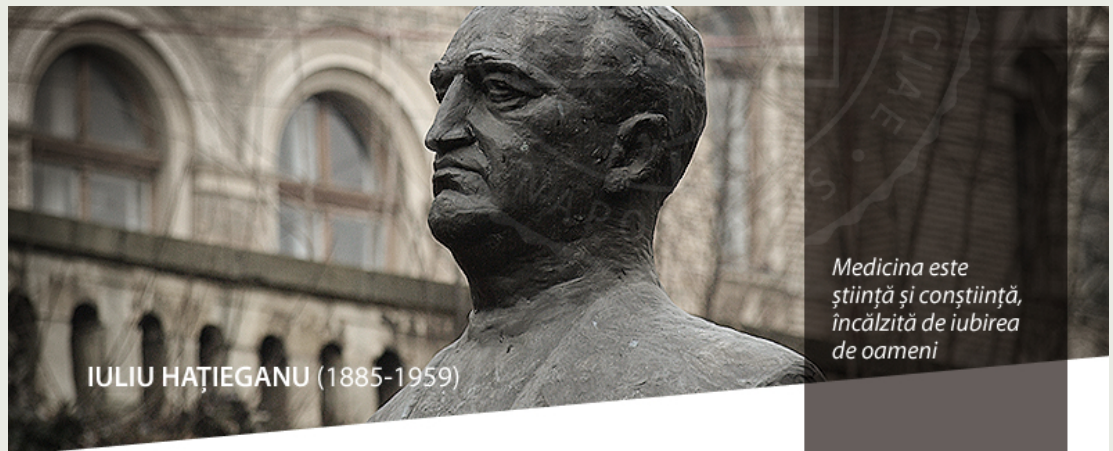


The Abdomen and Ultrasound

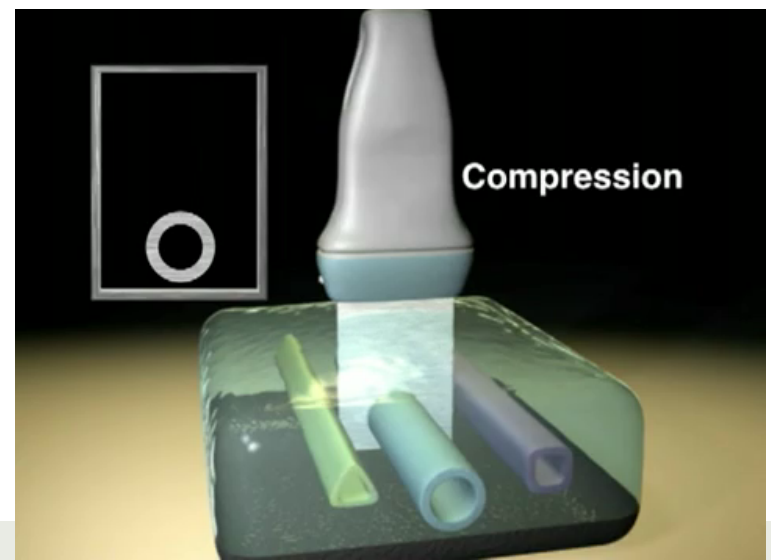
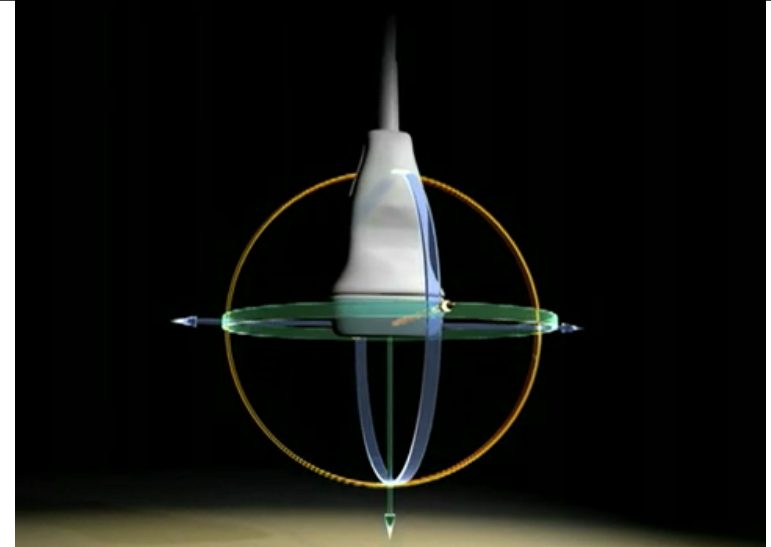
R. Badea, US Department, Institute of Hepatology and Gastroenterology, University of Medicine and Pharmacy "Iuliu Hațieganu" Cluj Napoca, România

rbadea@umfcluj.ro

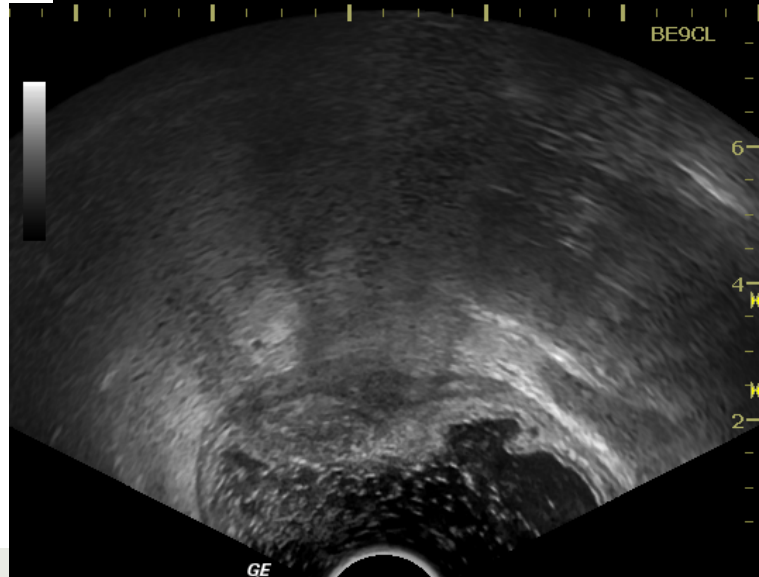
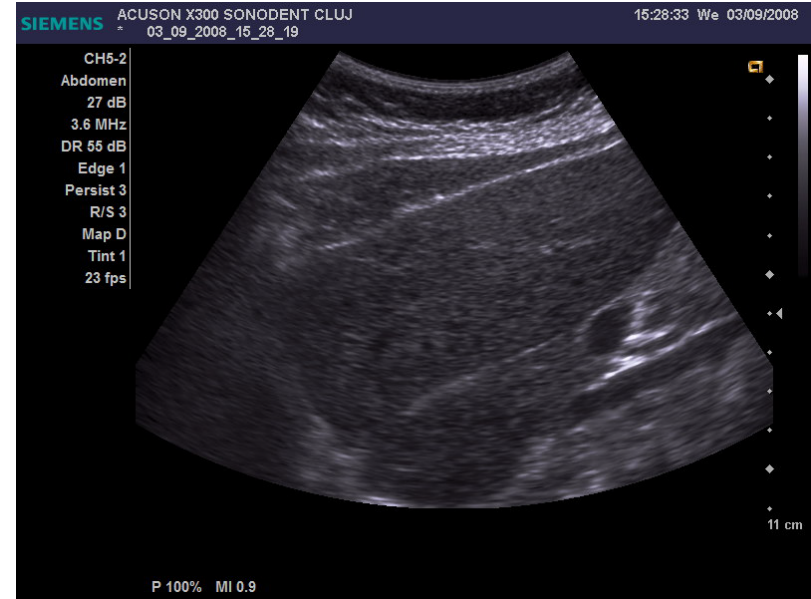


Abdominal ultrasonography. What is specific?

- a **“Real time” imaging technique** based on US of 2,5 – 5 MHz
- **The picture is obtained by the examiner** himself which makes US a very important **clinical instrument!**
- **Sectional technique** + 3D reconstruction in the imagination of the examiner
- Information:
 - **anatomical** – measurements – structure characterization – organ relations – spatial resolution = 1 mm!
 - **functional** - movements – blood flows
 - **clinical** - tenderness + compressibility



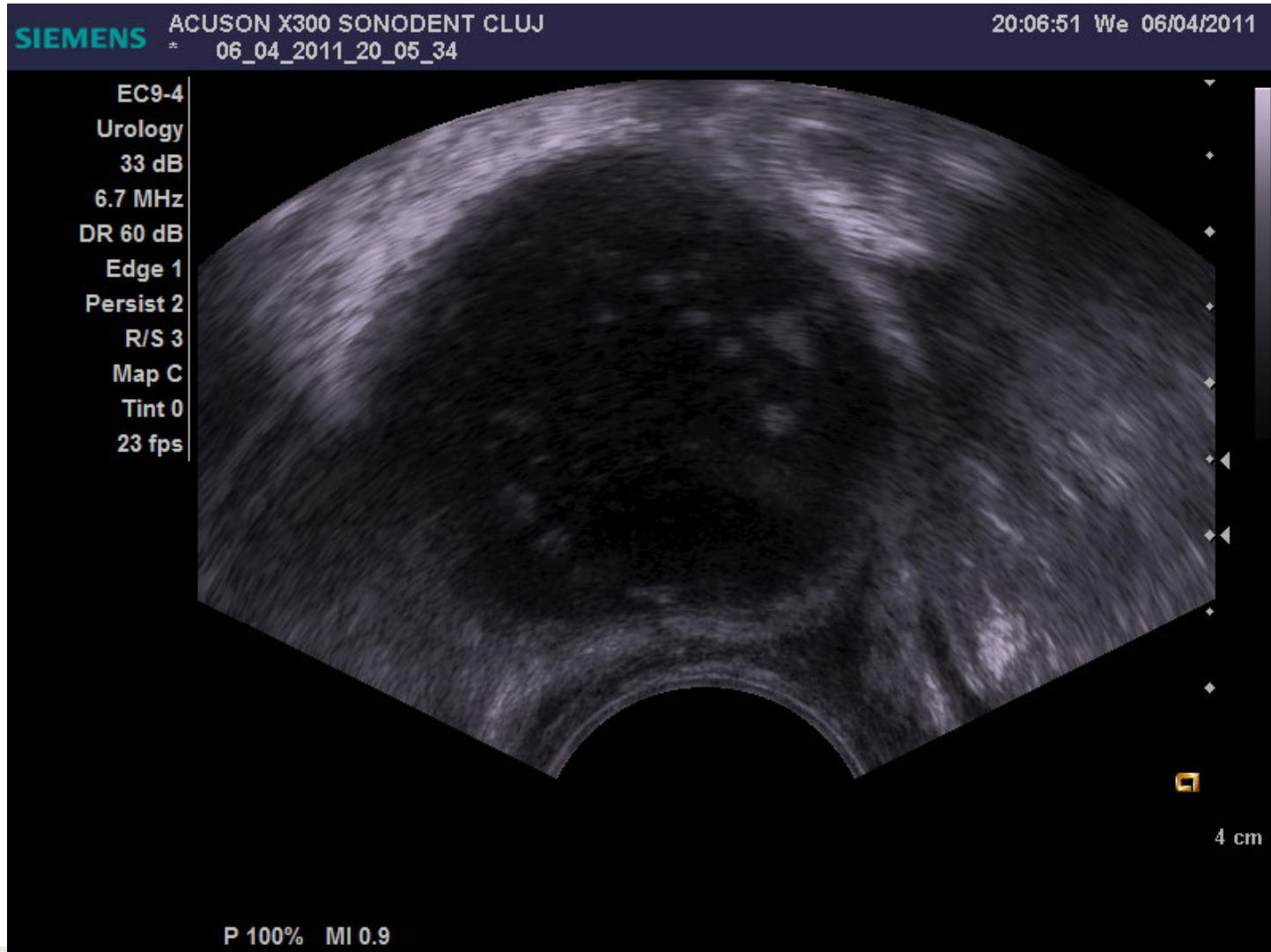
A multi approach technique



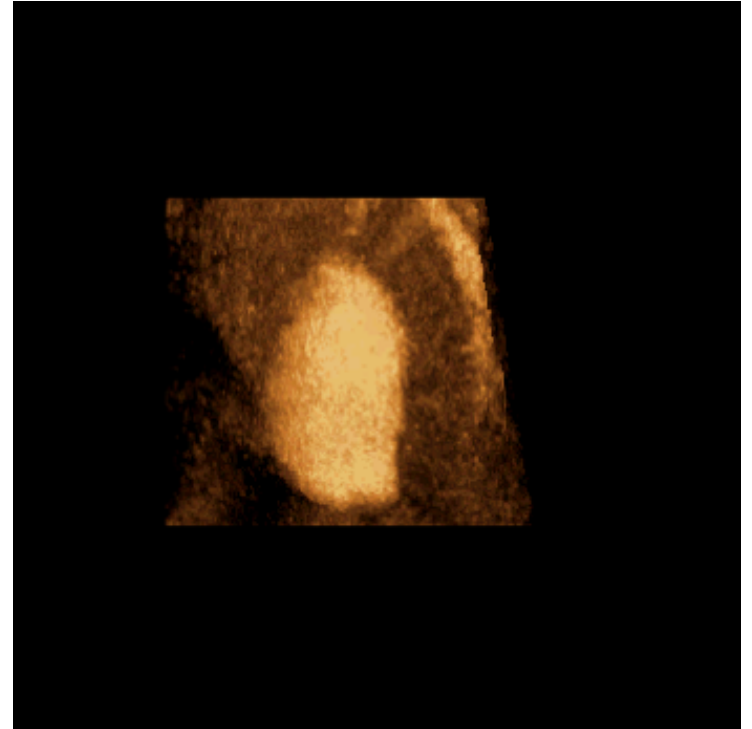
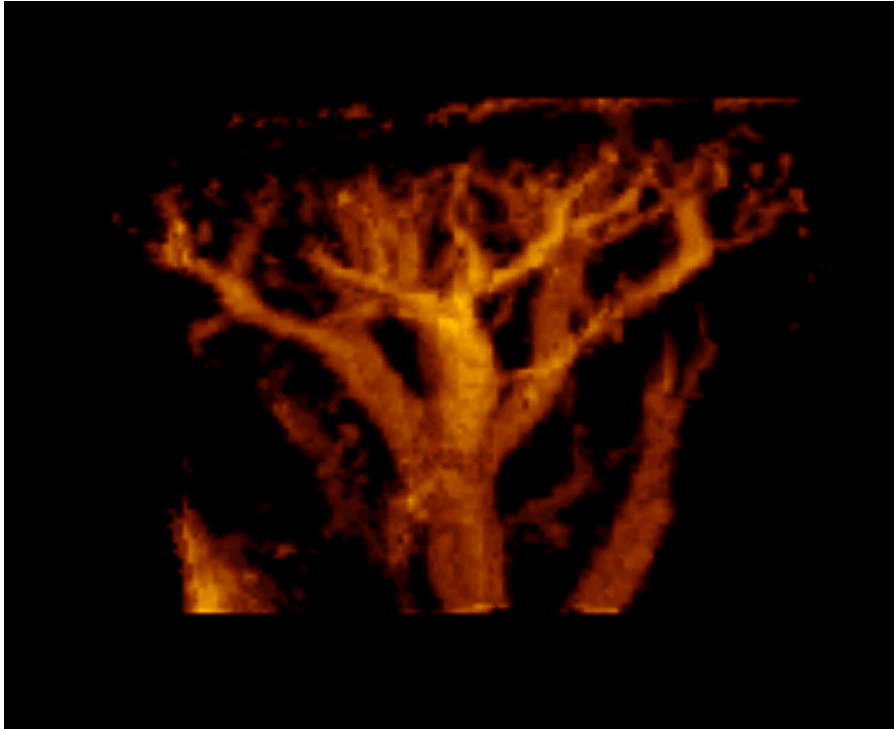
A multimodal technique

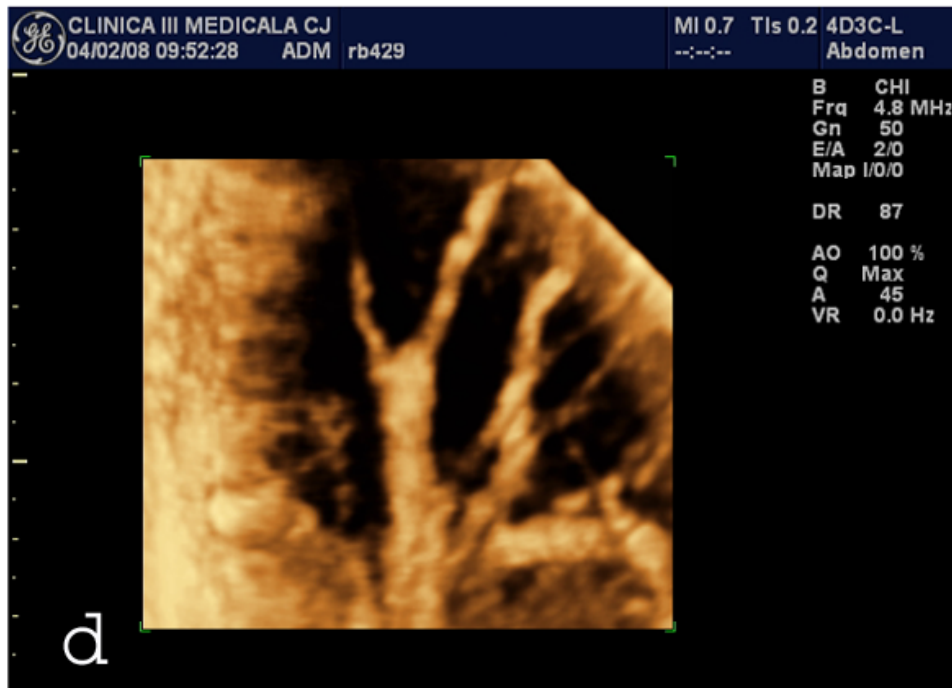
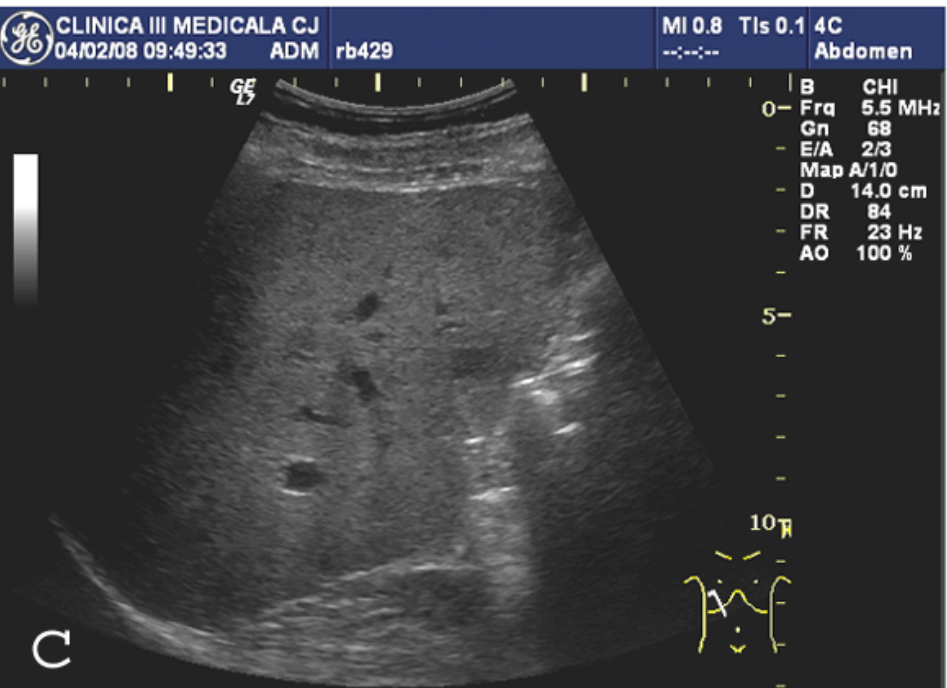
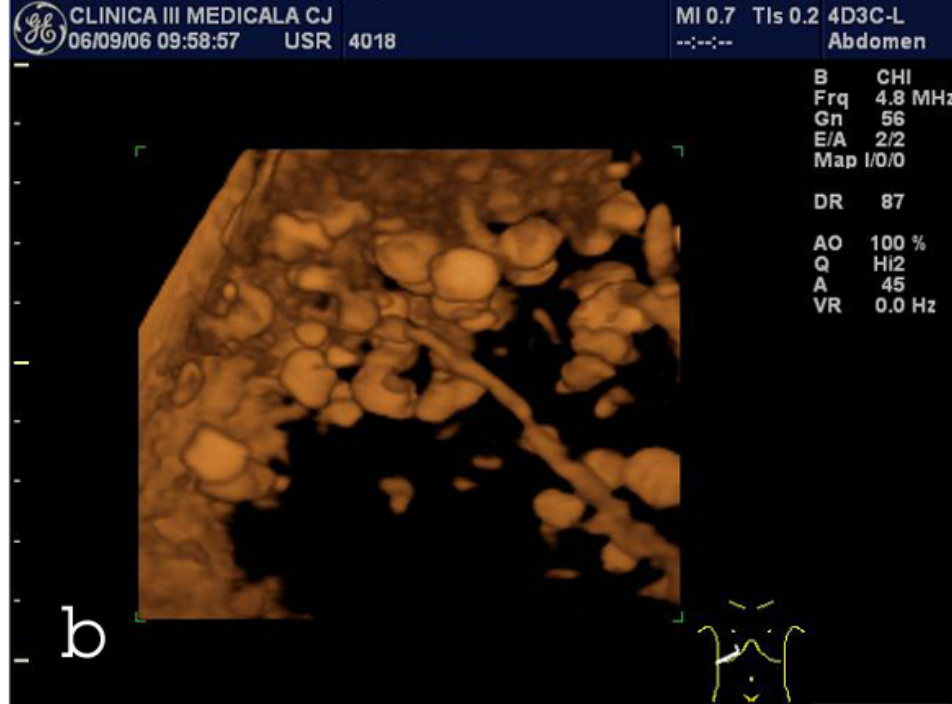
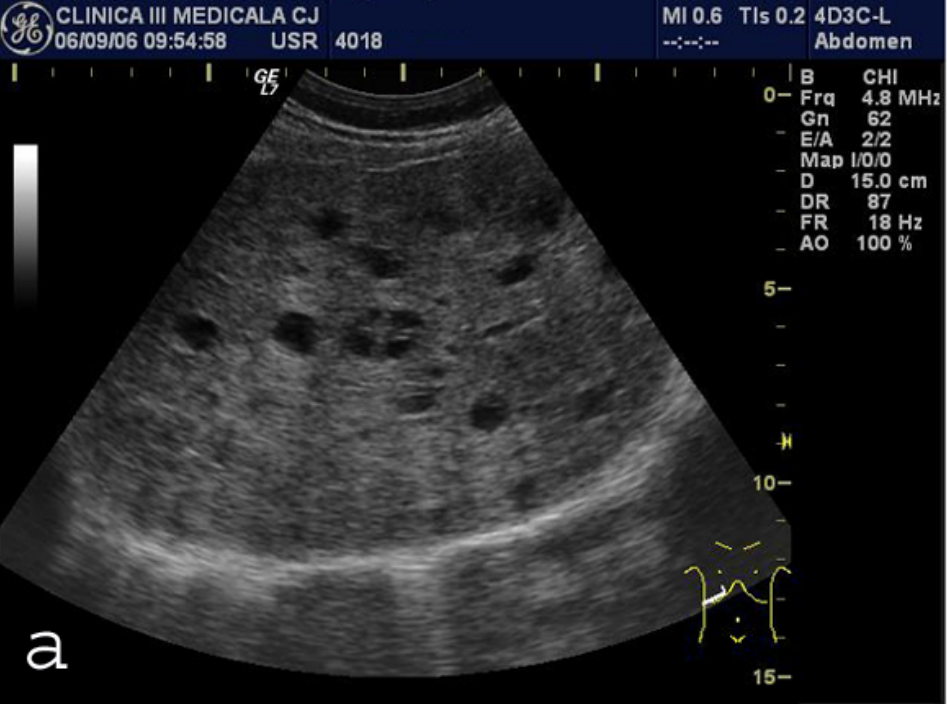
Nr.	Procedure	Importance/Application	Characteristics
1.	Grey scale 2D	Main technique	Morphology of the organs Sectional anatomy Discrimination between solid and cystic lesions Function of the organs e.g.. Heart beatings or digestive peristalsis
2.	Grey scale 3D/4D	Optional, educational application, 2 nd opinion	Spatial anatomy
3.	Doppler spectral	Vascular application	Presence and direction of blood flow Characterization of the flow Quantifications: speed, resistance
4.	Doppler CFM (color flow map)	Vascular application	Presence & characteristics of the blood flow in large & medium vessels
5.	Contrast enhanced ultrasonography	Vascular application	Presence & characterization of the blood flow in microcirculation

2D – palpation of the tumor

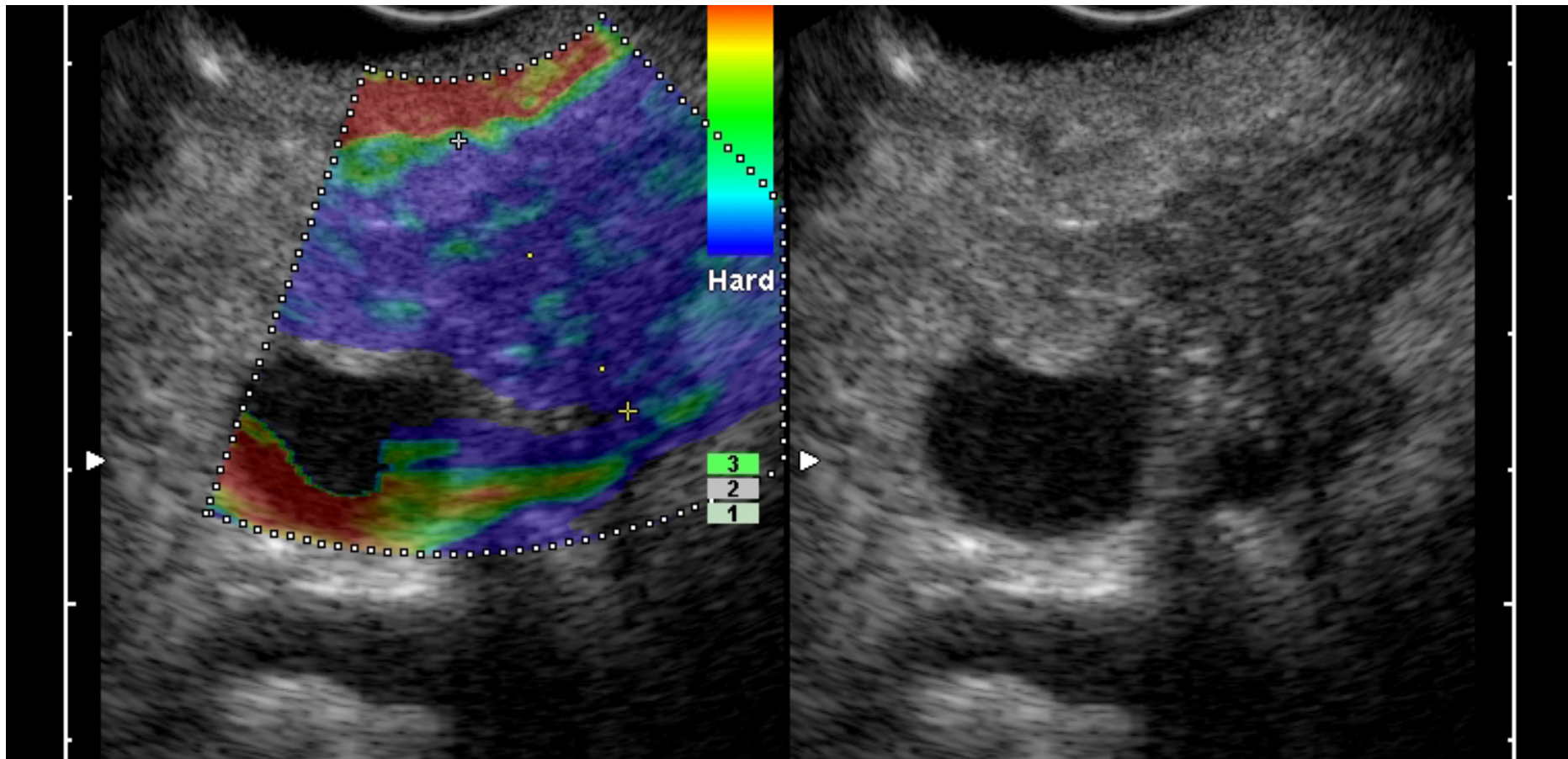


3D

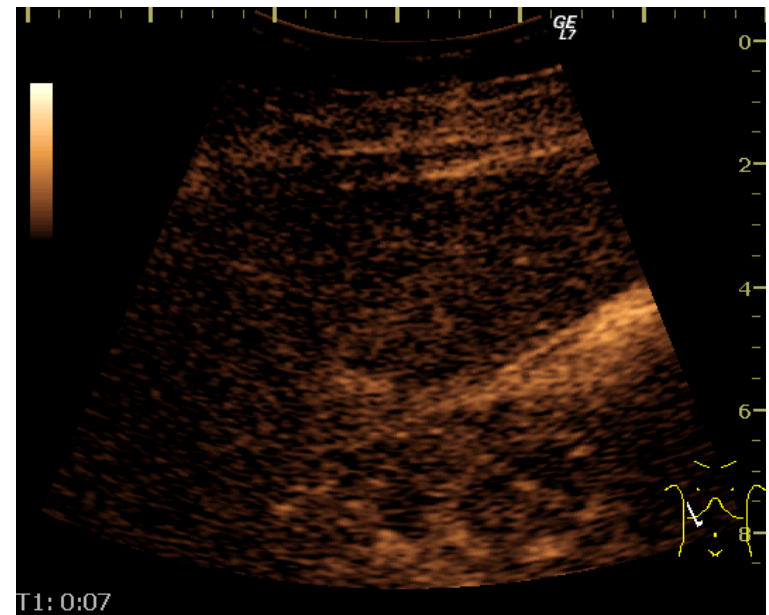
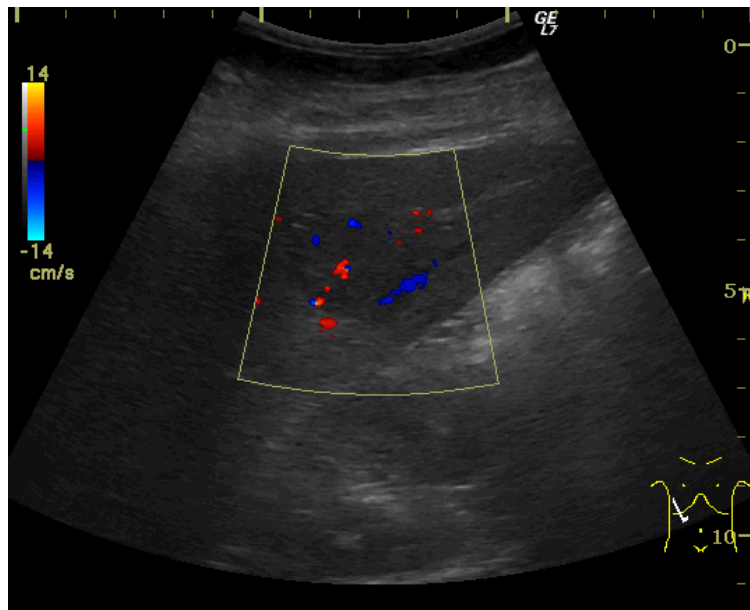




Elastography – importance for targeting of tumor parenchyma



Contrast enhanced harmonic ultrasonography



Detection of abdominal diseases by ultrasound? When and how?

- By general **scanning of the abdomen** – to separate healthy people from those with diseases and to detect asymptomatic lesions
- Evaluation of the abdomen when unspecific symptoms are present - the role of ultrasonography as **a “pick up” instrument for diagnosis** – when the the clinics is not suggestive
- Evaluation of the abdomen **when typical symptoms are present in chronic and acute situations** in order to detect the cause and complications
- Ultrasound as a diagnostic **tool integrated into diagnostic algorithms**
- Evaluation of the abdomen when there is a risk for a specific disease in early stage – **screening role**

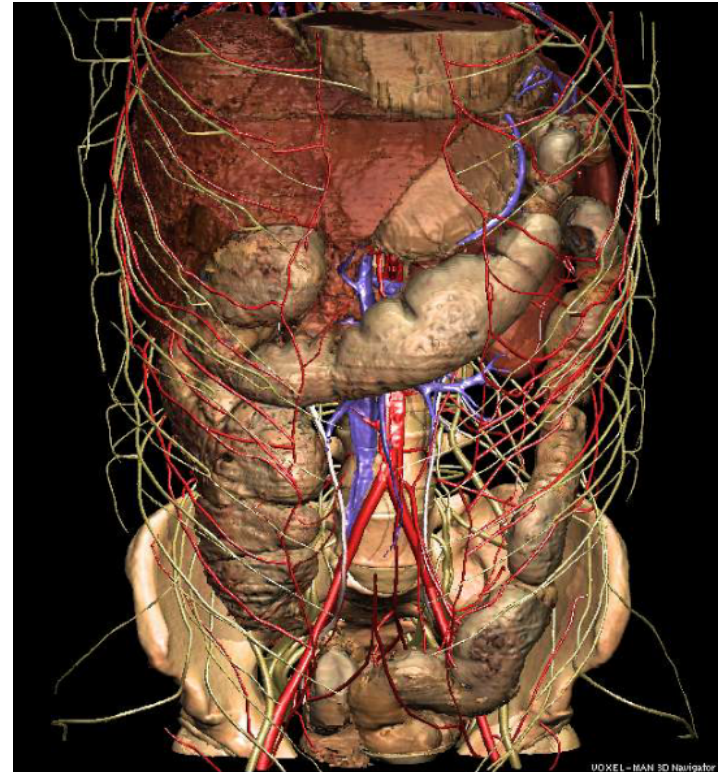
General scanning of the abdomen. Prerequisites

To know and understand the **sectional anatomy** of the abdomen and the relation between the organs

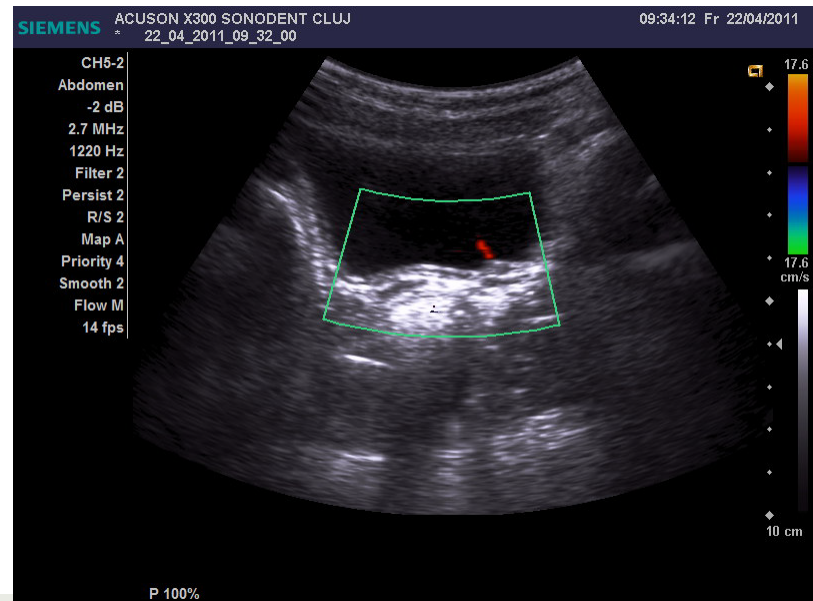
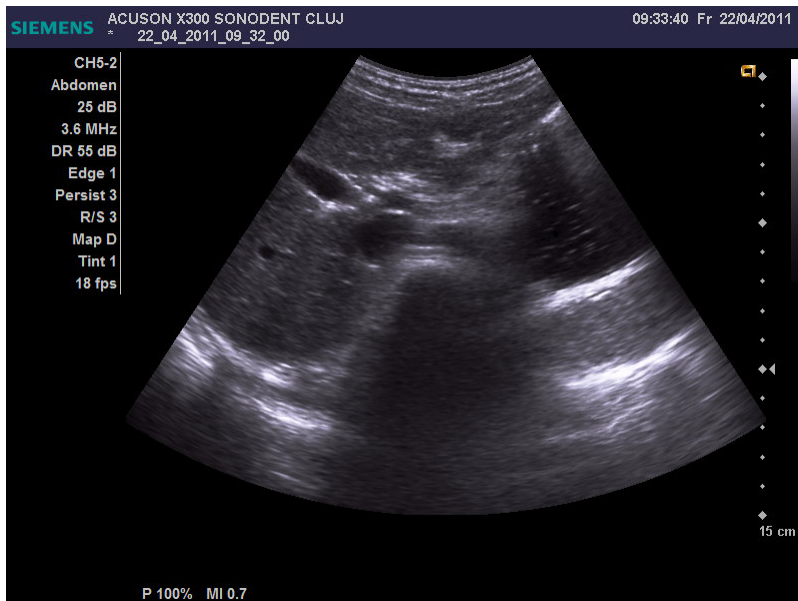
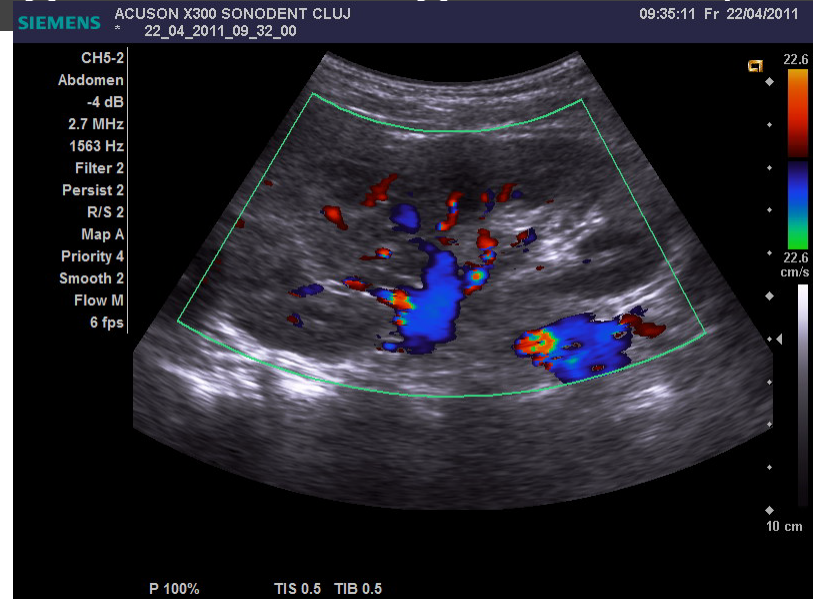
To know and understand the **ultrasound technology** and **technique of scanning**

To know how to avoid **artifacts** and **errors**

To use a **systematic approach** in order to cover all the abdominal organs



Scanning of the abdomen should be systematic and complete – agenesis of right kidney



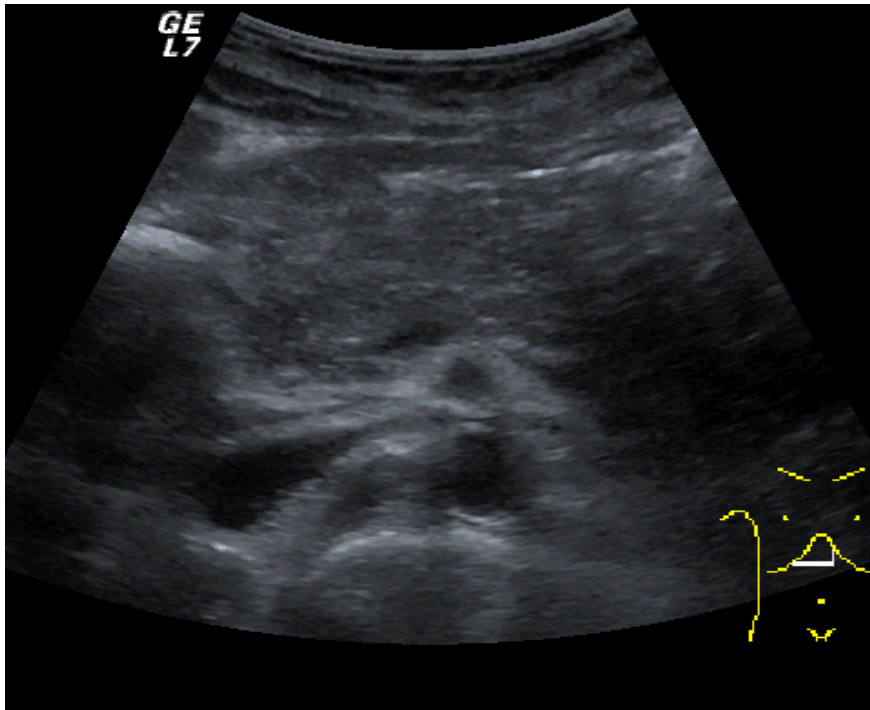
Typical symptoms are present – chronic diseases
– duodenal ulcer



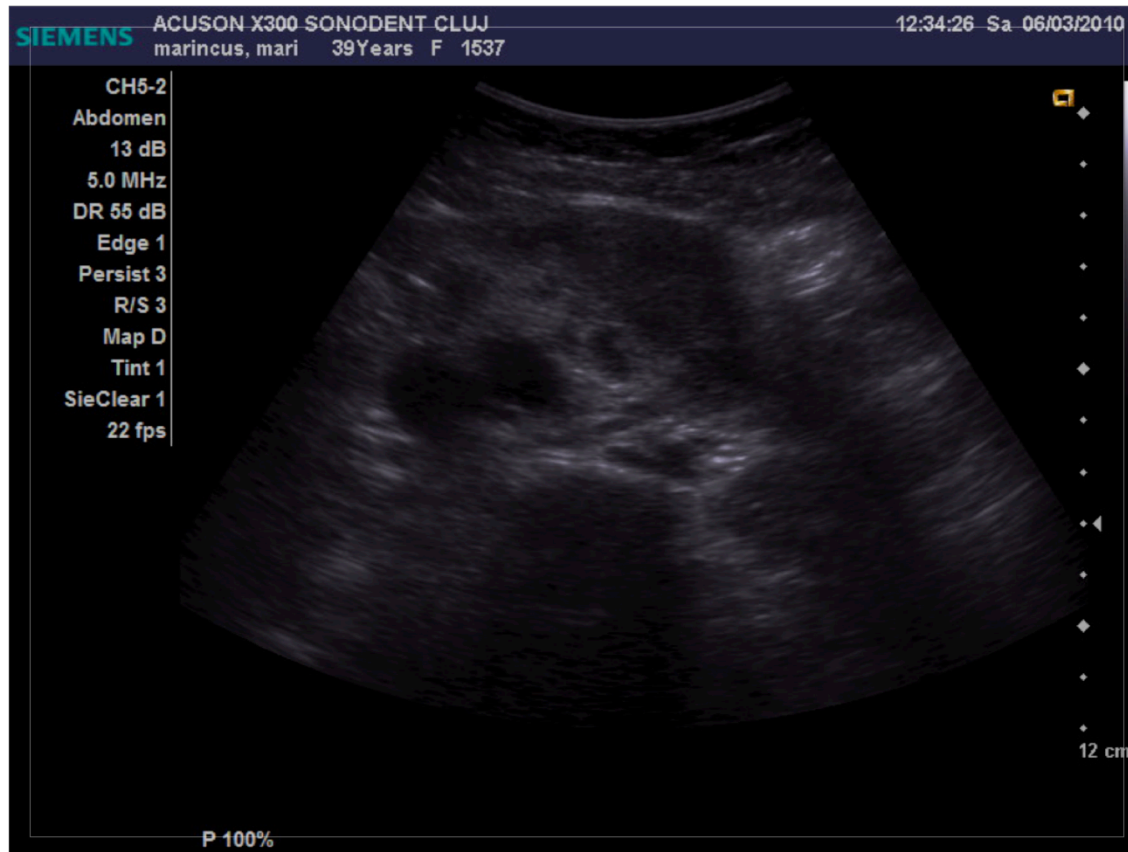
Typical symptoms are present – acute diseases

Direct signs – acute pancreatitis

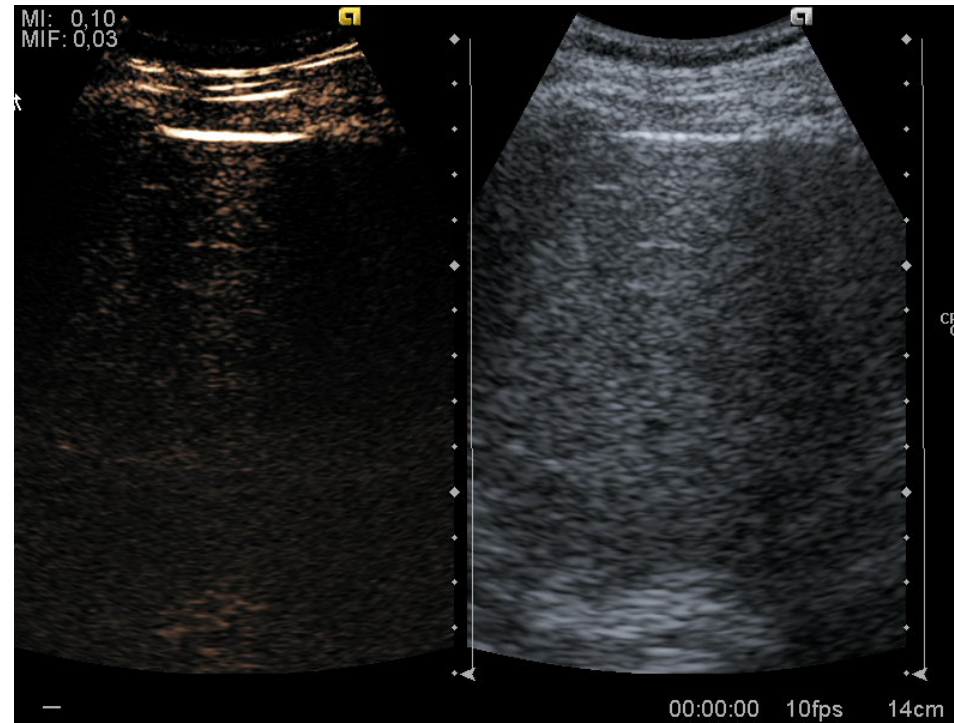
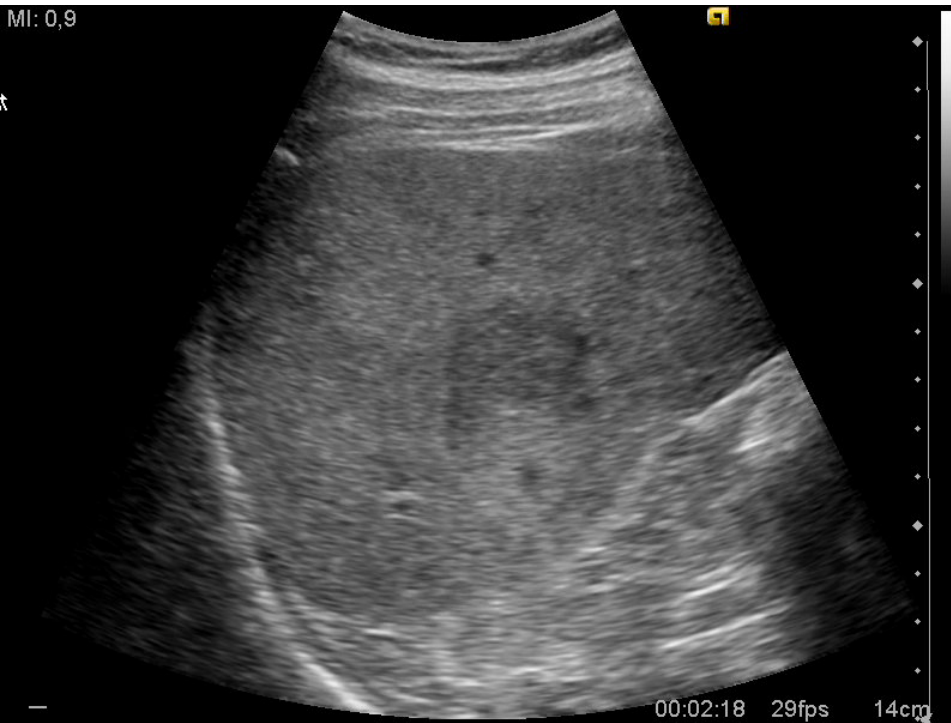
Indirect signs – bowel obstruction



Ultrasonography as a “pick up” instrument for diagnosis – colonic tumor



Ultrasonography for discrimination of similar diseases – liver angioma in a patient with breast tumor and possible liver metastases

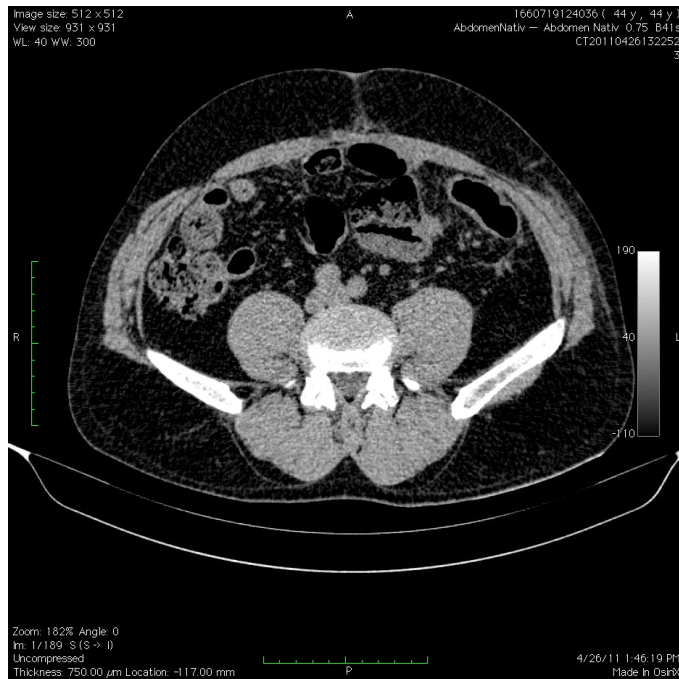


Ultrasound examination part of a diagnostic algorithm including clinical, CT, MRI etc criteria

m, 43 yrs, operation for paracolic abscess 3 months before US evaluation; re - evaluation because a suppuration at the site of the surgery



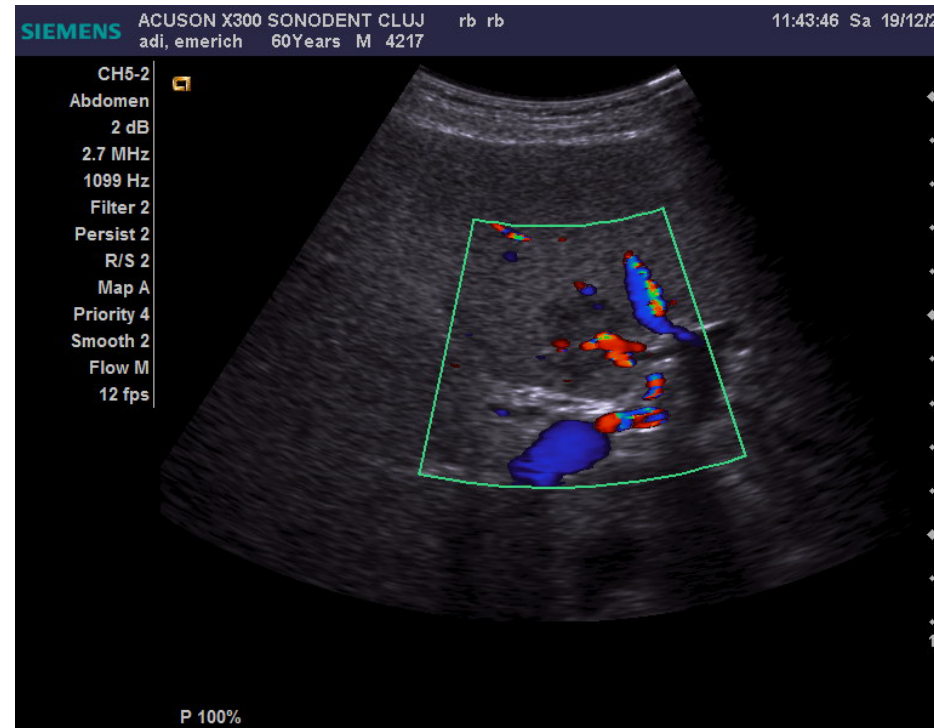
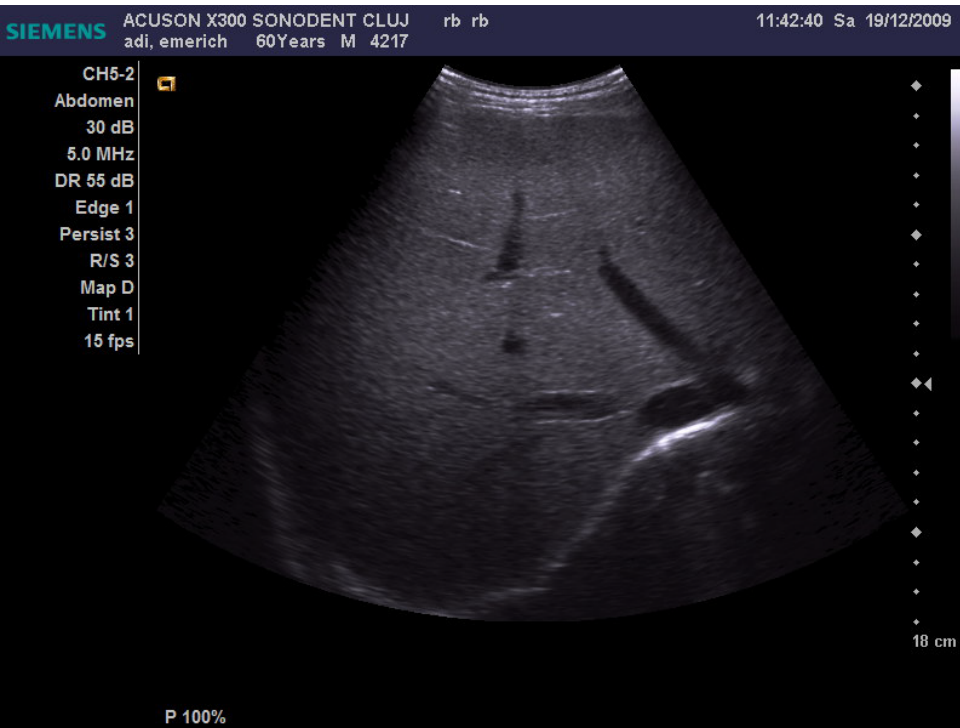
CT



Hydrosonography



Screening in abdominal pathologies – HCC, liver cirrhosis

















Conclusions

- Ultrasonography is a safe, accurate, comfortable (for patients & doctors) imaging technique
- Performances in abdominal pathology are often similar to CT/MRI
- Clinical approach is mandatory for a good and efficient diagnosis