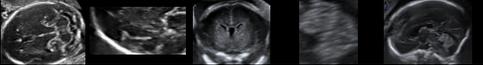


Baylor College of Medicine **Texas Children's Hospital**

Neurosonography Basic and Advanced CNS scan

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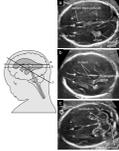
CNS examination

Ultrasound Obstet Gynecol 2007; 29: 109-116
Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/ulq.2007

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ULTRASOUND
in Obstetrics & Gynecology

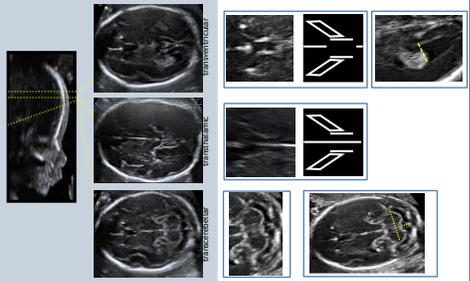
GUIDELINES

Sonographic examination of the fetal central nervous system: guidelines for performing the 'basic examination' and the 'fetal neurosonogram'



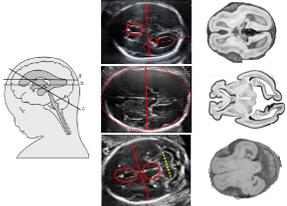
Sonographic examination of the fetal central nervous system: guidelines for performing the 'basic examination' and the 'fetal neurosonogram'. IJOG, 2007

basic examination CNS



Sonographic examination of the fetal central nervous system: guidelines for performing the 'basic examination' and the 'fetal neurosonogram'. IJOG, 2007

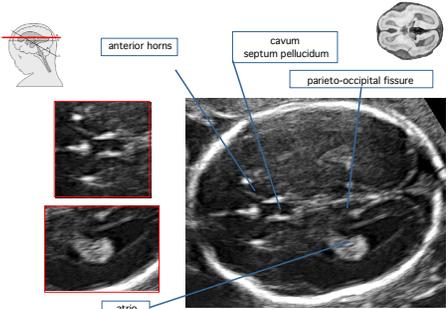
basic examination CNS



- 1- Systematic review of brain anatomy
- 2- Sweeps
- 3- Brain and skull biometrics
- 4- Interpretation of images based on GA

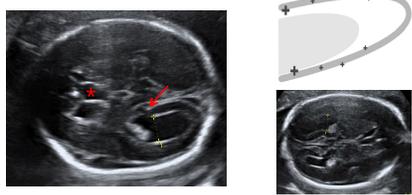
www.interscience.wiley.com
Guidelines ISUOG, 2007

Transventricular plane

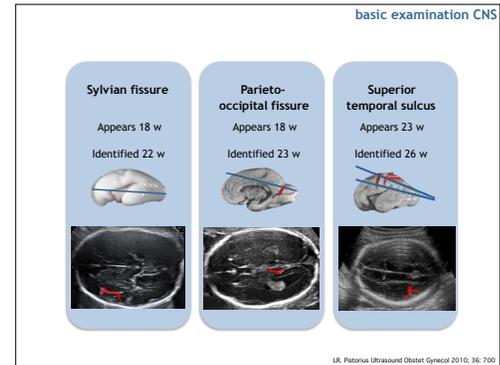
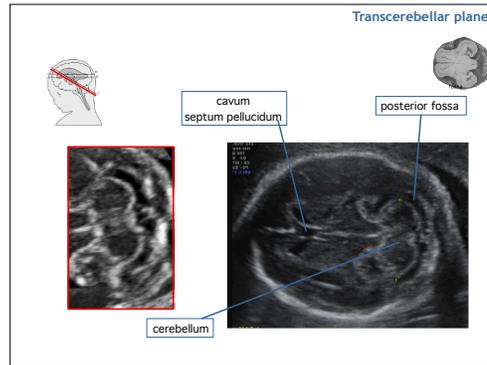
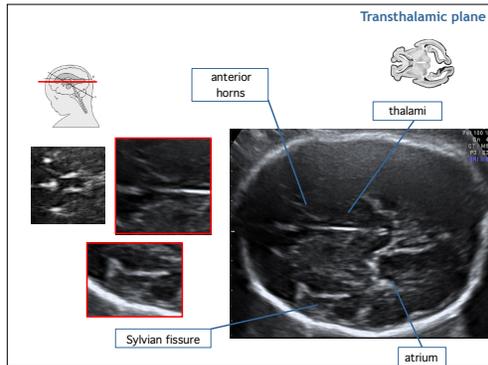


anterior horns
cavum septum pellucidum
parieto-occipital fissure
atrio

Atrial width measurement



Transventricular plane
Anatomic references: CSP, parieto-occipital fissure
Perpendicular line to main axis from ventricle
Choroid plexus glomus
Callipers inside-inside. Normal: < 10 mm [7.6 ± 0.6]
Evaluate both LV. Difficulty in evaluation of proximal ventricle



Indications for Neurosonography or advanced CNS exam

Detected in the fetus:

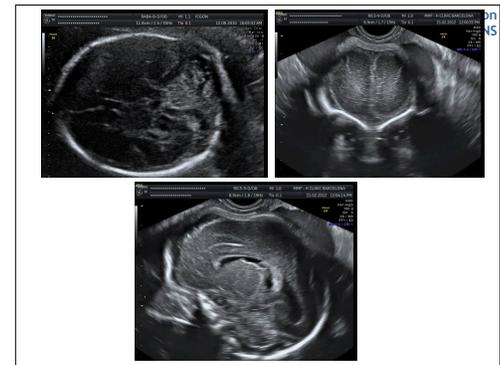
- Brain anomaly detected by basic anatomy scan
- Absence or abnormal cavum septum pellucidum
- Atrium ≥ 10 mm
- Cisterna magna ≥ 10 mm
- Cisterna magna < 2 mm
- Abnormal fetal skull Alteraciones morfología craneal
- Abnormal cranial biometrics ($>2SD$ o $<2SD$)
- Intracranial cysts
- Abnormal morphology in anterior horns of lateral ventricles
- Abnormal morphology or biometrics in cerebellum
- Abnormal brain echogenicity
- Abnormal brain sulcation

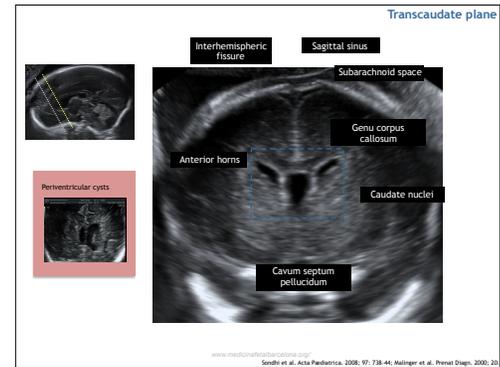
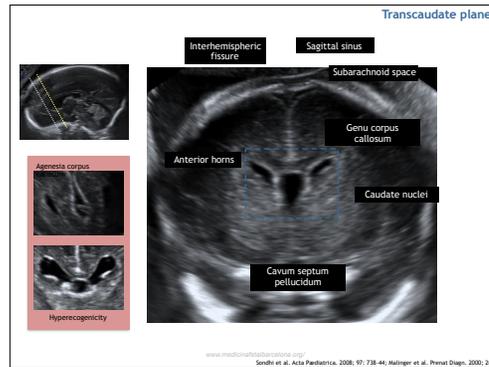
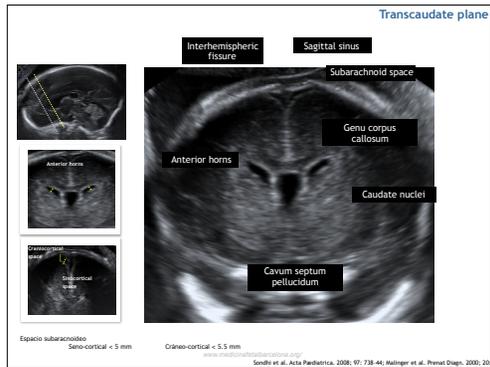
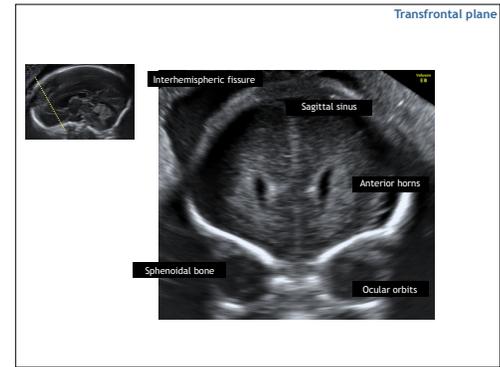
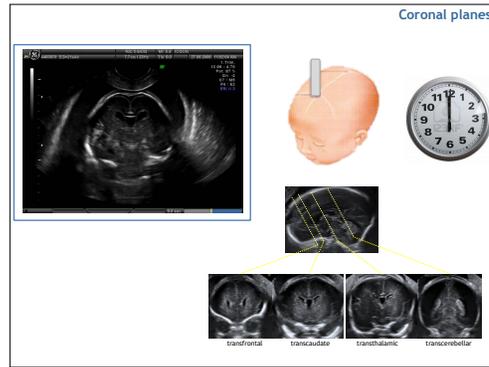
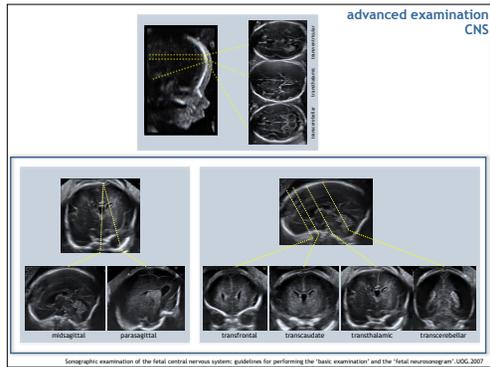
www.medicinoficialbarcelona.org

Indications for Neurosonography

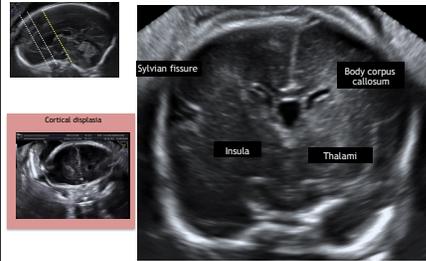
- History of brain anomaly
- Extra cranial anomalies (facial anomalies, ductus dependent cardiac malformations, rhabdomyomas)
- Suspicion for genetic syndromes
- History of an at-risk situation for brain injury :
 - Infection (CMV, TXP, Rubella, Varicella, Zika)
 - Anemia, TTTS, NAITs
 - Risk for hypoxia-ischemia
- IUGR (EFW $< 3rd$ centile)
- Complications of a MCDA pregnancy (TTTS $< sFGR$, Surviving twin)
- Toxics and recreational drugs (alcohol and cocaine)
- Drugs (anticoagulant, anti convulsive, antimetabolic, retinoids)

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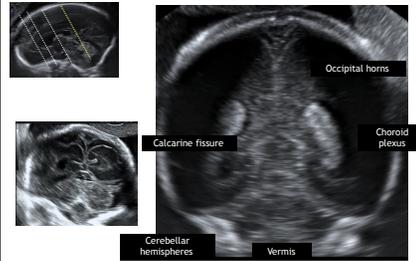




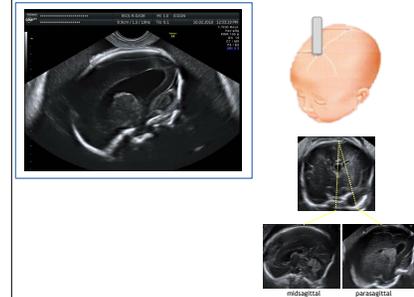
Transthalamic plane



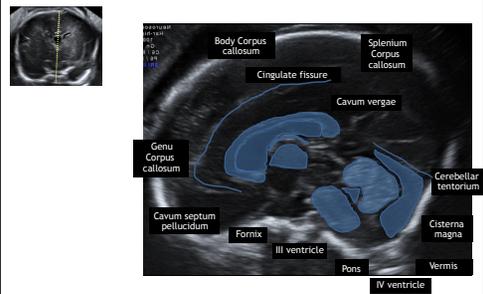
Transcerebellar plane



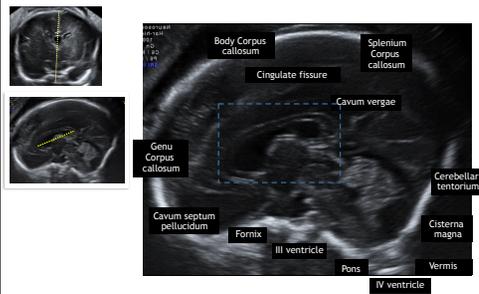
Sagittal planes



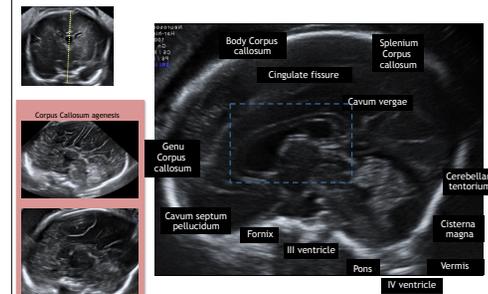
Midsagittal plane

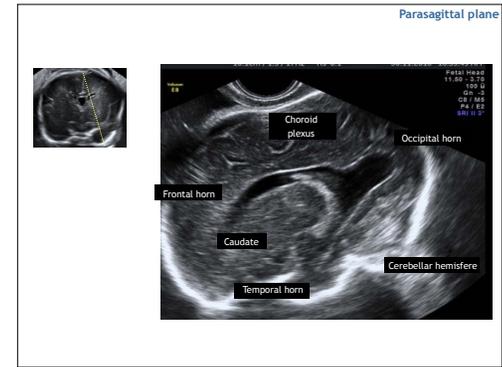
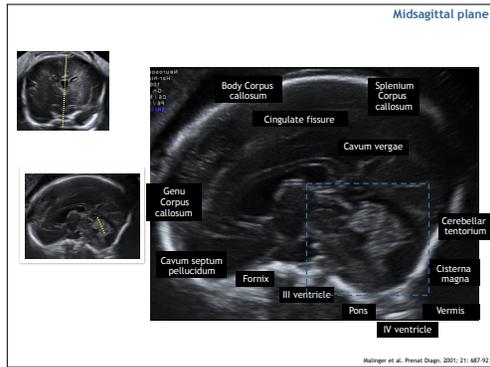


Midsagittal plane



Midsagittal plane





advanced examination
CNS

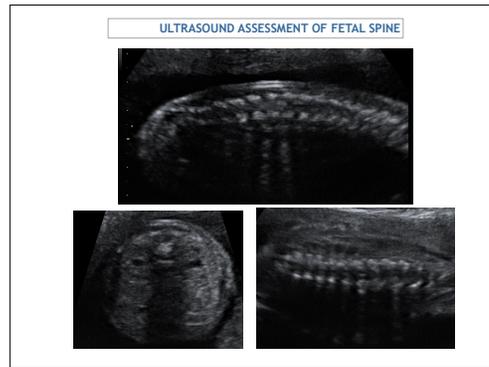
Calcarine fissure

Appears 18 w
Identified 23 w

Cingulate fissure

Appears 22 w
Identified 26 w

L.R. Pictorius, Ultrasound Obstet Gynecol 2010; 36: 700



INTRACRANIAL ASSESSMENT OF SPINA BIFIDA

- Lemon sign
- Ventriculomegaly, Spiked posterior horns.
- Interhemispheric cyst
- Banana sign
- Posterior fossa obliteration

Take home messages

- Axial planes are not enough for complete evaluation of CNS pathology
- Coronal and sagittal planes are essential for diagnosis of corpus callosum and posterior fossa anomalies
- Neurosonography tips:
 - Be systematic
 - Bear in mind gestational age

Thanks for your attention

magdalec@bcm.edu