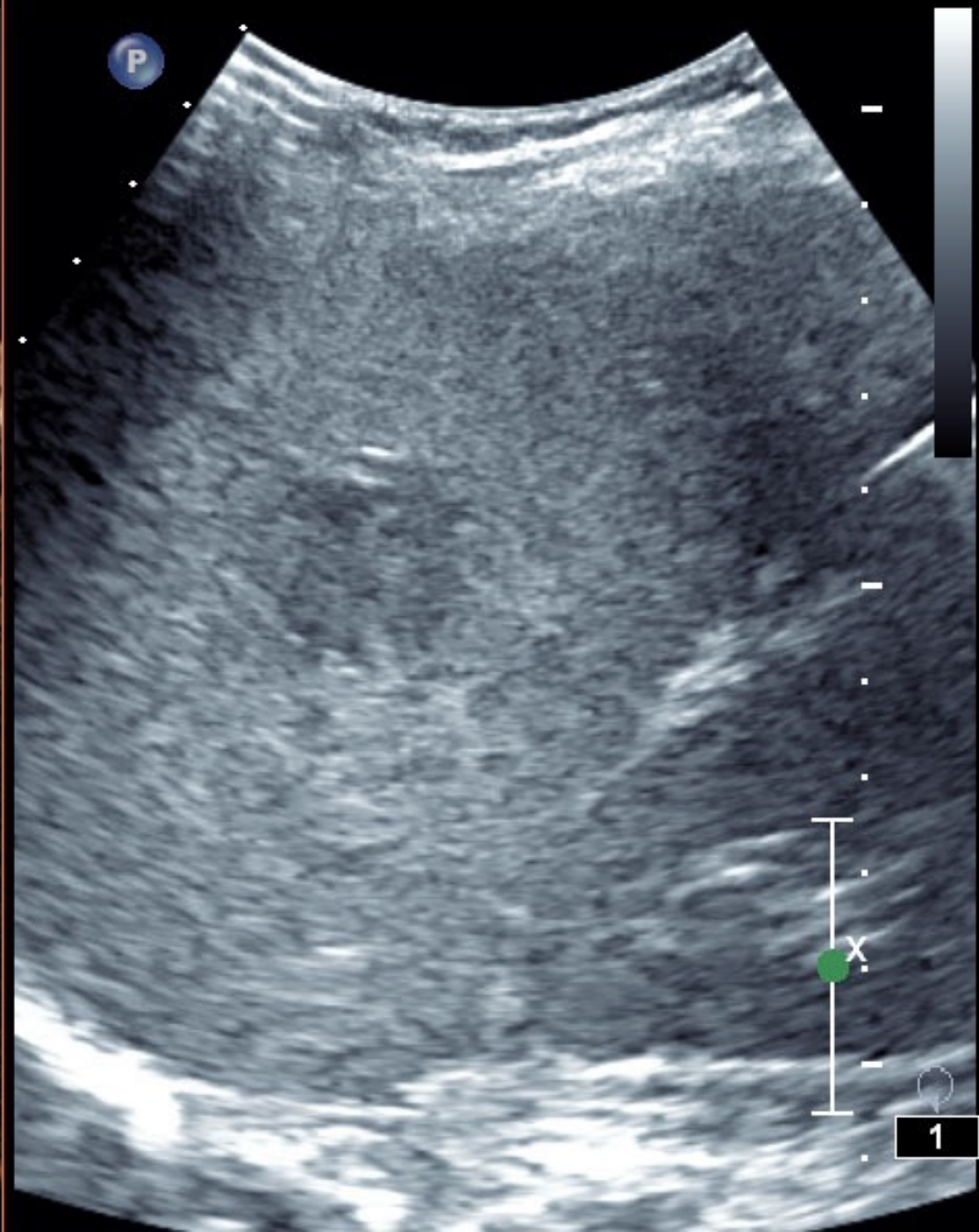
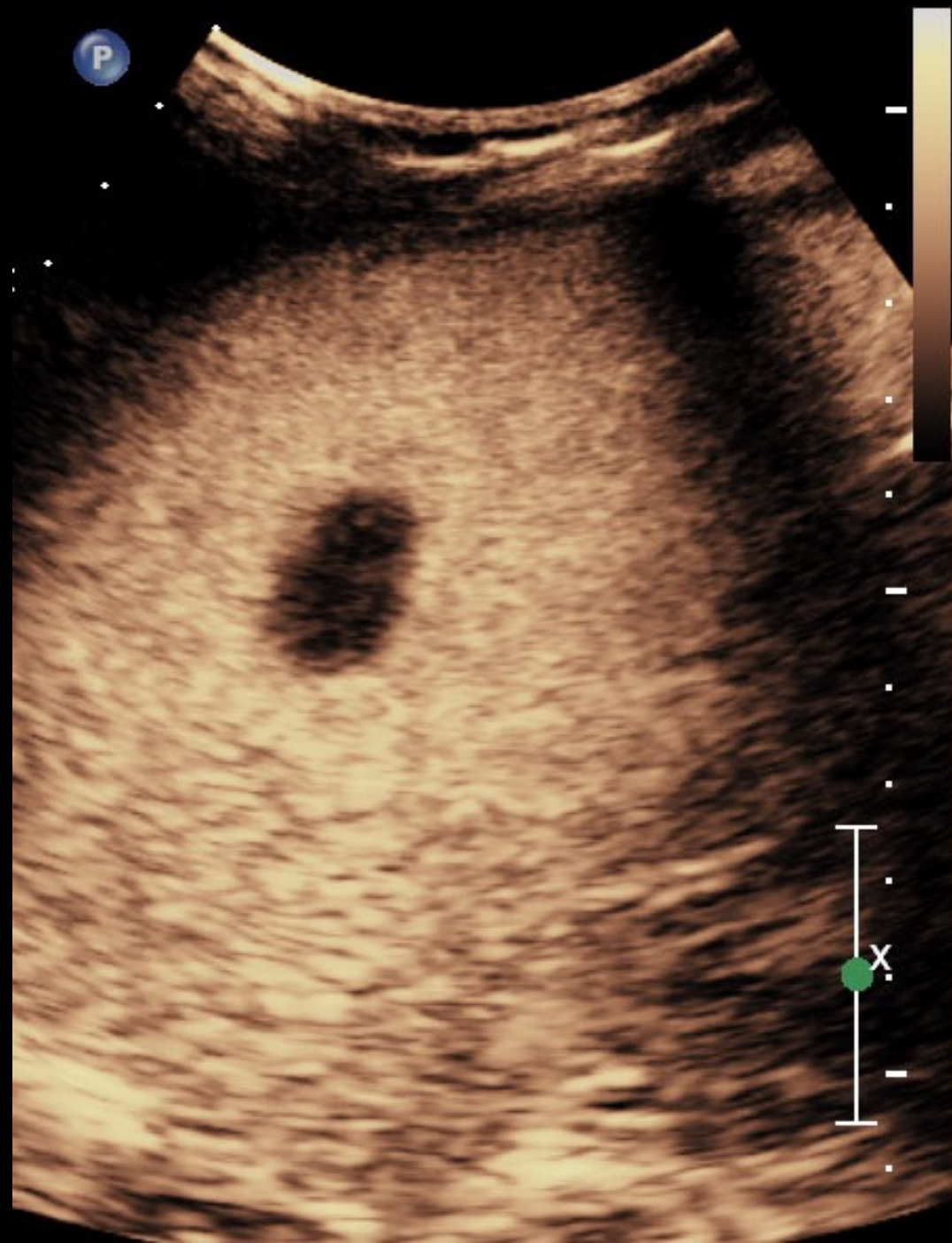
Liver



Smaller



1



Larger and multiple

Abd Gen  
C5-1  
37Hz  
RS

TIS0.3 MI 1.2

2D  
64%  
Dyn R 55  
P Low  
HGen

M3

✦ Dist 3.78 cm  
✕ Dist 2.19 cm

13cm



Abd Gen  
C5-1  
16Hz  
RS

**Tissue**  
73%  
C 55  
Gen  
MI0.06

**Contrast**  
50%  
C 50  
Gen  
MI0.06

TIS0.0 MI 0.06 L  
MI 0.75 F  
C 0:19 M3

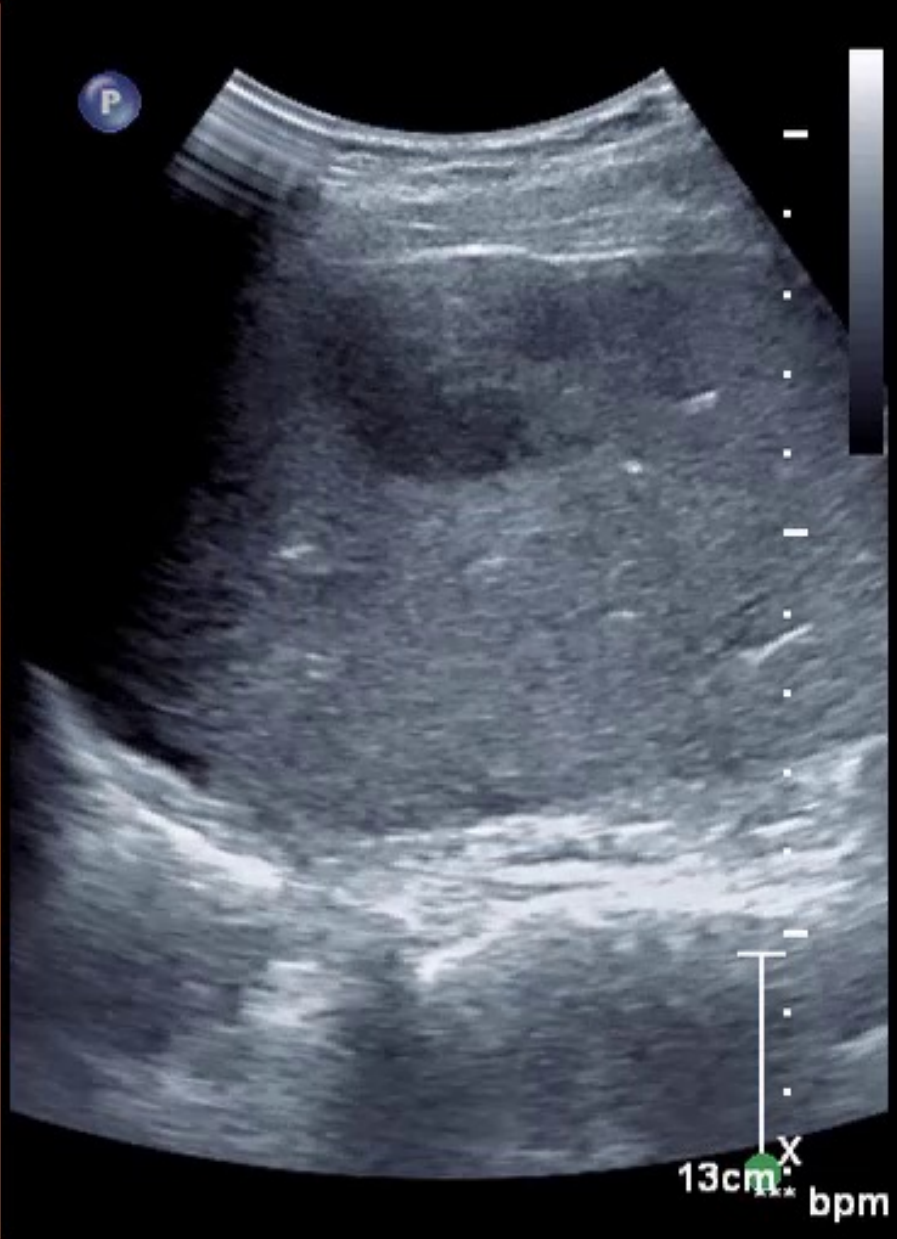
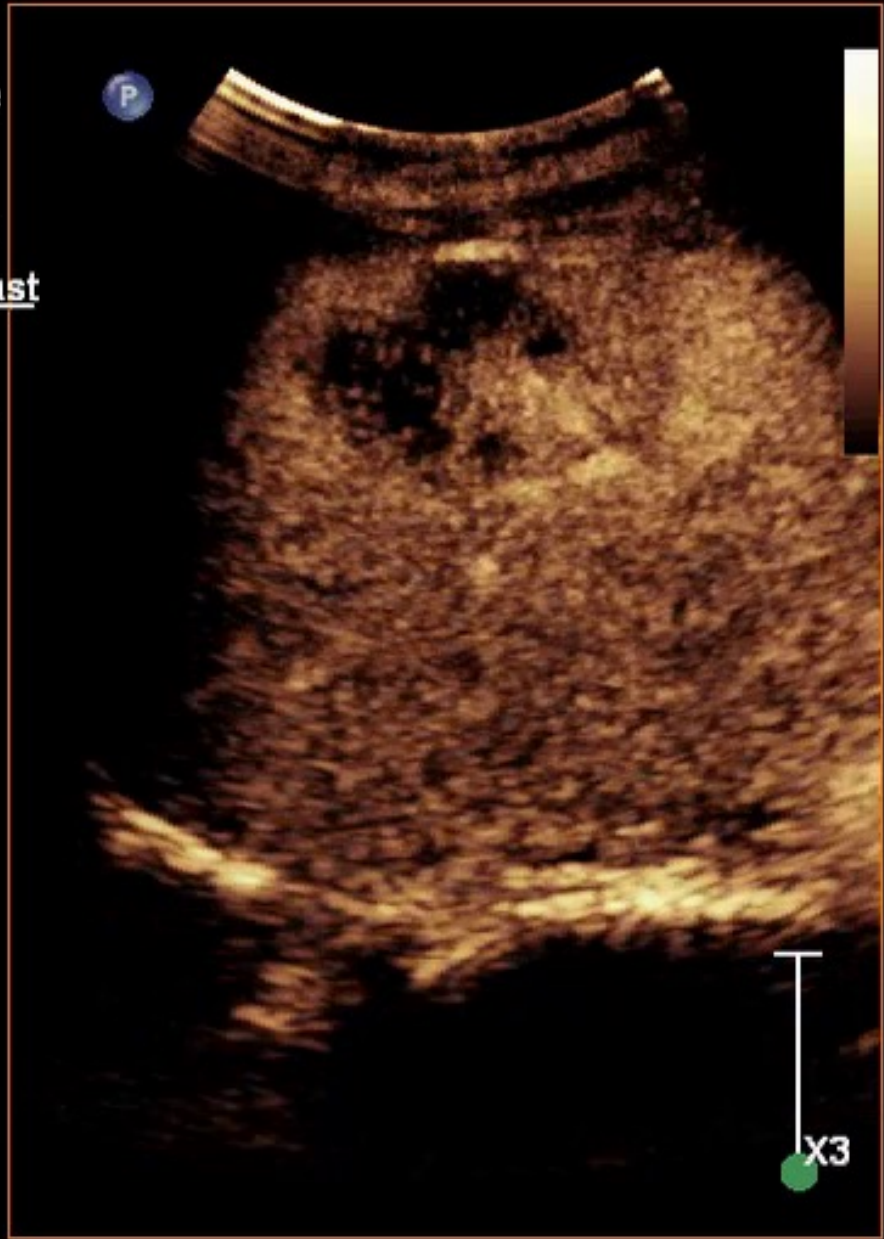


Abd Gen  
C5-1  
16Hz  
RS

**Tissue**  
73%  
C 55  
Gen  
MI0.06

**Contrast**  
50%  
C 50  
Gen  
MI0.06

TIS0.0 MI 0.06 L  
MI 0.75 F  
C 0:52 M3



Larger and multiple

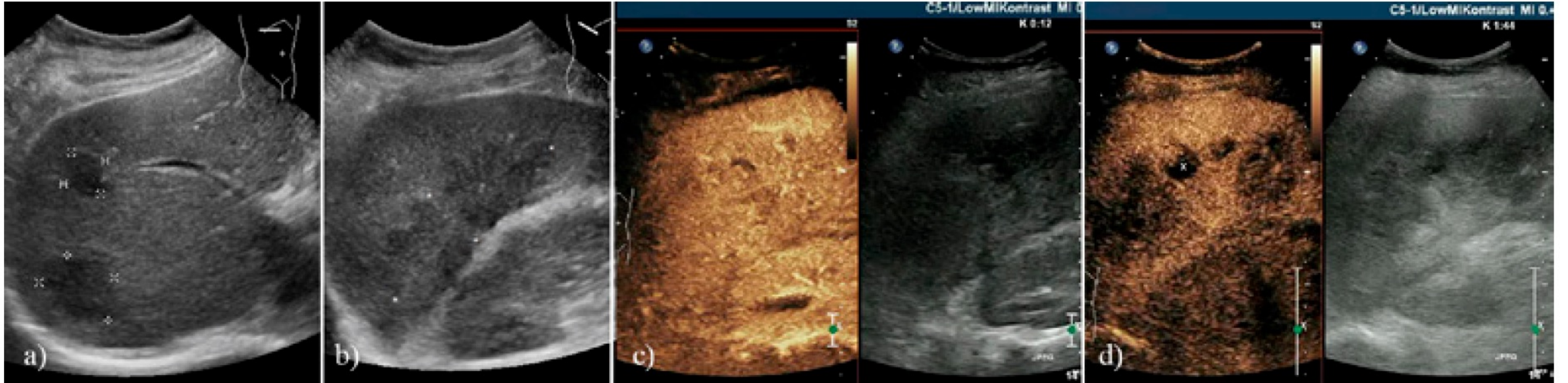




## Similar

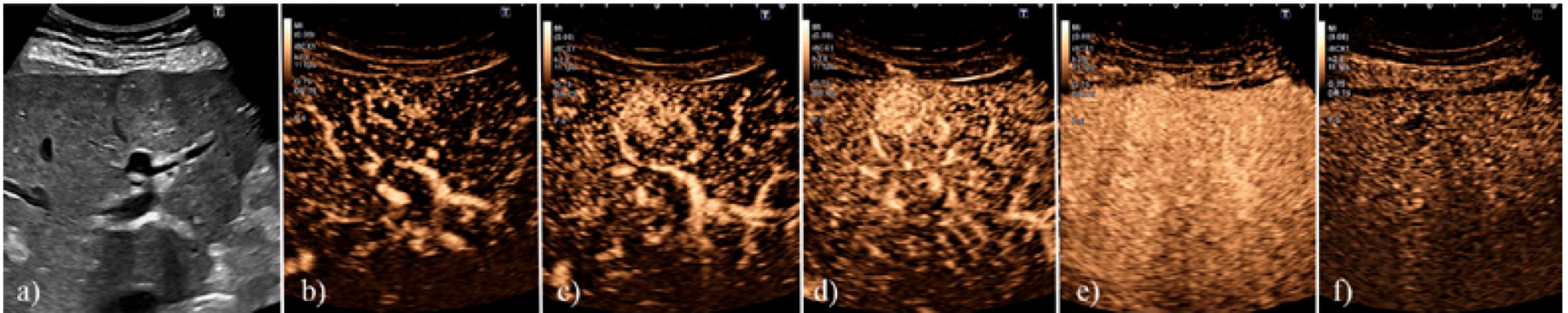
- Tuberculosis
- Actinomycosis
- Bartonellosis
- Brucellosis
- Melioidosis
- ...
- Sarcoidosis
- ...

# Actinomyces



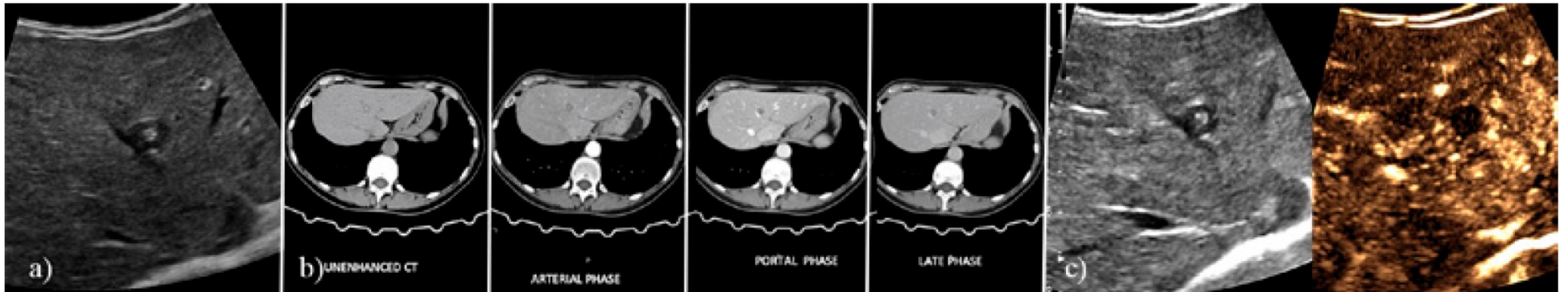
André Ignee, Kathleen Möller, Ruth Thees-Laurenz, Ehsan Safai Zadeh, Christian Görg, Jean Michel Correas, Nitin Chaubal, Vito Sansone, Christian Jenssen, Yi Dong, Manuela Götzberger, Maria Franca Meloni, Xin Wu Cui, Christoph Klinger, Chiara DeMolo, Serra Carla, Adrian Lim, Pintong Huang, Nathally Espinosa Montagut, Christoph Frank Dietrich. Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesions – infectious (bacterial). Med Ultrason 2023, epub in advance.

# Bartonellosis



André Ignee, Kathleen Möller, Ruth Thees-Laurenz, Ehsan Safai Zadeh, Christian Görg, Jean Michel Correas, Nitin Chaubal, Vito Sansone, Christian Jenssen, Yi Dong, Manuela Götzberger, Maria Franca Meloni, Xin Wu Cui, Christoph Klinger, Chiara DeMolo, Serra Carla, Adrian Lim, Pintong Huang, Nathally Espinosa Montagut, Christoph Frank Dietrich. Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesions – infectious (bacterial). Med Ultrason 2023, epub in advance.

# Brucellosis



André Ignee, Kathleen Möller, Ruth Thees-Laurenz, Ehsan Safai Zadeh, Christian Görg, Jean Michel Correas, Nitin Chaubal, Vito Sansone, Christian Jensen, Yi Dong, Manuela Götzberger, Maria Franca Meloni, Xin Wu Cui, Christoph Klinger, Chiara DeMolo, Serra Carla, Adrian Lim, Pintong Huang, Nathally Espinosa Montagut, Christoph Frank Dietrich. Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesions – infectious (bacterial). Med Ultrason 2023, epub in advance.

*Ahead of print*

*Med Ultrason 2023:0, 1-13 Online first*  
DOI: 10.11152/mu-xxxx

---

## **Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesions – infectious (bacterial)**

**André Ignee<sup>1</sup>, Kathleen Möller<sup>2</sup>, Ruth Thees-Laurenz<sup>3</sup>, Ehsan Safai Zadeh<sup>4</sup>, Christian Görg<sup>4</sup>, Jean Michel Correas<sup>5</sup>, Nitin Chaubal<sup>6</sup>, Vito Sansone<sup>7</sup>, Christian Jenssen<sup>8</sup>, Yi Dong<sup>9</sup>, Manuela Götzberger<sup>10</sup>, Maria Franca Meloni<sup>11</sup>, Xin Wu Cui<sup>12</sup>, Christoph Klinger<sup>13</sup>, Chiara DeMolo<sup>14</sup>, Serra Carla<sup>14</sup>, Adrian Lim<sup>15</sup>, Pintong Huang<sup>16</sup>, Nathally Espinosa Montagut<sup>17</sup>, Christoph Frank Dietrich<sup>18</sup>**

# Ultrasound in Rare Diffuse Liver Disease

## Ultraschall seltener diffuser Lebererkrankungen

**Authors**

A. P. Barreiros<sup>1</sup>, L. Chiorean<sup>2</sup>, B. Braden<sup>3</sup>, C. F. Dietrich<sup>4</sup>

**Affiliations**

<sup>1</sup> Medical Department I, University Hospital, University of Regensburg, Regensburg, Germany

<sup>2</sup> Department of Ultrasonography, "Octavian Fodor" Institute of Gastroenterology and Hepatology, Cluj-Napoca, Romania

<sup>3</sup> Translational Gastroenterology Unit, Oxford University Hospitals, Oxford, U. K.

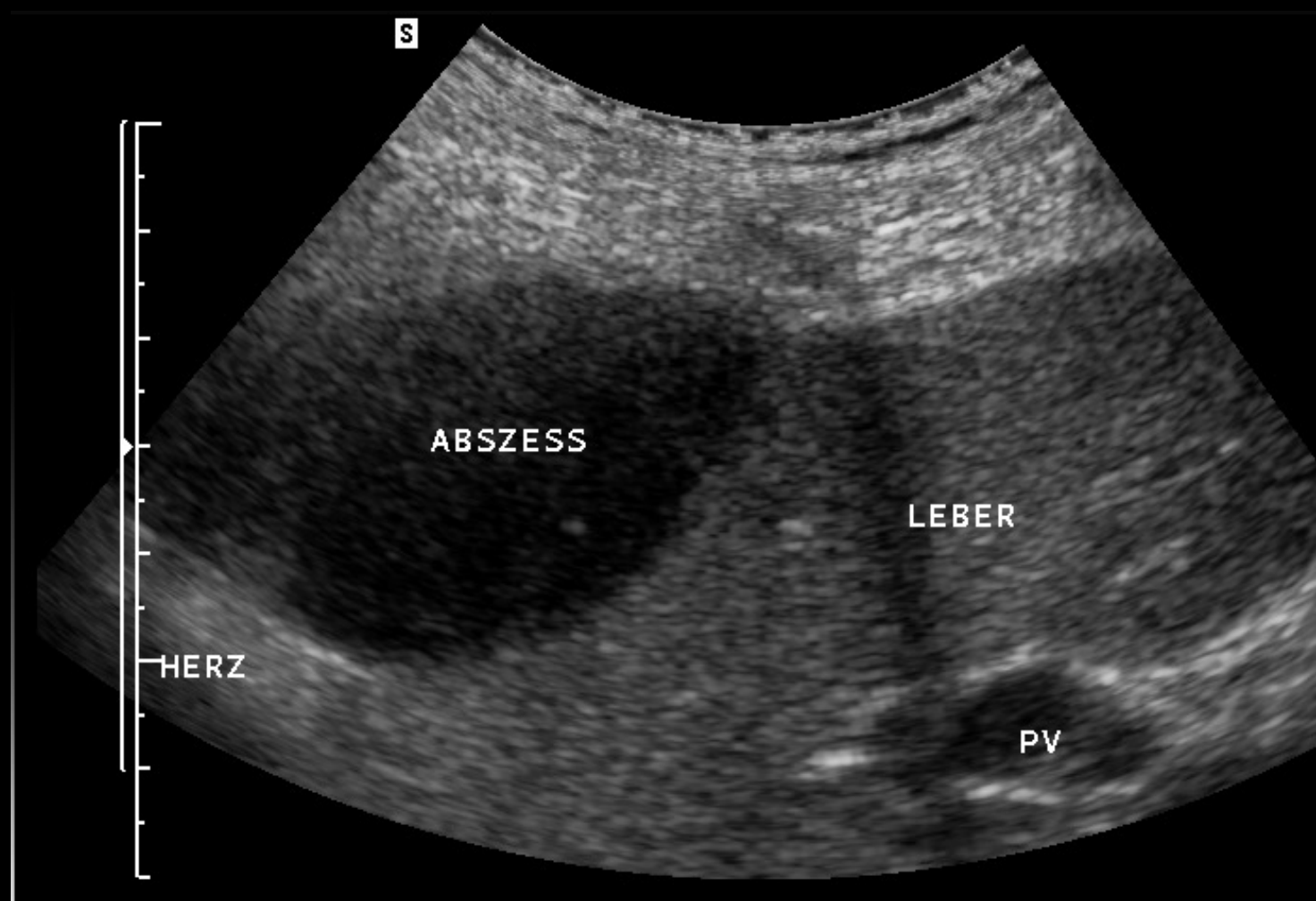
<sup>4</sup> Medical Department II, Caritaskrankenhaus, Bad Mergentheim, Germany

Barreiros AP et al. Ultrasound in Rare ... Z Gastroenterol 2014; 52: 1247–1256

Abscess and Fistula

Peritoneum - Pleura





S

ABSZESS

LEBER

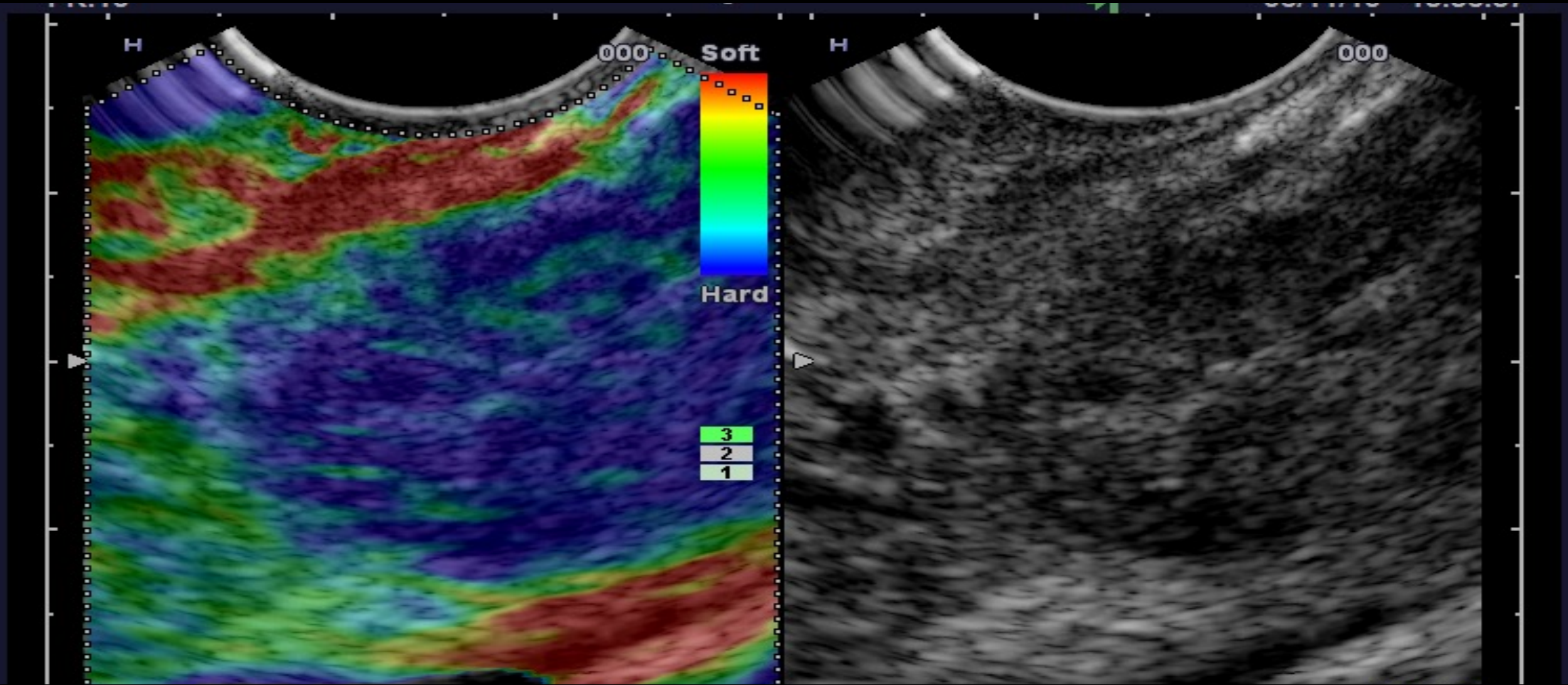
HERZ

PV



Pancreas

This image shows a microscopic view of a tissue section, likely the pancreas. The central feature is a duct-like structure containing a cluster of cells, possibly an islet of Langerhans. The surrounding tissue is composed of various cell types, including acinar cells and connective tissue. The overall appearance is that of a complex, multi-layered biological structure.



Dong Y, Jurgensen C, Puri R, D'Onofrio M, Hocke M, Wang WP, Atkinson N, et al. Ultrasound imaging features of isolated pancreatic tuberculosis. Endosc Ultrasound 2018

A close-up photograph of a metal surface, likely a tool or part of a machine. The surface is highly textured and appears to be engraved or machined with a complex, repeating pattern. The lighting is bright, creating strong highlights and shadows that emphasize the three-dimensional nature of the texture. The word "GIUS" is printed in a bold, black, sans-serif font in the center of the image.

**GIUS**

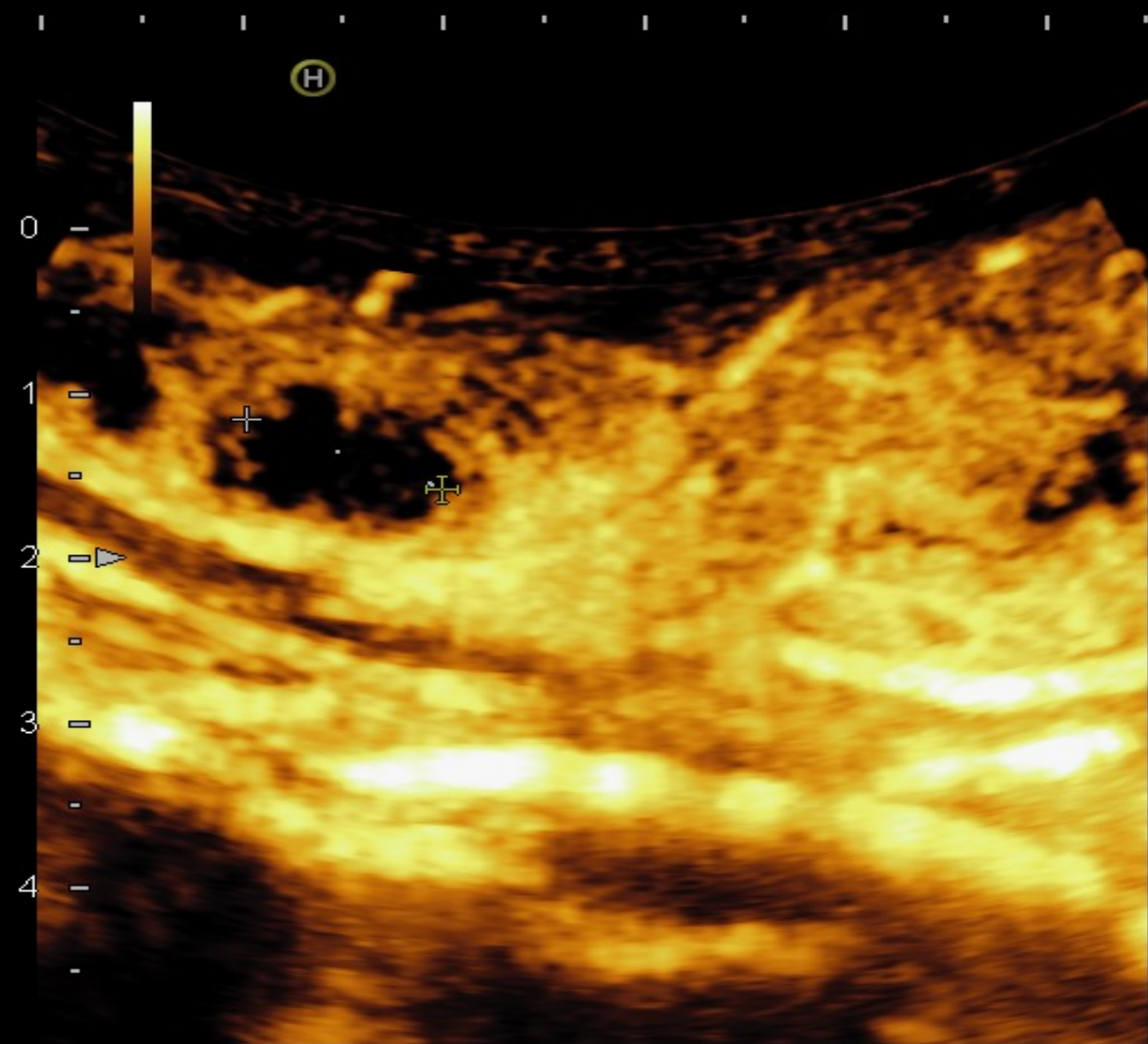
IN THE 80IES OF LAST CENTURY (HIV → AIDS)

Necrosis



Barreiros AP, Braden B, Schieferstein-Knauer C, Ignee A, Dietrich CF. Characteristics of intestinal tuberculosis in ultrasonographic techniques. Scand J Gastroenterol 2008; 43(10):1224-1231

-+ D= 4.3mm



Calip	
+ D1	10.6 mm

Colitis





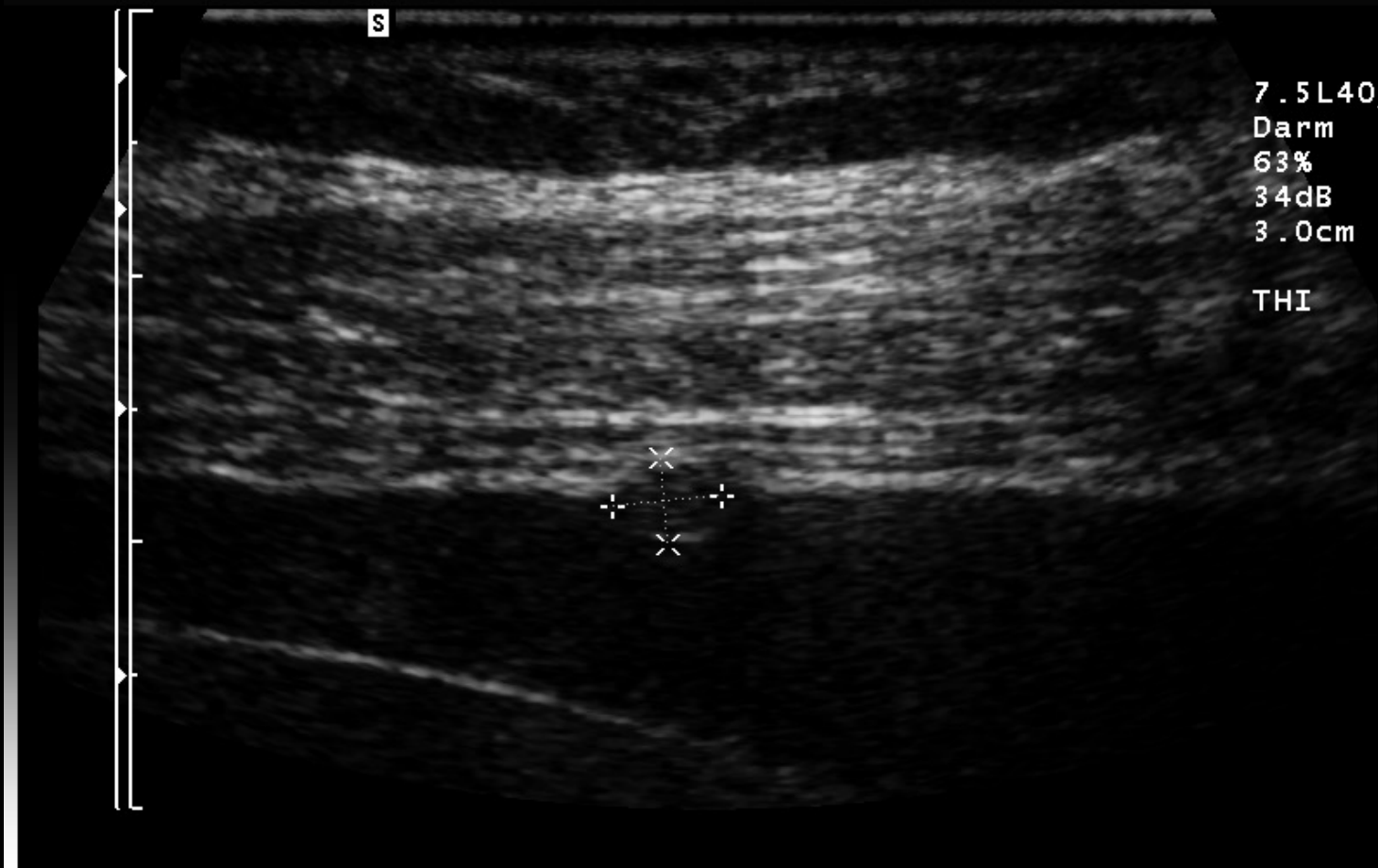
⊕ D= 5.8mm

SIEMENS

UNI Frankfurt II.Med.

11.57.19 27.06.00

MI 1.3



7.5L40/4.0

Darm

63%

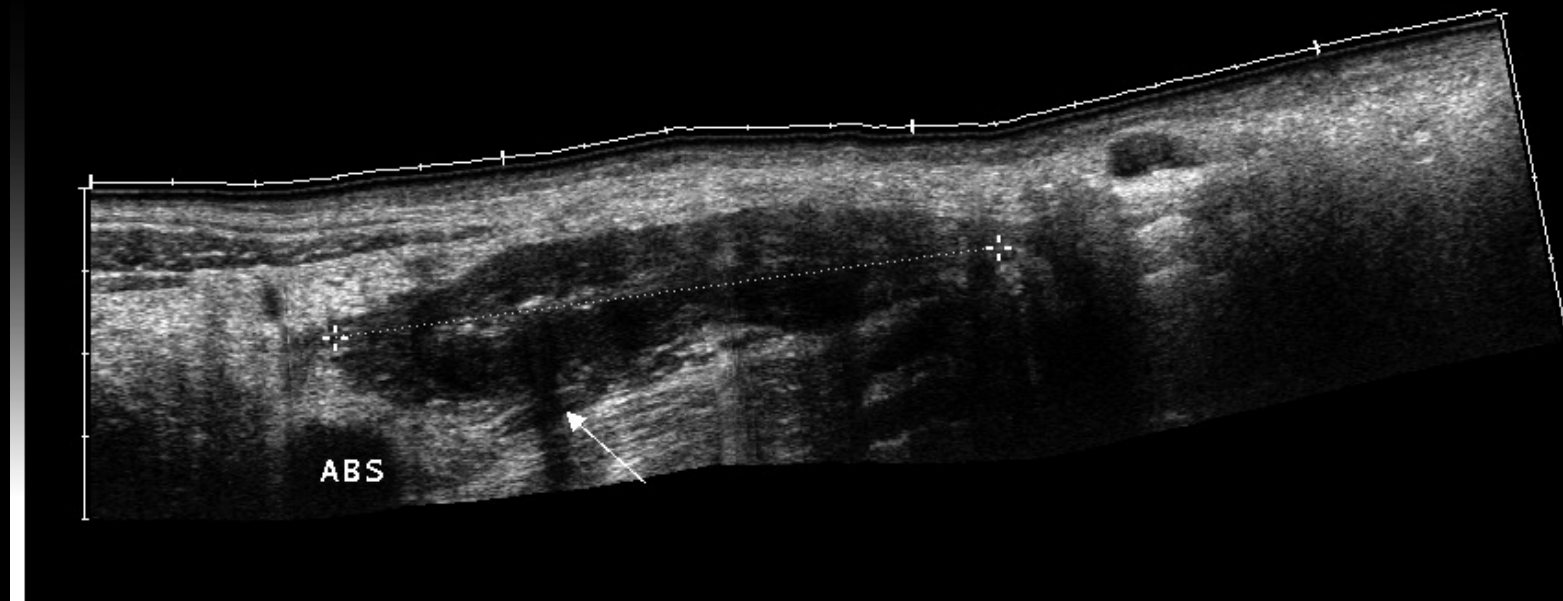
34dB ZD4

3.0cm 10B/s

THI

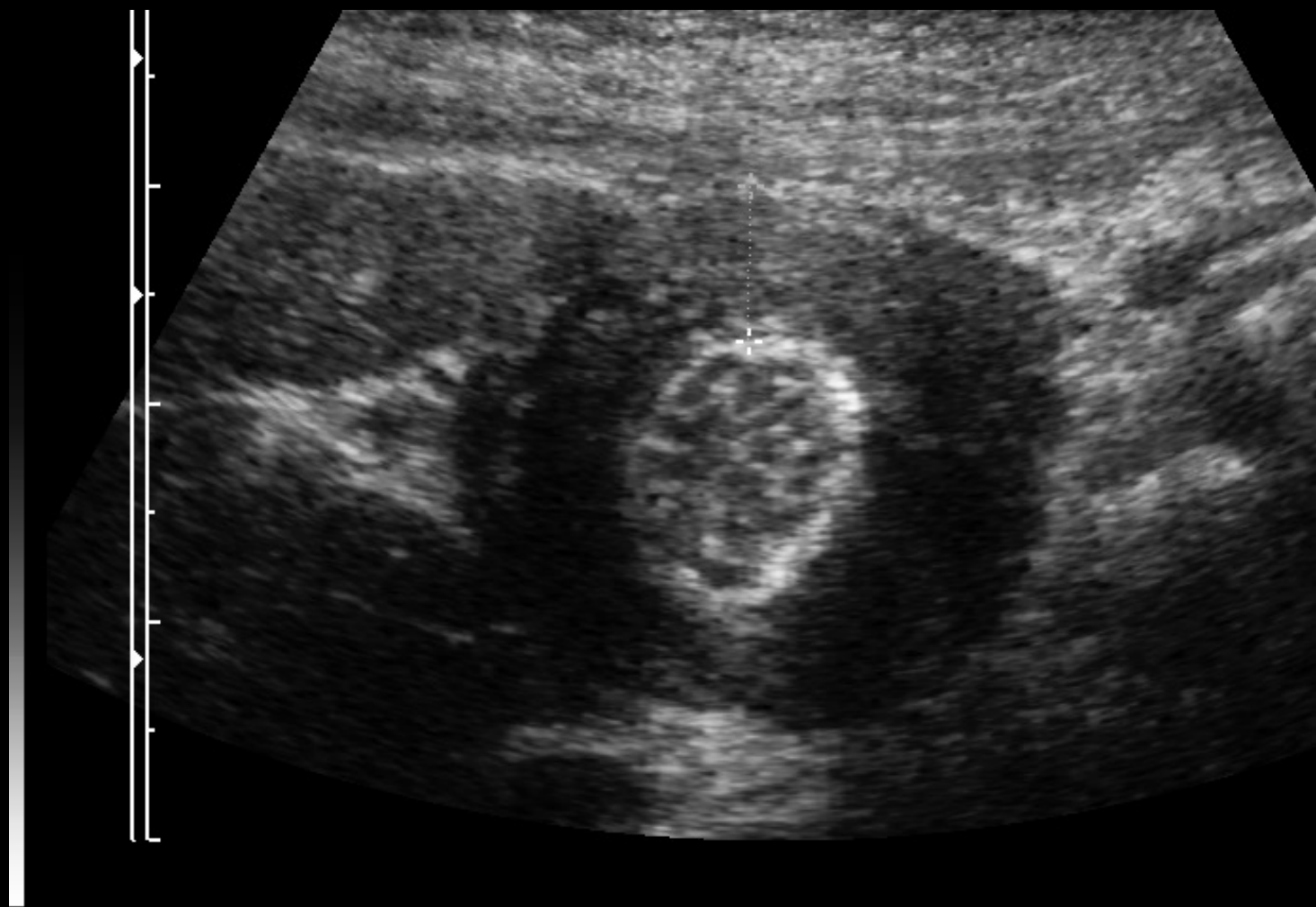
⊕ D= 4.1mm

× D= 3.3mm

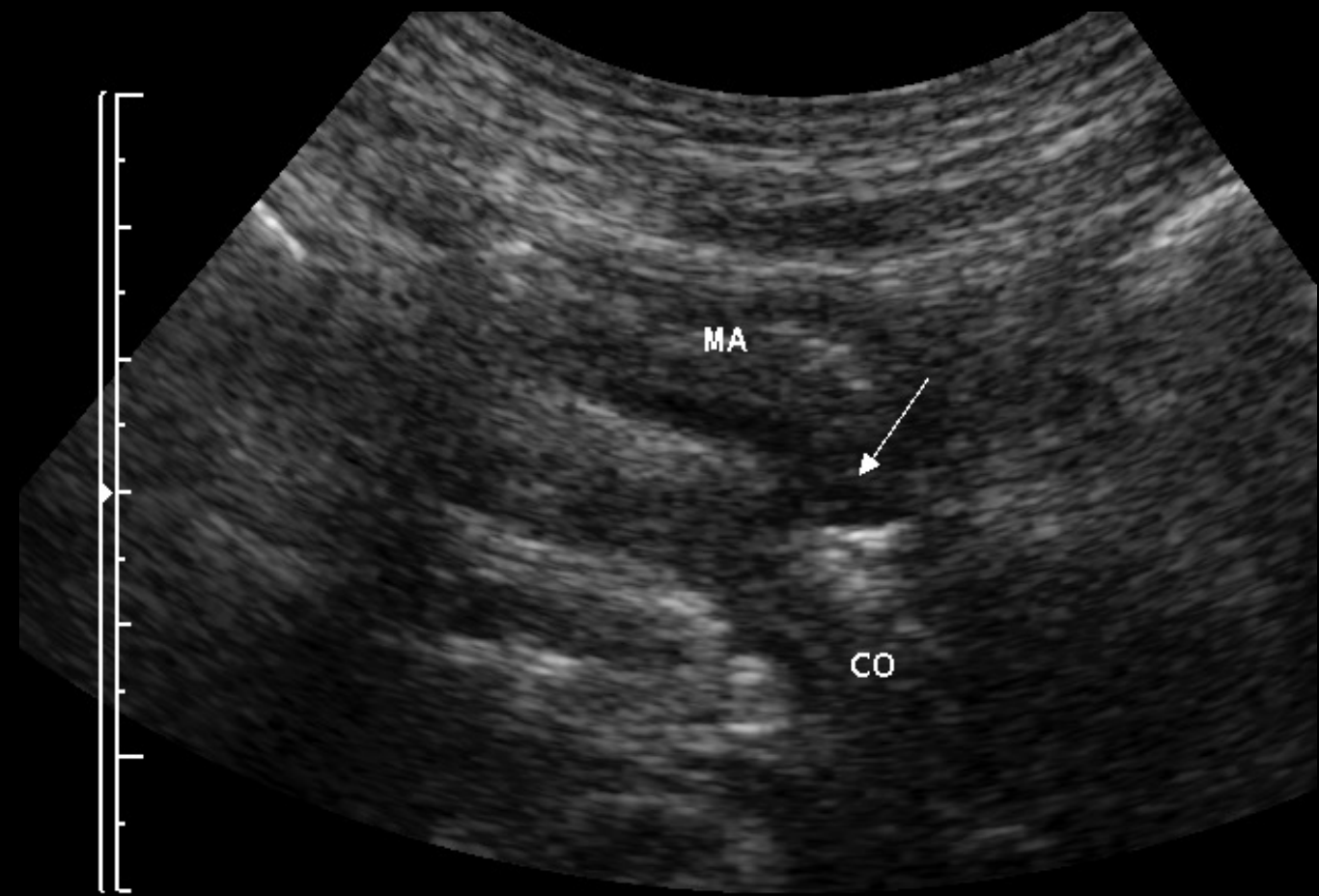


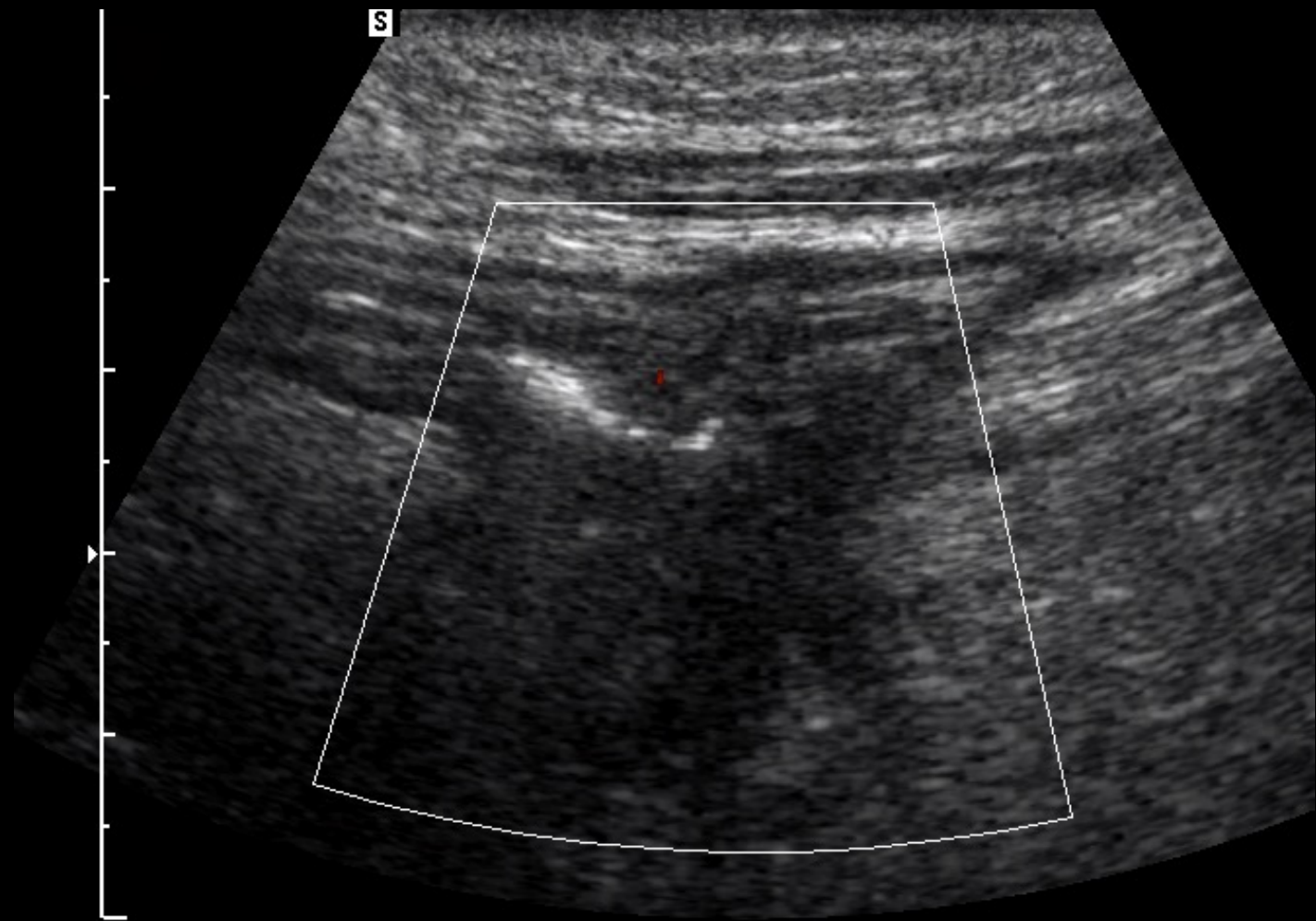
-:- D= 81.0mm

Fistula stomach colon



∴ D= 7.1mm





**ORIGINAL ARTICLE**

## **Characteristics of intestinal tuberculosis in ultrasonographic techniques**

ANA PAULA BARREIROS<sup>1,2</sup>, BARBARA BRADEN<sup>3</sup>, CHRISTIANE SCHIEFERSTEIN-KNAUER<sup>4</sup>, ANDRE IGNEE<sup>2</sup> & CHRISTOPH F. DIETRICH<sup>2</sup>

*<sup>1</sup>First Department of Internal Medicine, Johannes Gutenberg-University Mainz, Mainz, Germany, <sup>2</sup>Second Department of Internal Medicine, Caritas-Krankenhaus Bad Mergentheim, Bad Mergentheim, Germany, <sup>3</sup>Department of Gastroenterology, John Radcliffe Hospital, Headley Way, Oxford, UK, and <sup>4</sup>Department of Oncology and Hematology, Krankenhaus Nordwest GmbH, Frankfurt, Germany*

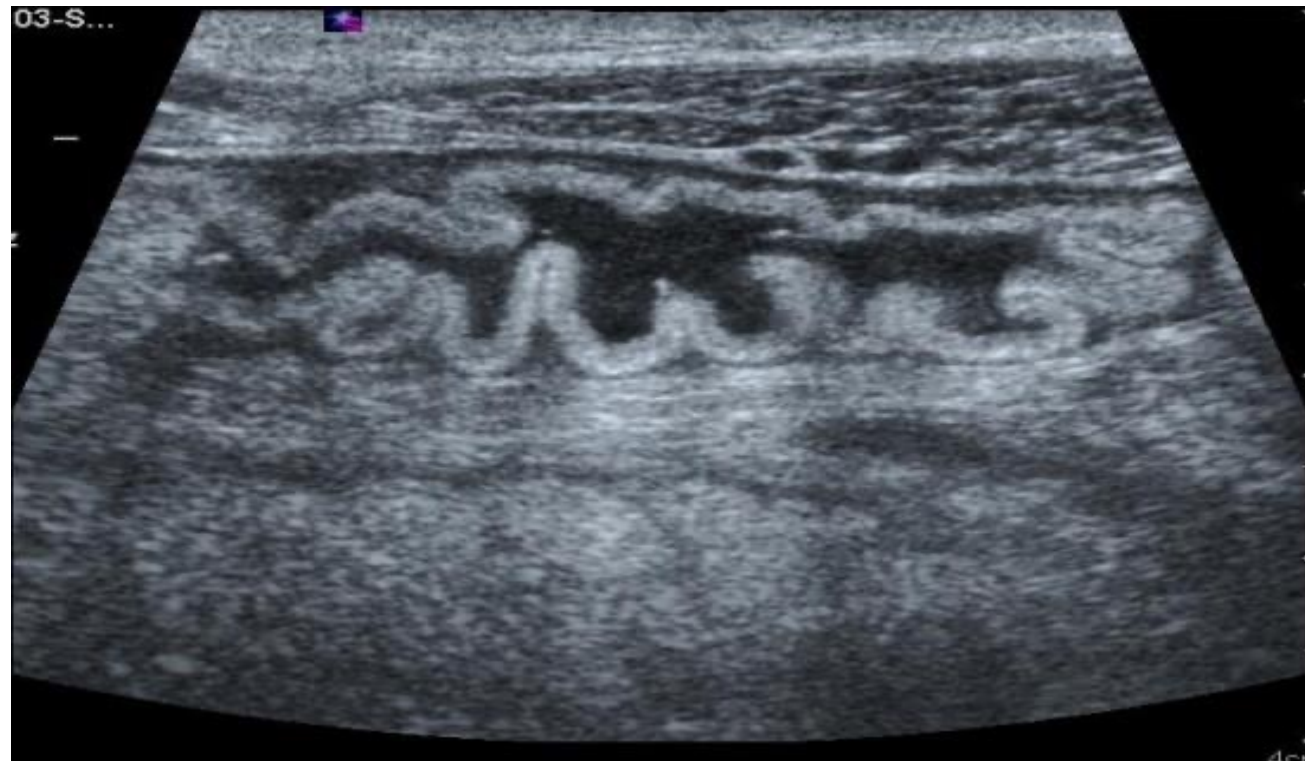


White bowel in tbc

A. Hollerweger<sup>1</sup>  
C. F. Dietrich<sup>2</sup>

# „White bowel – die weiße Darmwand“. Sonographischer Ausdruck einer mesenterialen Lymphstauung?

*“White Bowel”. A Sonographic Sign of Intestinal Lymph Edema?*



Hollerweger A, Dietrich CF.

“White bowel – die weiße Darmwand”. Sonographischer Ausdruck einer mesenterialen Lymphstauung?

Ultraschall Med 2005;26:127-132

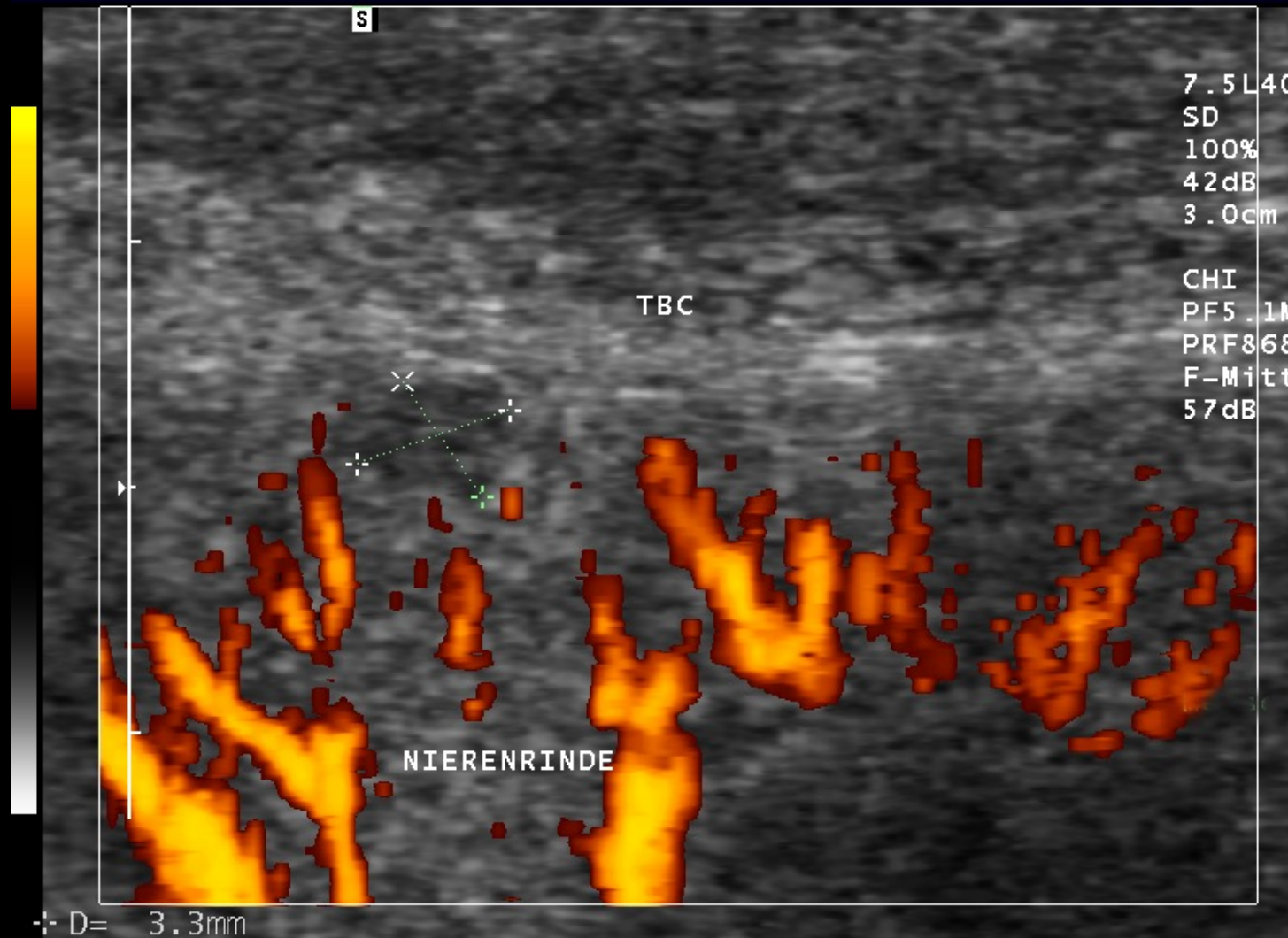


**Kidney**

SIEMENS

UNI Frankfurt II.Med.  
11.21.35 06.09.99

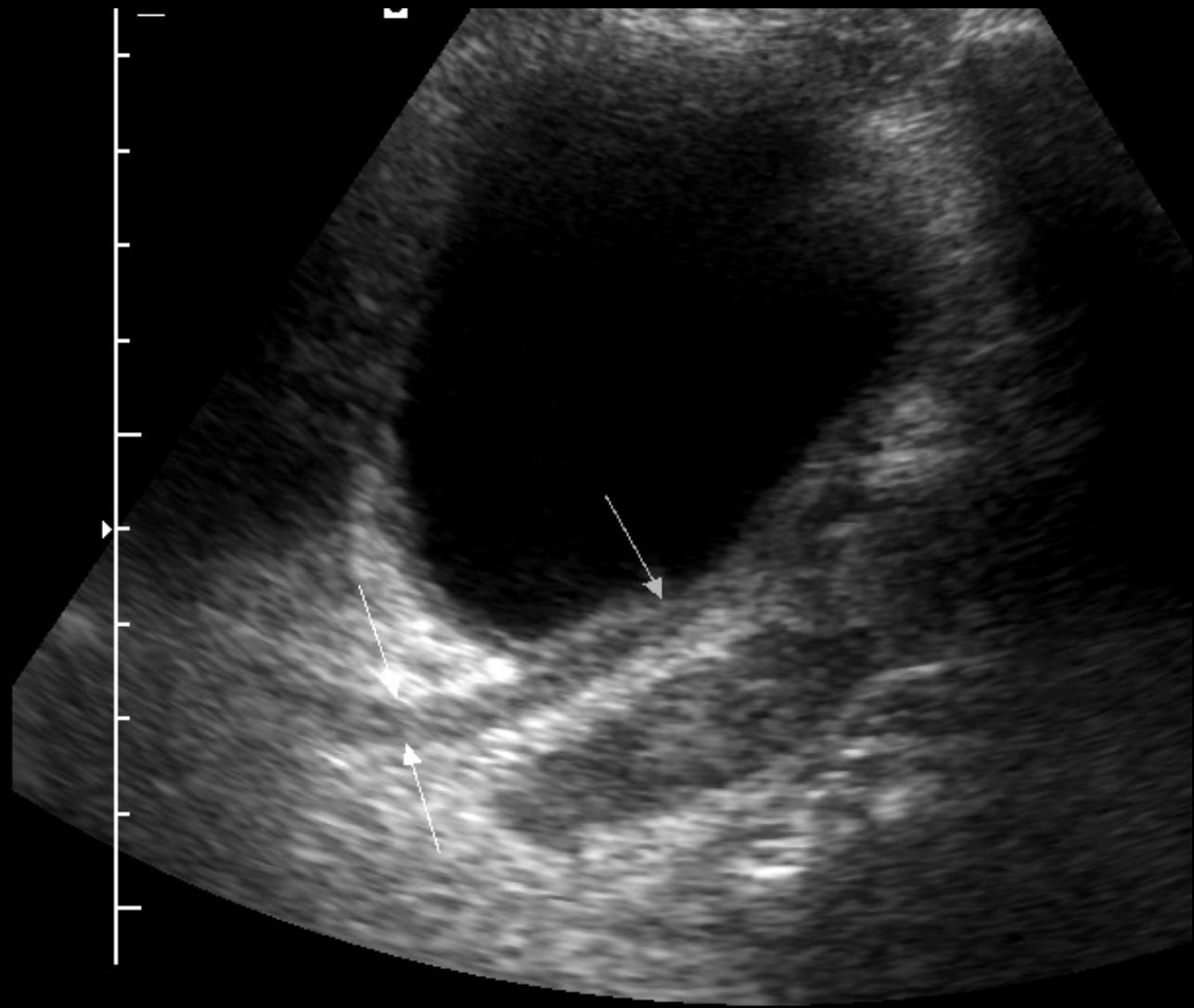
MI 1.1



7.5L40/3.3  
SD  
100%  
42dB ZD3  
3.0cm 6B/s  
Z  
CHI  
PF5.1MHz  
PRF868Hz  
F-Mittel  
57dB ZD6

+ D= 3.3mm  
x D= 2.9mm

UGT



Never seen before and we might never see it again

1. Bacterial diseases
2. Viral diseases
3. Parasitic diseases
4. Worms
5. Autoimmune diseases
6. Toxic diseases

You might be familiar with hydatid cysts ...

*Review*

*Med Ultrason 2020, Vol. 22, no. 1, 75-84*  
DOI: 10.11152/mu-2421

---

**Cystic and alveolar echinococcosis of the hepatobiliary tract  
– the role of new imaging techniques for improved diagnosis**

**Christoph F. Dietrich<sup>1,2</sup>, Wiem Douira-Khoms<sup>3</sup>, Hassen Gharbi<sup>4</sup>, Malay Sharma<sup>5</sup>, Xin Wu Cui<sup>6</sup>, Zeno Sparchez<sup>7</sup>, Joachim Richter<sup>8</sup>, Adnan Kabaalioglu<sup>9</sup>, Nathan S. S. Atkinson<sup>10</sup>, Dagmar Schreiber-Dietrich<sup>11</sup>, Dong Yi<sup>12</sup>**

*Review*

*Med Ultrason 2020, Vol. 22, no. 3, 319-324*  
DOI: 10.11152/mu-2537

---

**Cystic echinococcosis, review and illustration of non-hepatic  
manifestations**

**Christoph F. Dietrich<sup>1,2</sup>, Wiem Douira-Khoms<sup>3</sup>, Hassen Gharbi<sup>4</sup>, Malay Sharma<sup>5</sup>, Xin Wu Cui<sup>6</sup>, Zeno Sparchez<sup>7</sup>, Joachim Richter<sup>8</sup>, Adnan Kabaalioglu<sup>9</sup>, Nathan S.S. Atkinson<sup>10</sup>, Dagmar Schreiber-Dietrich<sup>11</sup>, Yi Dong<sup>12</sup>**



# Fasciolosis

## Fasziolose

**Authors**

C. F. Dietrich<sup>1</sup>, A. Kabaalioglu<sup>2</sup>, E. Brunetti<sup>3</sup>, J. Richter<sup>4</sup>

**Affiliations**

<sup>1</sup> Innere Medizin 2, Caritas Krankenhaus Bad Mergentheim

<sup>2</sup> Akdeniz University Hospital, Department of Radiology, Antalya-Turkey

<sup>3</sup> Division of Infectious and Tropical Diseases, San Matteo Hospital Foundation, University of Pavia

<sup>4</sup> Tropenmedizinische Ambulanz, Klinik für Gastroenterologie, Hepatologie und Infektiologie, Heinrich-Heine Universität Düsseldorf

## **Never seen before? Opisthorchiasis and Clonorchiasis**

Imaging parasitic diseases

## **Noch nie gesehen? Opisthorchiasis und Clonorchiasis**

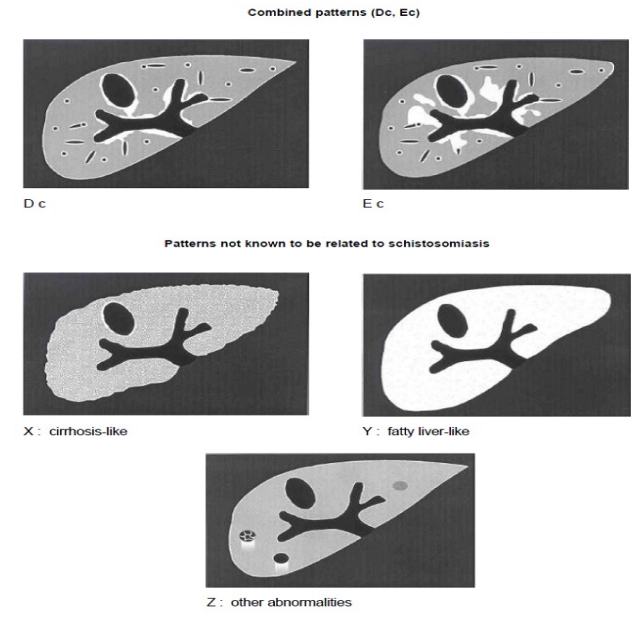
Bildgebung parasitärer Erkrankungen

### Authors

Christoph F. Dietrich<sup>1,2</sup>, Nathan S.S. Atkinson<sup>3</sup>, W. J. Lee<sup>4</sup>, Kerstin Kling<sup>5</sup>, Andreas Neumayr<sup>5</sup>, Barbara Braden<sup>6</sup>, Joachim Richter<sup>7</sup>, Robert Akpata<sup>8</sup>, Phonesavanh Southisavath<sup>5</sup>, Dagmar Schreiber-Dietrich<sup>9</sup>, Yi Dong<sup>10</sup>

Z Gastroenterol 2018; 13: 1513–1520

# Niamey Ultrasound classification for S. Mansoni



Richter J, Botelho MC, Holtfreter MC, Akpata R, El Scheich T, Neumayr A, Brunetti E, Dietrich CF  
Ultrasound assessment of schistosomiasis. Z Gastroenterol 2016;54:653-660

Richter J, Azoulay D, Dong Y, Holtfreter MC, Akpata R, Calderaro J, El-Scheich T, Dietrich CF  
Ultrasonography of gallbladder abnormalities due to schistosomiasis. Parasitol Res 2016;115:2917-2924

*Ahead of print*

*Med Ultrason 2021:0, 1-10 Online first*  
DOI: 10.11152/mu-3343

---

## **Ascariasis, a review**

**Markus Schindler-Piontek<sup>1</sup>, Nitin Chaubal<sup>2</sup>, Sirine Dehmani<sup>3</sup>, Xin Wu Cui<sup>4</sup>, Yi Dong<sup>5</sup>,  
Malay Sharma<sup>6,7</sup>, Christoph F Dietrich<sup>3</sup>**

*Ahead of print*

*Med Ultrason 2023:0, 1-12 Online first*  
DOI: 10.11152/mu-4091

---

## **Comments and illustrations of the WFUMB CEUS liver guidelines: Rare focal liver lesion – infectious parasitic, fungus**

**Tobias Zander<sup>1</sup>, Ehsan Safai Zadeh<sup>2</sup>, Kathleen Möller<sup>3</sup>, Christian Goerg<sup>2</sup>, Jean Michel Correas<sup>4</sup>, Nitin Chaubal<sup>5</sup>, Klaus Dirks<sup>6</sup>, Alois Hollerweger<sup>7</sup>, Christian Jenssen<sup>8,9</sup>, Christoph Klinger<sup>10</sup>, Adrian Lim<sup>11</sup>, Yi Dong<sup>12</sup>, Xin Wu Cui<sup>13</sup>, Nathally Espinosa Montagut<sup>14</sup>, David Srivastava<sup>15</sup>, Christoph F Dietrich<sup>1</sup>**

# Ultrasound and contrast-enhanced ultrasound (CEUS) in infective liver lesions

## Ultraschall und Kontrastmittelultraschall zur Beurteilung infektiöser Leberläsionen

### Authors

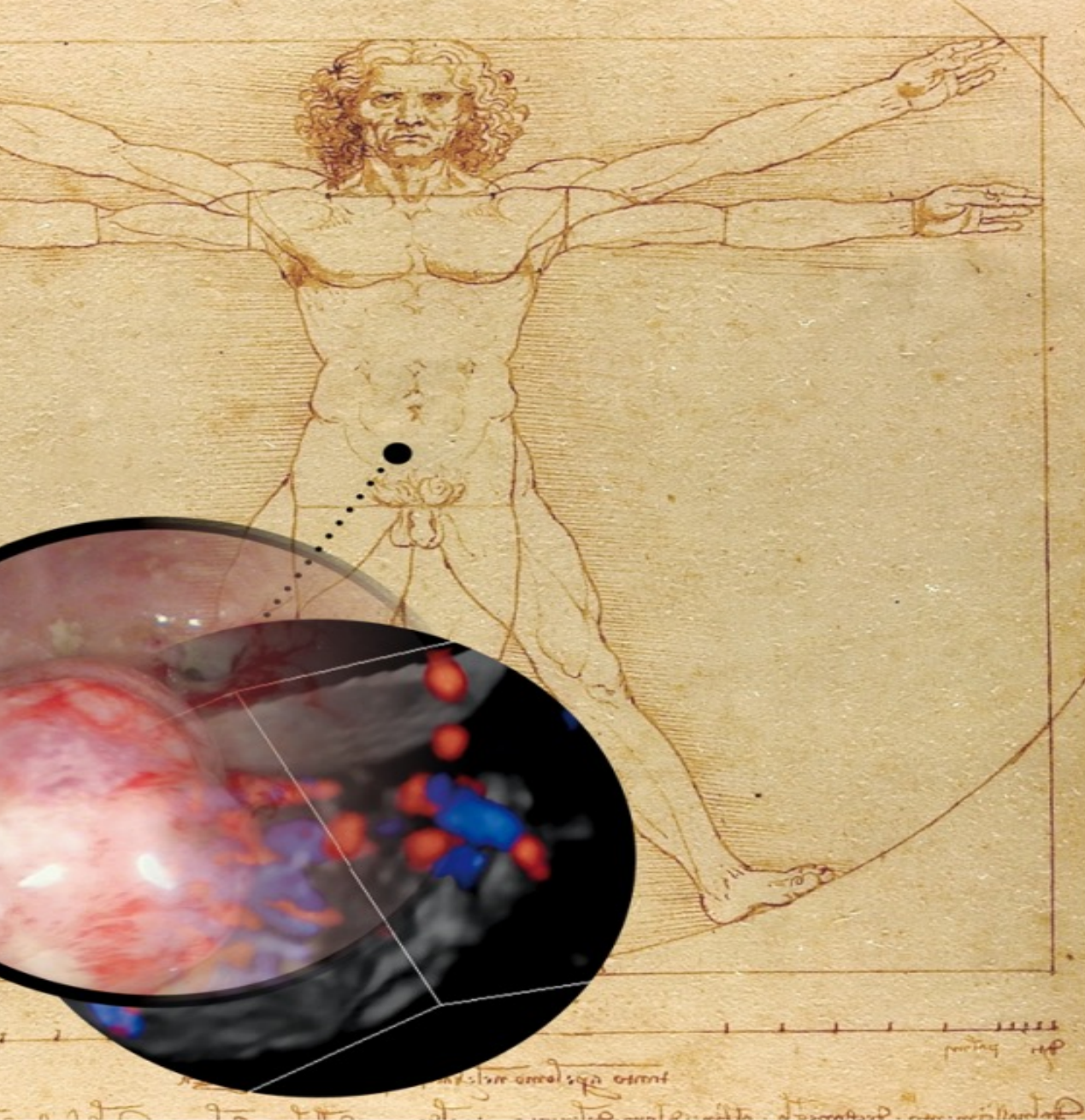
Nitin Chaubal<sup>1, 2</sup>, Thomas Thomsen<sup>3</sup>, Adnan Kabaalioglu<sup>4</sup>, David Srivastava<sup>5</sup>, Stephanie Simone Rösch<sup>5</sup>, Christoph F. Dietrich<sup>5</sup> 

# Review of Dancing Parasites in Lymphatic Filariasis



## Authors

Christoph F. Dietrich<sup>1</sup>, Nitin Chaubal<sup>2</sup>, Achim Hoerauf<sup>3</sup>, Kerstin Kling<sup>4</sup>, Markus Schindler Piontek<sup>5</sup>, Ludwig Steffgen<sup>6</sup>, Sabine Mand<sup>3</sup>, Yi Dong<sup>7</sup>



# *When Art meets Science...*

**14. - 16. März 2013, The Westin Grand München**

**43. Kongress der Deutschen Gesellschaft für  
Endoskopie und Bildgebende Verfahren e.V.**

**zusammen mit den Fachgesellschaften der  
CAES, DEGEA, SMIT, DGD, CTAC und DEGUM**



# „Art meets Science“ – Gedanken zu Schnittstellen zwischen Kunst und Wissenschaft. Das Spannungsfeld von Information und ästhetischer Faszination in Endoskopie und Bildgebung

“Art Meets Science” – Thoughts on Interfaces between Art and Science, and on the Relationship between Information and Aesthetics in Endoscopy and Imaging

Autoren

C. Janssen<sup>1</sup>, N. J. Lauer<sup>2</sup>, E. Burmester<sup>3</sup>, U. Will<sup>4</sup>, M. Hocke<sup>5</sup>, C. F. Dietrich<sup>6</sup>

Janssen C et al. „Art meets Science“ ... Endheue 2013; 26: 2–12

Janssen C, Lauer NJ, Burmester E, Will U, Hocke M, Dietrich CF.

„Art meets Science“ – Gedanken zu Schnittstellen zwischen Kunst und Wissenschaft und zum Zusammenhang von Informationsgehalt und ästhetischer Faszination in Endoskopie und Bildgebung. Endheue 2013;26:2-12.





# Danksagung

- Kathleen Möller
- Ko-Autoren



**Abdomensonographie – Refresher**  
**03. – 07. März 2024**  
**Gaschurn/Vorarlberg/AT**  
**ÖGUM - DEGUM - SGUM – Seminar**

**Lungen- und Pleurasonographie**  
**08. – 10. März 2024**  
**Gaschurn/Vorarlberg/AT**  
**ÖGUM - DEGUM - SGUM – Seminar**

# Herzlich Willkommen

Andreas Schuler

Gebhard Mathis

# Kursablauf

Vorträge 8-11, 16-19Uhr

Praktika-Fallberichte 11/15Uhr



- Vorträge, Forum der Teilnehmer
- Knopfologie
- Sonographische Fingerübungen
- Systematische Untersuchungstechnik
- oder was suche ich für Fortgeschrittene?
- Fokussierte Echokardiographie
- Punktionen
  
- Parallel dazu Fallberichte

Abdomen-/Thoraxsonografie 2022  
[www.ultraschallkurse-gaschurn.de](http://www.ultraschallkurse-gaschurn.de)

**ULTRASCHALLTAGE  
GASCHURN**



Abdomen-/Thoraxsonografie 2022  
[www.ultraschallkurse-gaschurn.de](http://www.ultraschallkurse-gaschurn.de)

**ULTRASCHALLTAGE  
GASCHURN**

