

CERPO

Centro de Referencia Perinatal Oriente

Facultad de Medicina, Universidad de Chile



HOLOPROSENCEFALIA

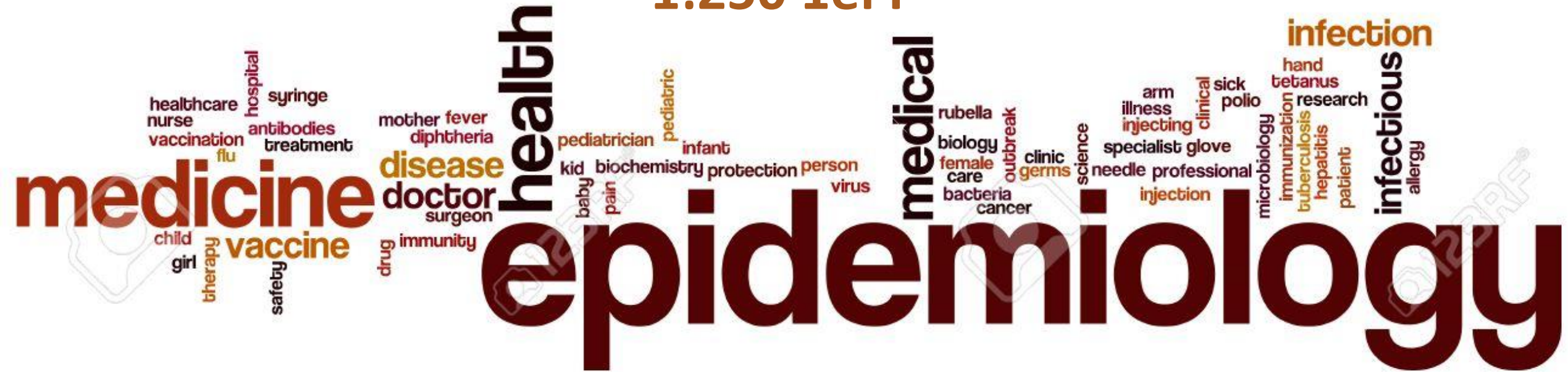
Dr. Nicolás Zapata Lara
Becado Ginecología y Obstetricia
Universidad de Concepción
CERPO



1:10.000-20.000 RNV

1:15150 RNV CHILE

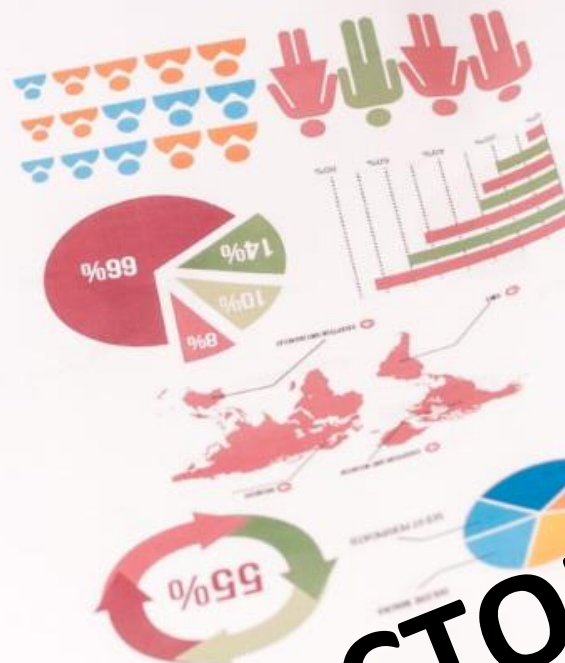
1:250 1erT

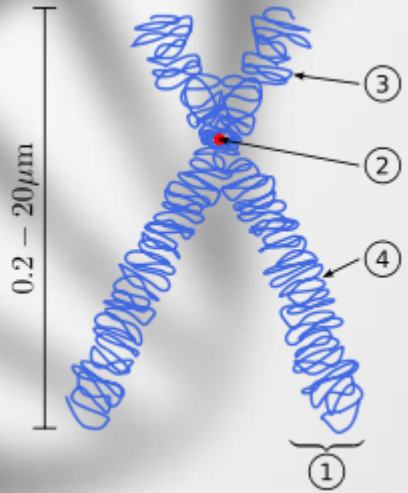


1. Nazer J., Cifuentes L Cortez A. ECLAMC: 41 años de vigilancia de la holoprosencefalia en Chile. Período 1972-2012. Rev Med Chile 2015; 143: 874-879
2. Kaliaperumal C., Ndro S., Mandiwanza T., Reidy F., McAuliffe F., Caird J., Crimmins D. Holoprosencephaly: antenatal and postnatal diagnosis and outcome. Childs Nerv Syst. 2016 May;32(5):801-9



MULTIFACTORIAL

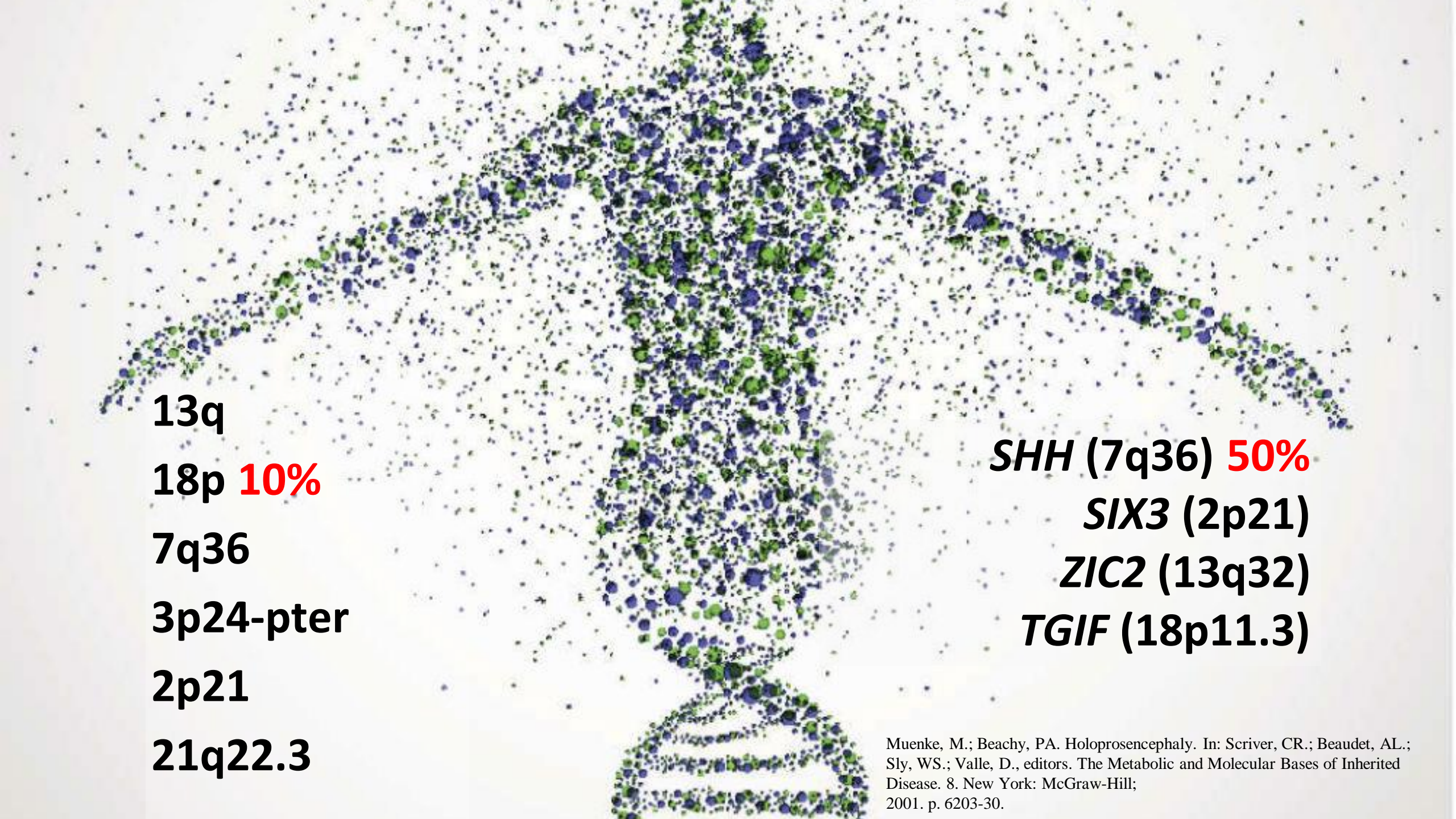




24-45%
– 75% T13

18-25% Síndrome monogénico

- **Smith-Lemli-Opitz syndrome**
- **Pallister-Hall síndrome**
- **Rubinstein-Taybi syndrome**



13q

18p 10%

7q36

3p24-pter

2p21

21q22.3

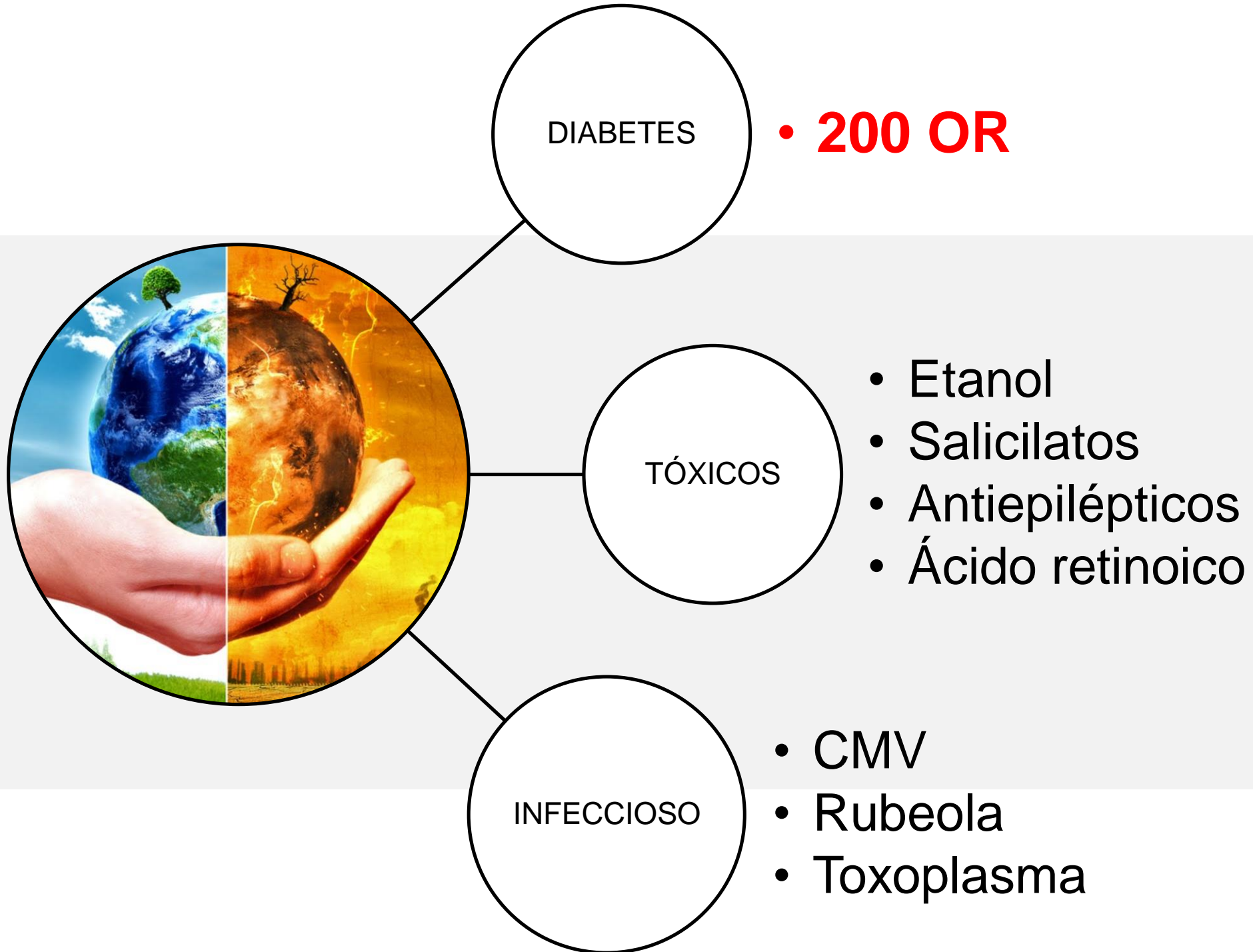
***SHH* (7q36) 50%**

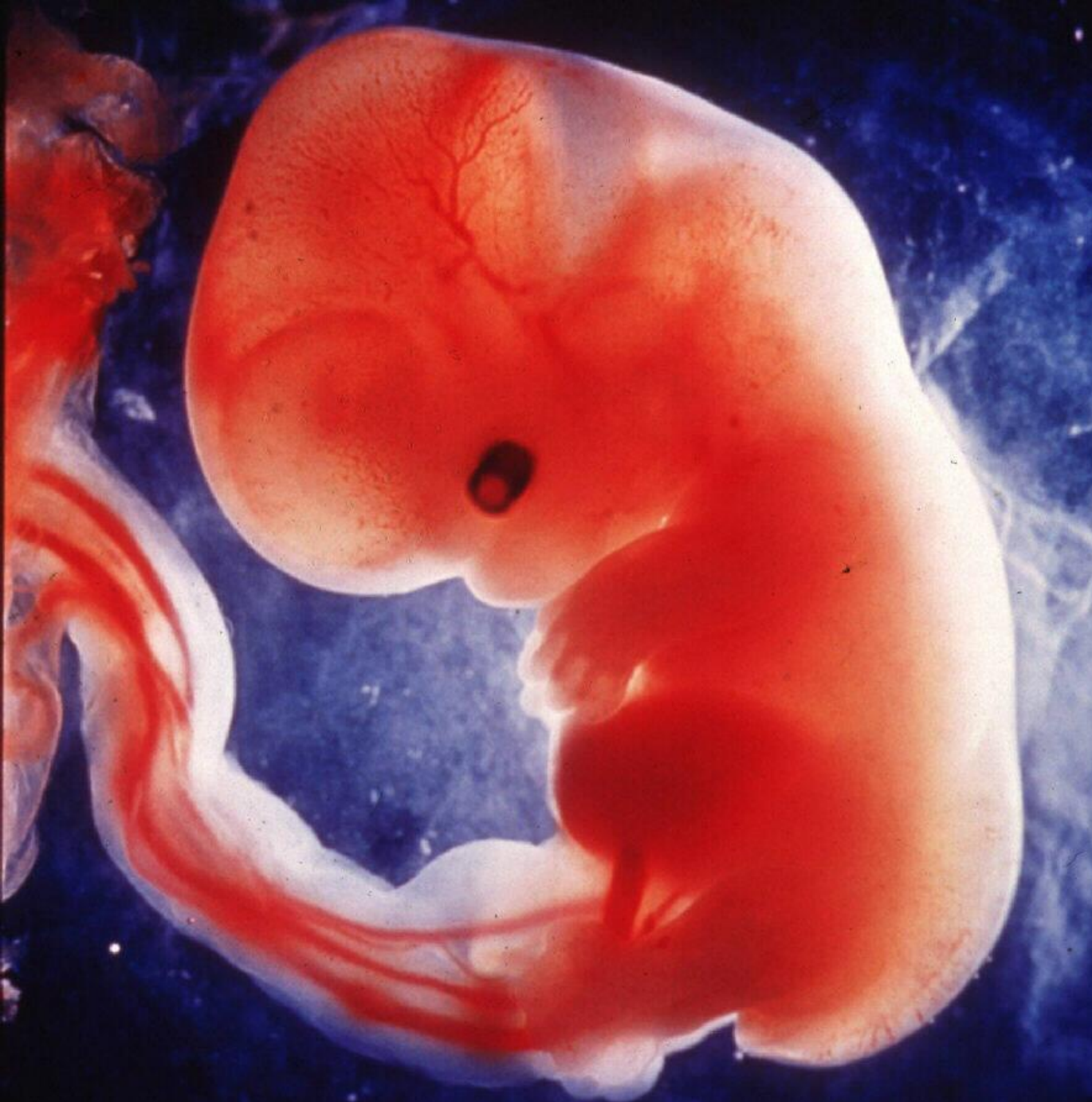
***SIX3* (2p21)**

***ZIC2* (13q32)**

***TGIF* (18p11.3)**

Muenke, M.; Beachy, PA. Holoprosencephaly. In: Scriver, CR.; Beaudet, AL.; Sly, WS.; Valle, D., editors. The Metabolic and Molecular Bases of Inherited Disease. 8. New York: McGraw-Hill; 2001. p. 6203-30.

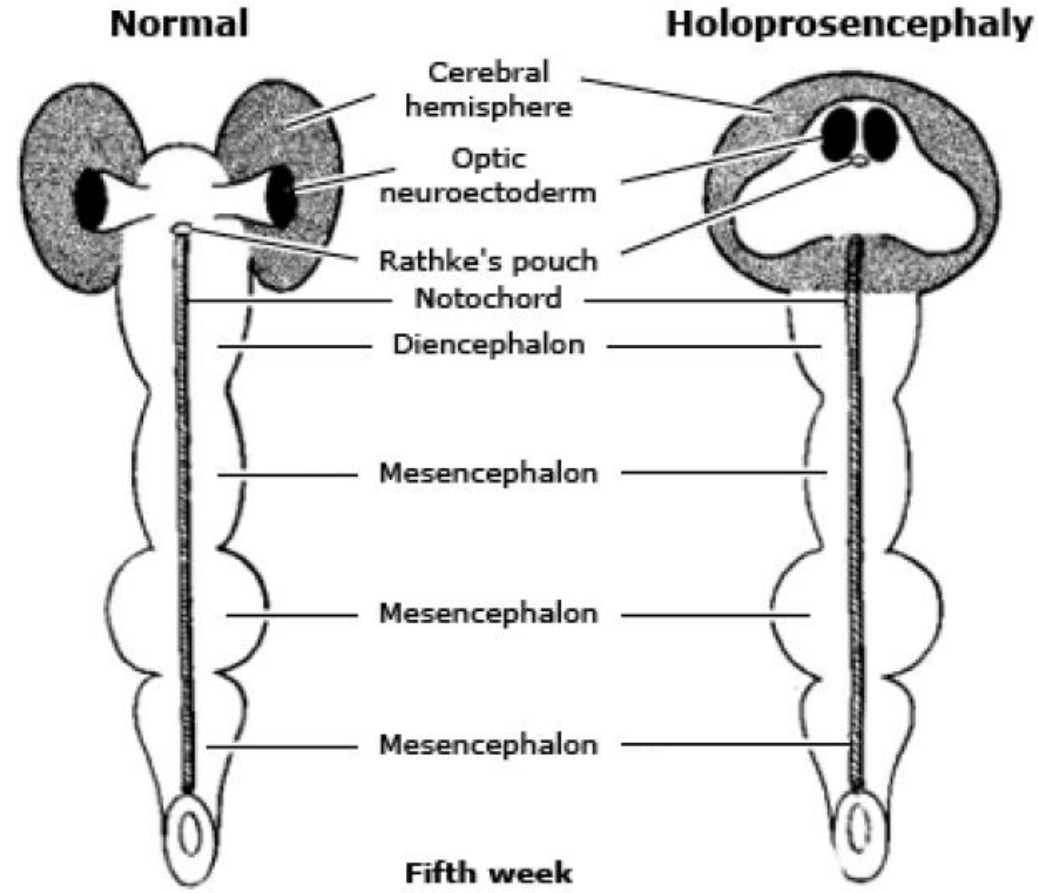




EMBRIOLOGÍA

- El prosencefalo a las 5s sufre el clivaje dividiéndose en el telencéfalo y el diencefalo
- El telencéfalo dara origen a los hemisferios cerebrales, putamen y nucleo caudados y el diencefalo dara origen al talamo , globus pallidus y vesículas ópticas

Holoprosencephaly



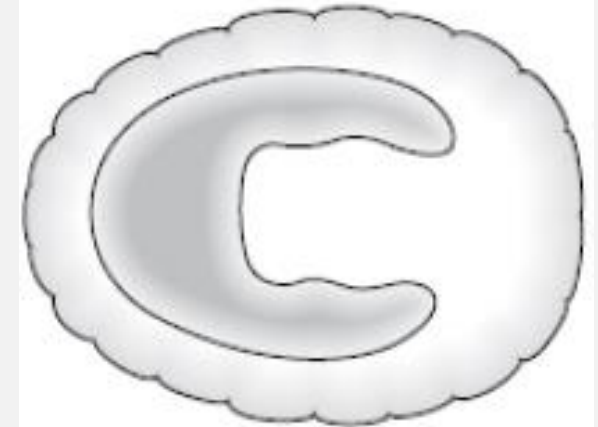
Reproduced with permission from: Kawamoto HK Jr, Pravin-Kumar KP, Atypical facial clefts. In: Pediatric Plastic Surgery, Bentz M (Ed), Appleton Lange, Stamford, CT 1998. p.184. Copyright ©1998 The McGraw-Hill Companies, Inc.



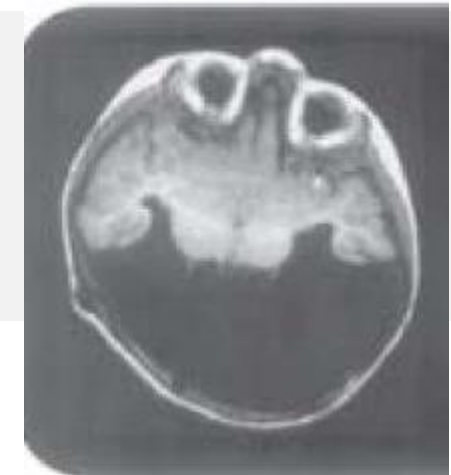
ALOBAR

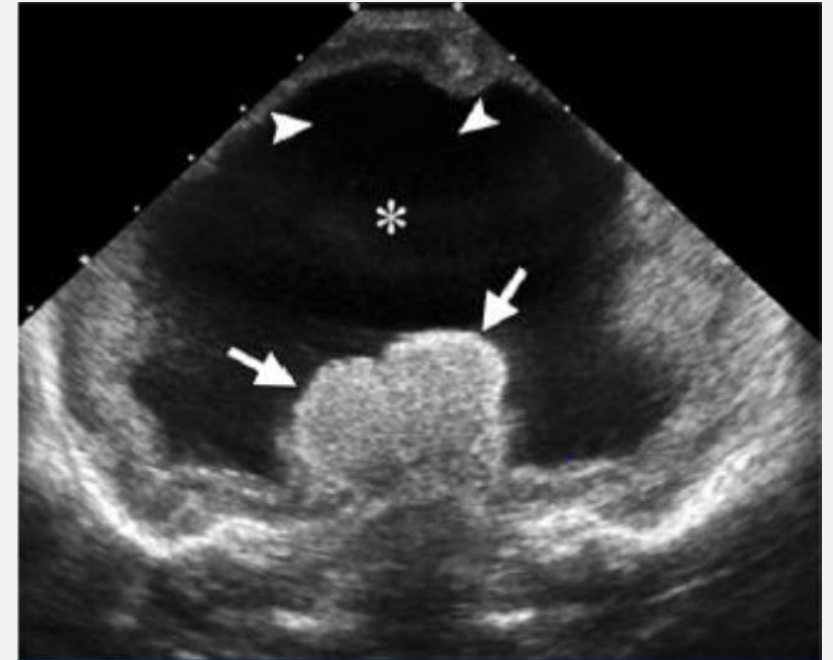
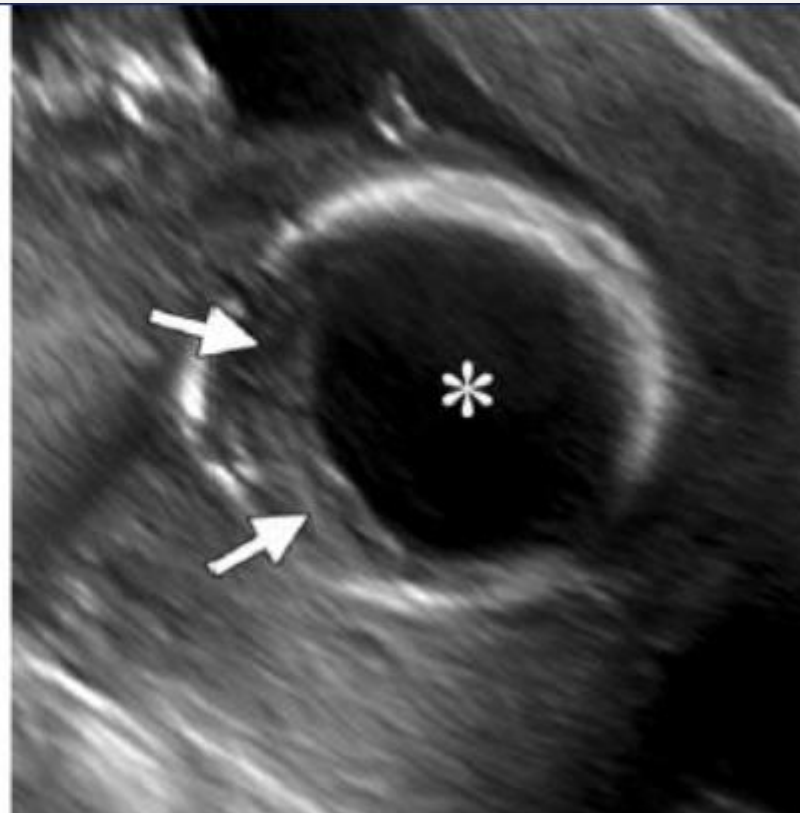
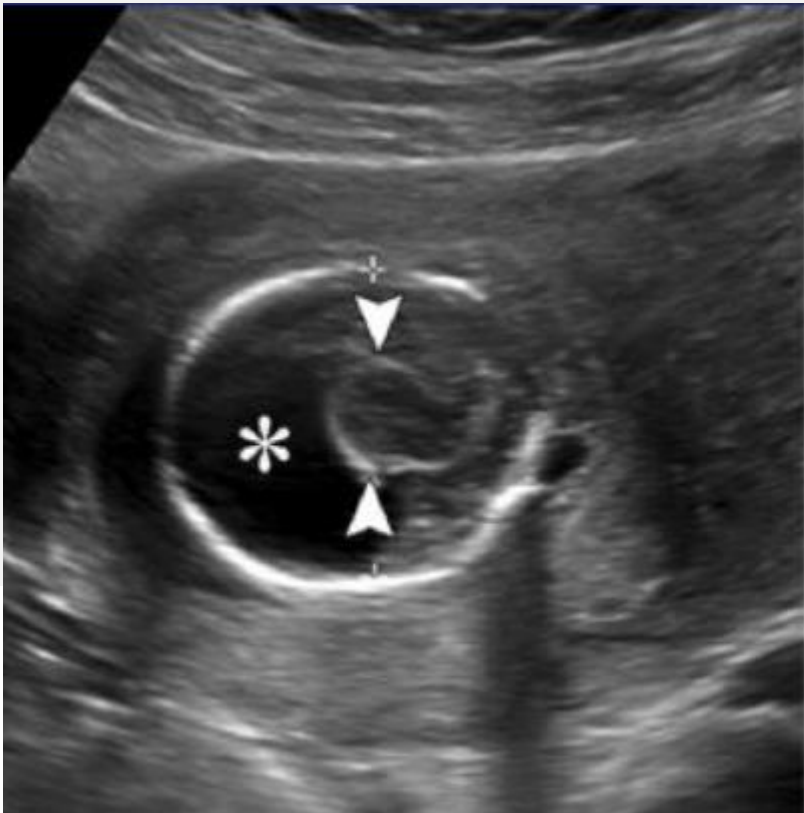


- Ventrículo primitivo único
- No hay estructuras línea media: falx cerebral, fisura interhemisférica, tercer ventrículo, bulbo olfatorio y CC
- Ganglios basales y Talamos fusionados.
- Los nervios ópticos pueden estar normal, fusionados o ausentes
- ACA y ACM pueden estar ausentes siendo reemplazados por una red de vasos que provienen de la carótida interna y basilar



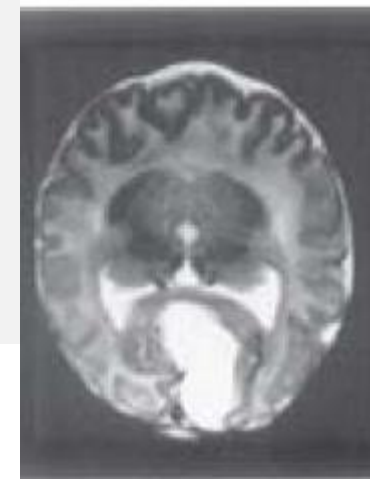
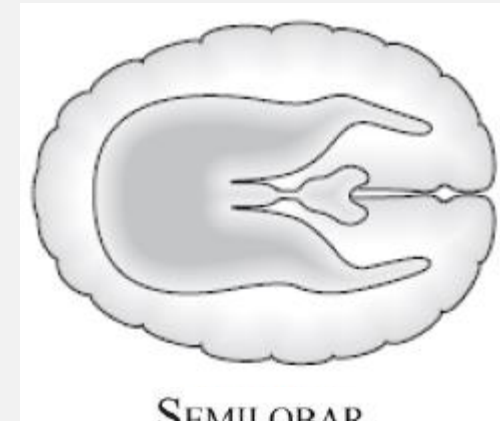
ALOBAR

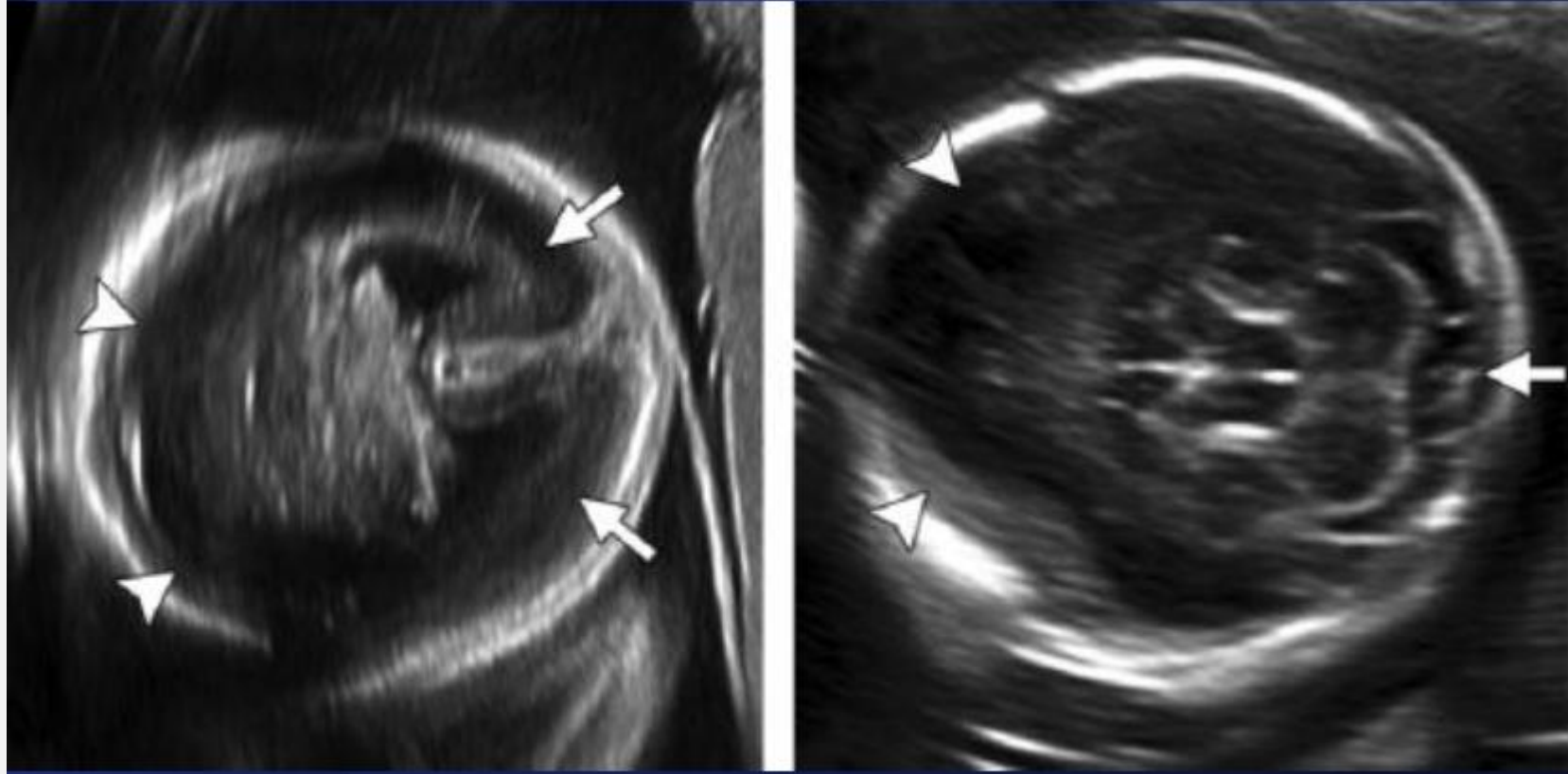




SEMILOBAR

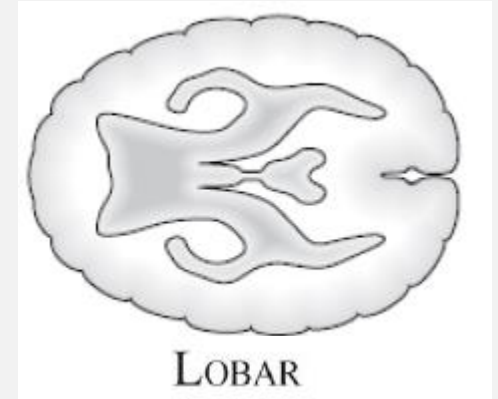
- Presencia de rudimentarios ventrículos con cuernos posteriores
- Fisura interhemisférica parcial, solo del segmento posterior y falx cerebral
- Fusión de los talamos y agenesia parcial del CC.
- CSP siempre ausente

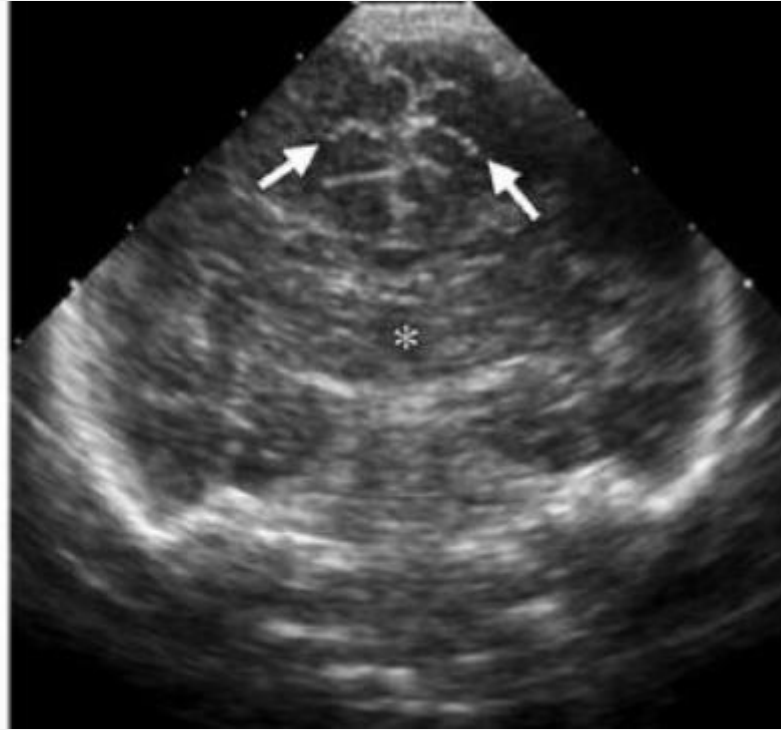




LOBAR

- Fusión parcial de los cuernos anteriores comunicados con el tercer ventrículo
- Agenesia parcial o normalidad del CC
- Ausencia de CSP
- Dg diferencial: agenesia septum pellucidum

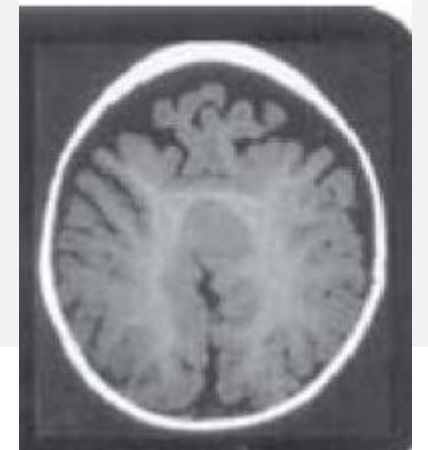


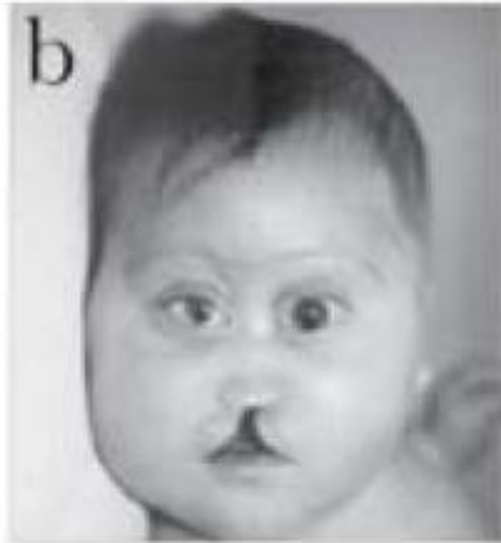


VARIANTE INTERHEMISFERICA



- Descrita en 1993 por Barkovich
- Zona posterior frontal y parietal fallan en dividirse
- Rodilla y Esplenio del CC normales, cuerpo ausente.
- Cisura de Silvio es vertical y conectadas en la parte superior
- 65 % presentan displasias corticales o focos heterotópicos sustancia gris subcorticales





Don DePaola

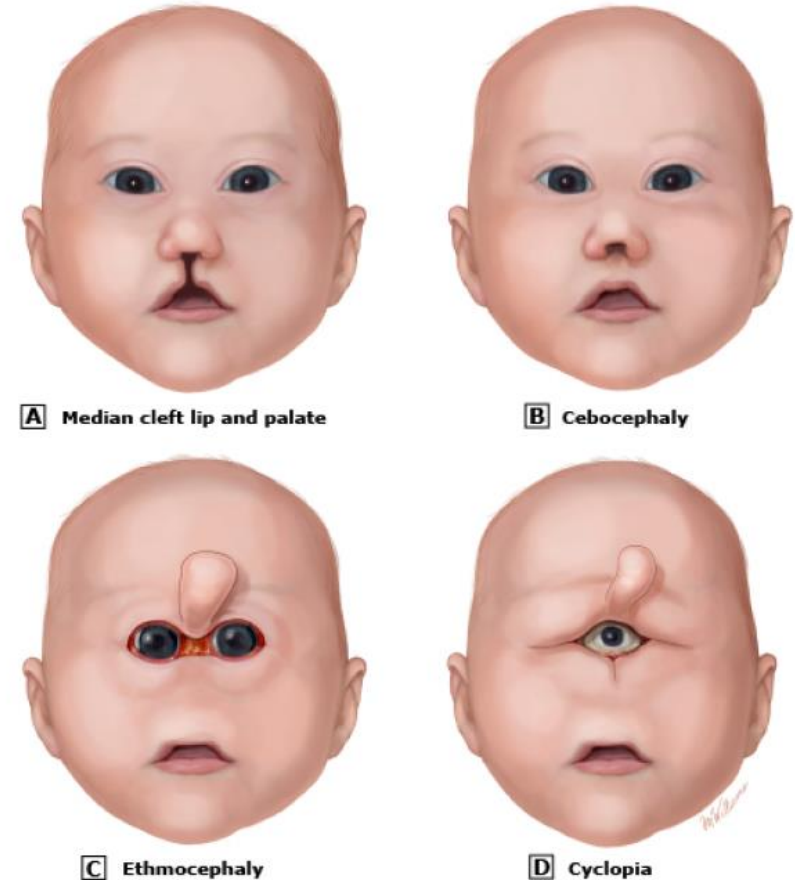
U.I. School of Medicine



ALOBAR



- Ciclopía c/s probóscide
- Etmocefalia
- Cebocefalia
- Hipotelorismo
- Anoftalmia o microftalmia
- Fisura labiopalatina bilateral



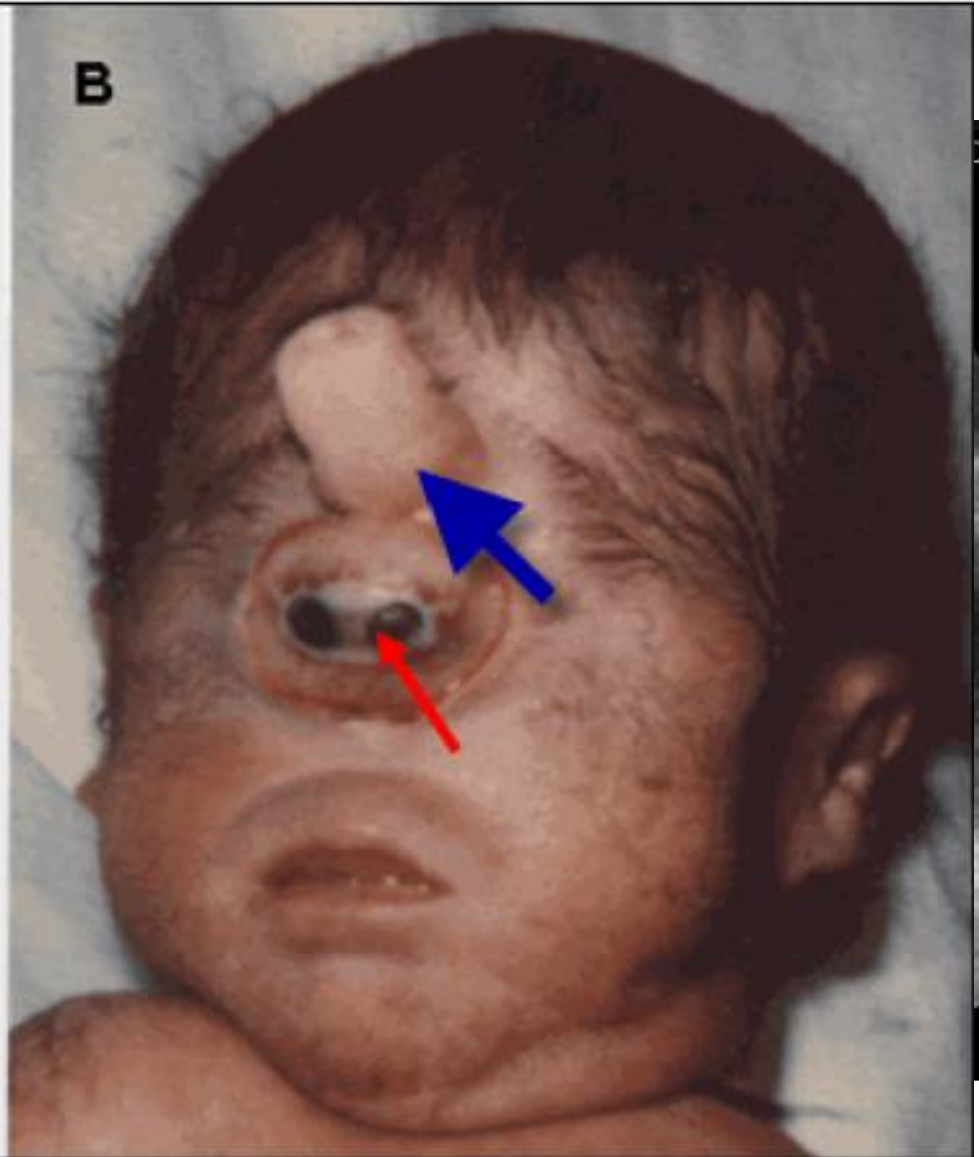
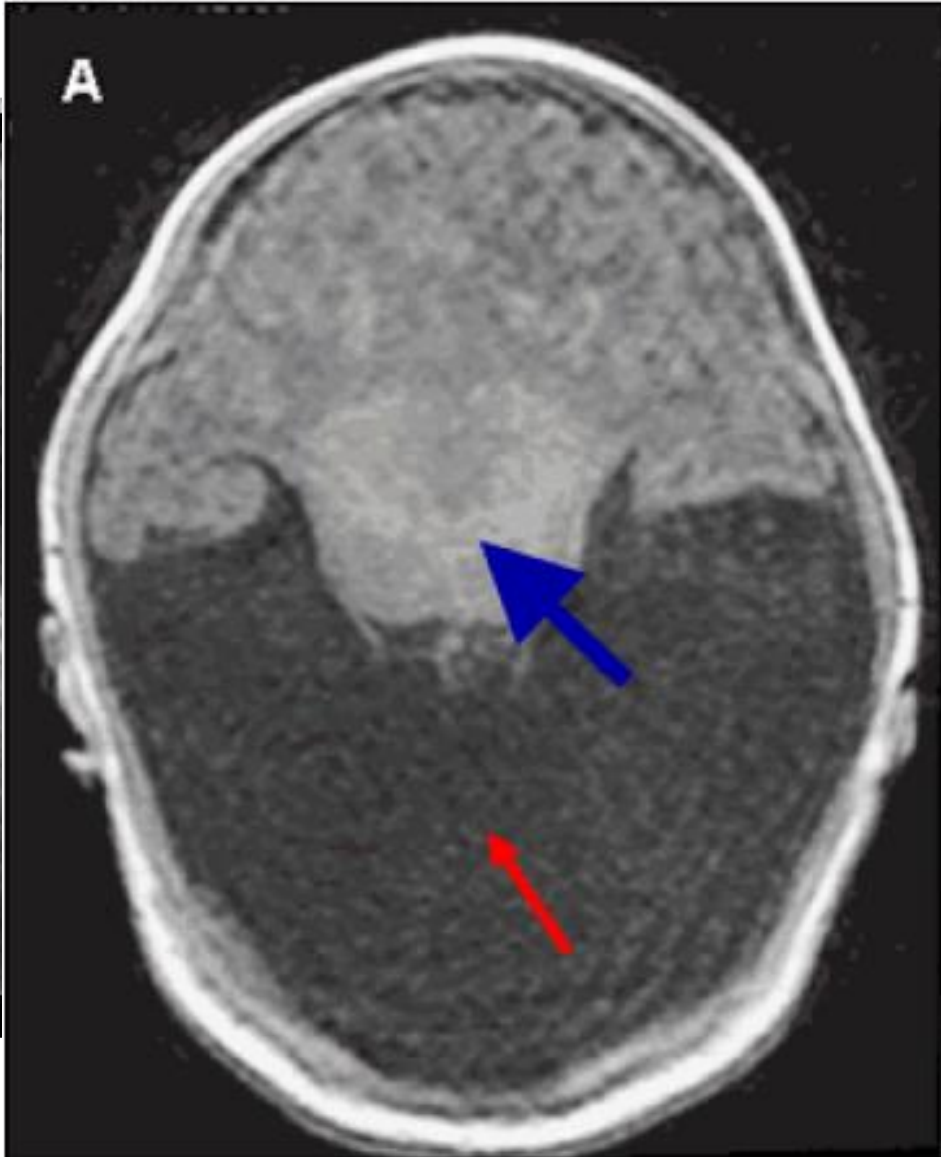


CERPO

DJ G60 / 97dB

PC2 / P80

HAR

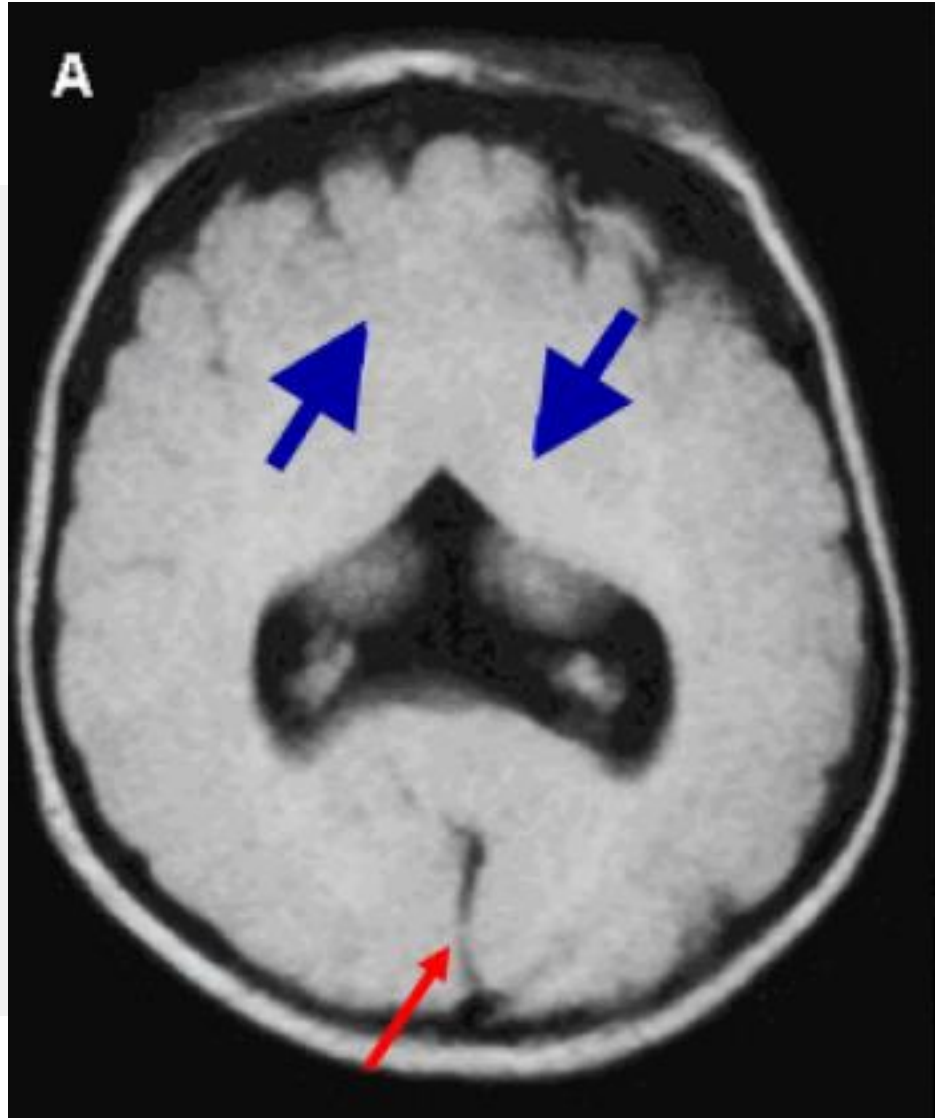


Lossy 3:1

SEMILOBAR



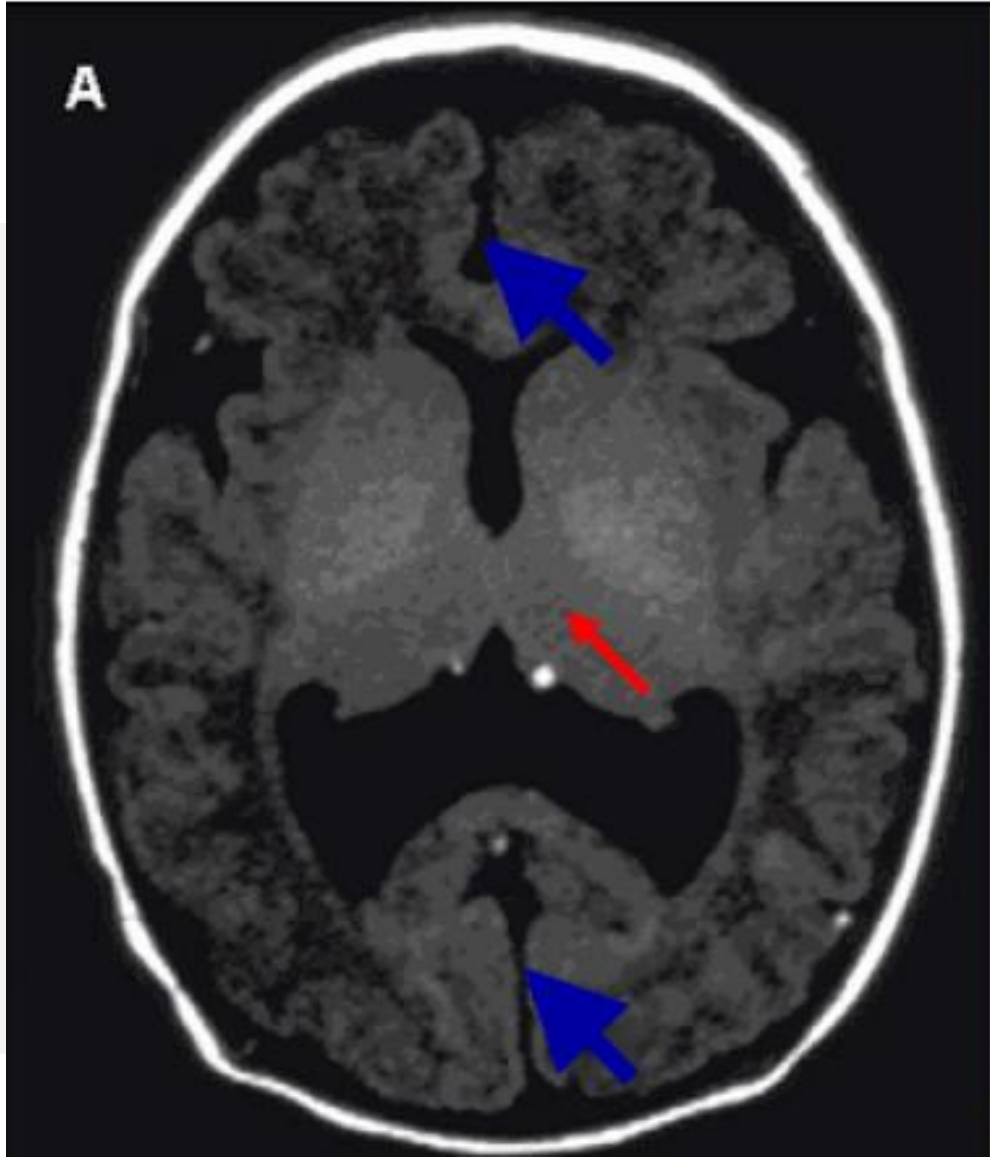
- Hipotelorismo
- Anoftalmia, microftalmia
- Depresión del puente nasal
- Ausencia del tabique nasal
- Punta nasal plana
- Fisura labiopalatina bilateral
- Fisura labiopalatina media



LOBAR



- Hipotelorismo
- Fisura labiopalatina bilateral
- Depresión del puente nasal
- Fascie relativamente normal
- Incisivo central único

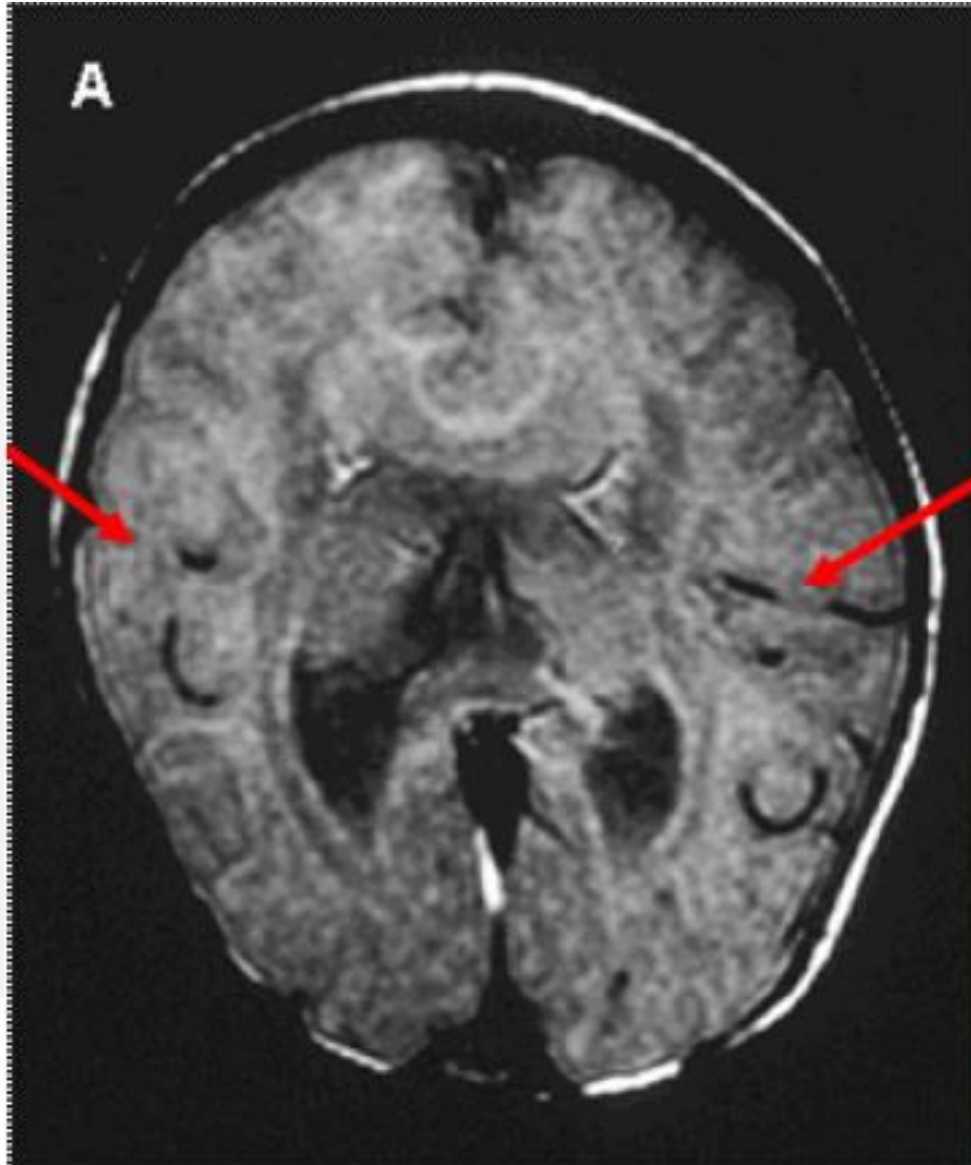


VARIANTE INTERHEMISFERICA



- Hipotelorismo
- Depresión del puente nasal
- Puente nasal delgado
- Fascie relativamente normal
- Incisivo central único





MALFORMACIONES NO CRANEOFASCIALES



- **Genitales 24 %**
- **Polidactilia post axial 8 %**
- **Vertebrales 5 %**
- **extremidades 4 %**
- **TGA 4 %**

Defecto específico	n	%
Cardiopatía congénita	10	18,2%
Polidactilia	6	10,9%
Malformaciones renales	4	7,3%
Arteria umbilical única	3	5,5%
Hipoplasia pulmonar	2	3,6%
Hernia diafragmática	1	1,8%
Onfalocele	1	1,8%



AM -

Corona
Anglo
(pending)



Gold
Standard

Wenghoefer M, Ettema AM, Sina F, Geipel A, Kuijpers-Jagtman AM, Hansmann H, et al. Prenatal ultrasound diagnosis in 51 cases of holoprosencephaly: craniofacial anatomy, associated malformations, and genetics. *Cleft Palate Craniofac J.* 2010; 47:15–21.



UB-1
B
0- Frec 8.0
Gn 50
- E/A 1/3
- Map: C/O
- D 9.0
- DR 72
2- FR 15
- AO 100

DG: ALOBAR - SEMILOBAR

Hahn JS, Barnes PD. Neuroimaging advances in holoprosencephaly: refining the spectrum of the midline malformation. *Am J Med Genet C Semin Med Genet.* 2010; 154C:120–32.
Joó GJ, Beke A, Papp C, Tóth-Pál E, Szigeti Z, Bán Z, et al. Prenatal diagnosis, phenotypic and obstetric characteristics of holoprosencephaly. *Fetal Diagn Ther.* 2005; 20:161–6.

A woman with blonde hair is lying on a white-covered table, smiling. A person's hand, wearing a white sleeve and a ring, is holding a light blue medical device with a white cable against her bare abdomen. The device has a circular applicator head. The background is a blurred clinical setting.

86% Sensibilidad 18-20s
Dg promedio 23s



3er T + formas leves

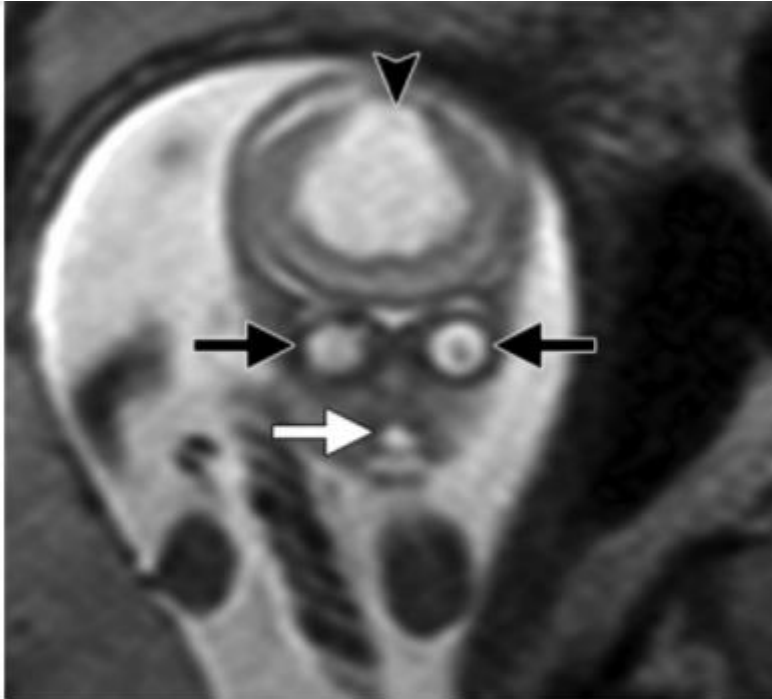


Figure 8. Alobar HPE. Coronal fetal MR image shows a monoventricle (arrowhead), hypotelorism (black arrows), and a midline facial cleft (white arrow).

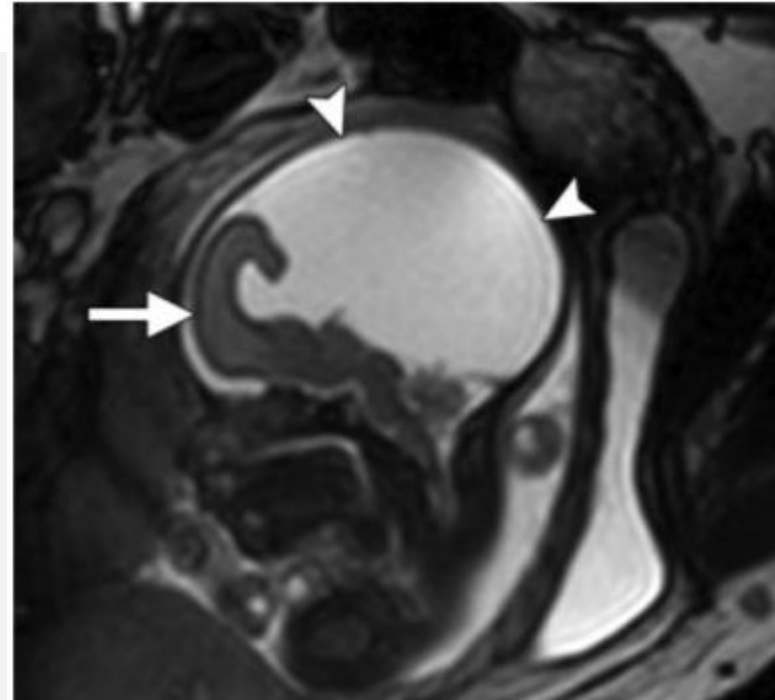


Figure 9. Alobar HPE. Sagittal fetal MR image shows a large "dorsal cyst" (arrowheads) and "cup" morphology of the brain (arrow). Note the normal fetal profile in this case. Alobar HPE is not always associated with dysmorphic facies.

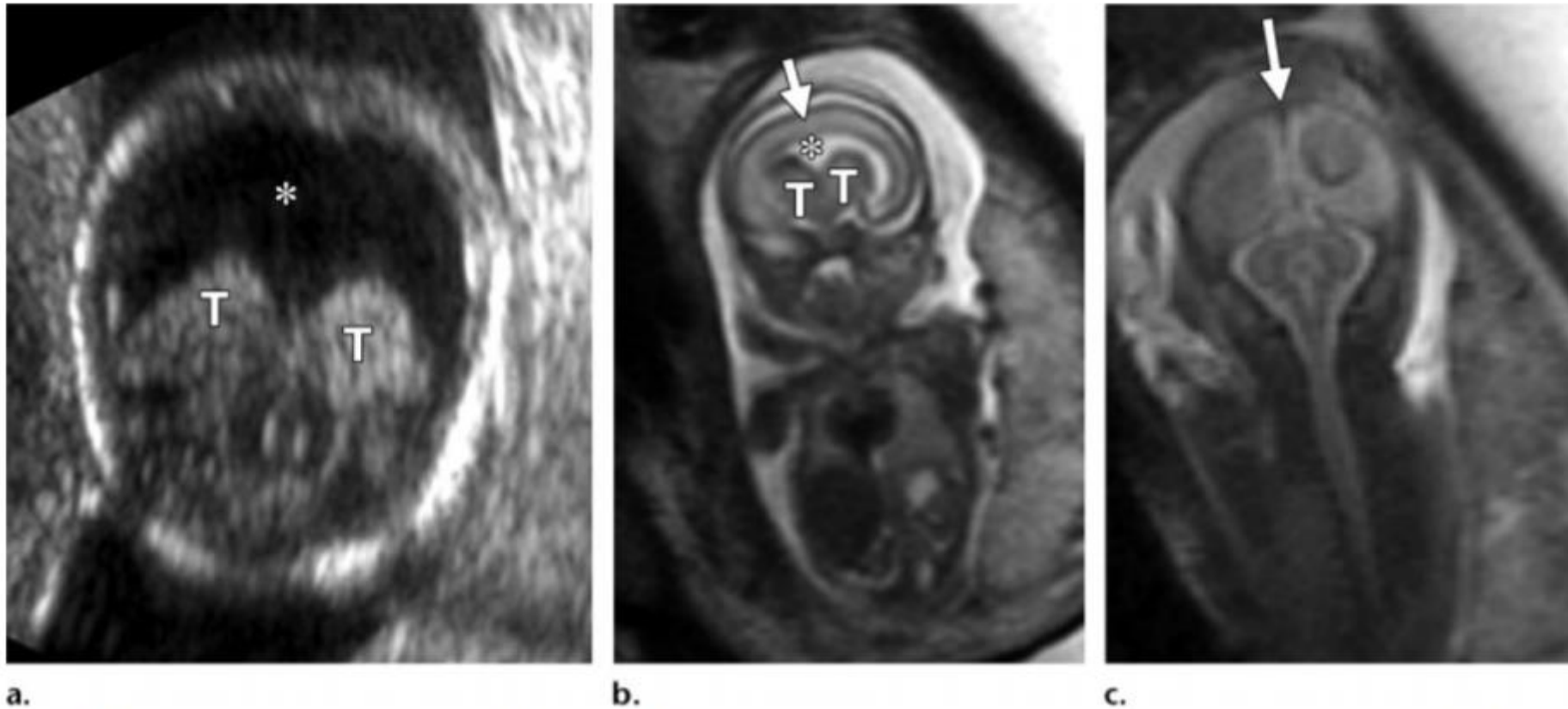


Figure 15. Semilobar HPE. (a) Coronal US image shows a monoventricle (*) and partial fusion of the thalami (*T*). (b) Coronal T2-weighted half-Fourier RARE MR image shows the continuous anterior brain parenchyma (arrow), monoventricle (*), and partially fused thalami (*T*). (c) Coronal T2-weighted half-Fourier RARE MR image more posteriorly shows two occipital lobes separated by the falx (arrow).



a.

b.

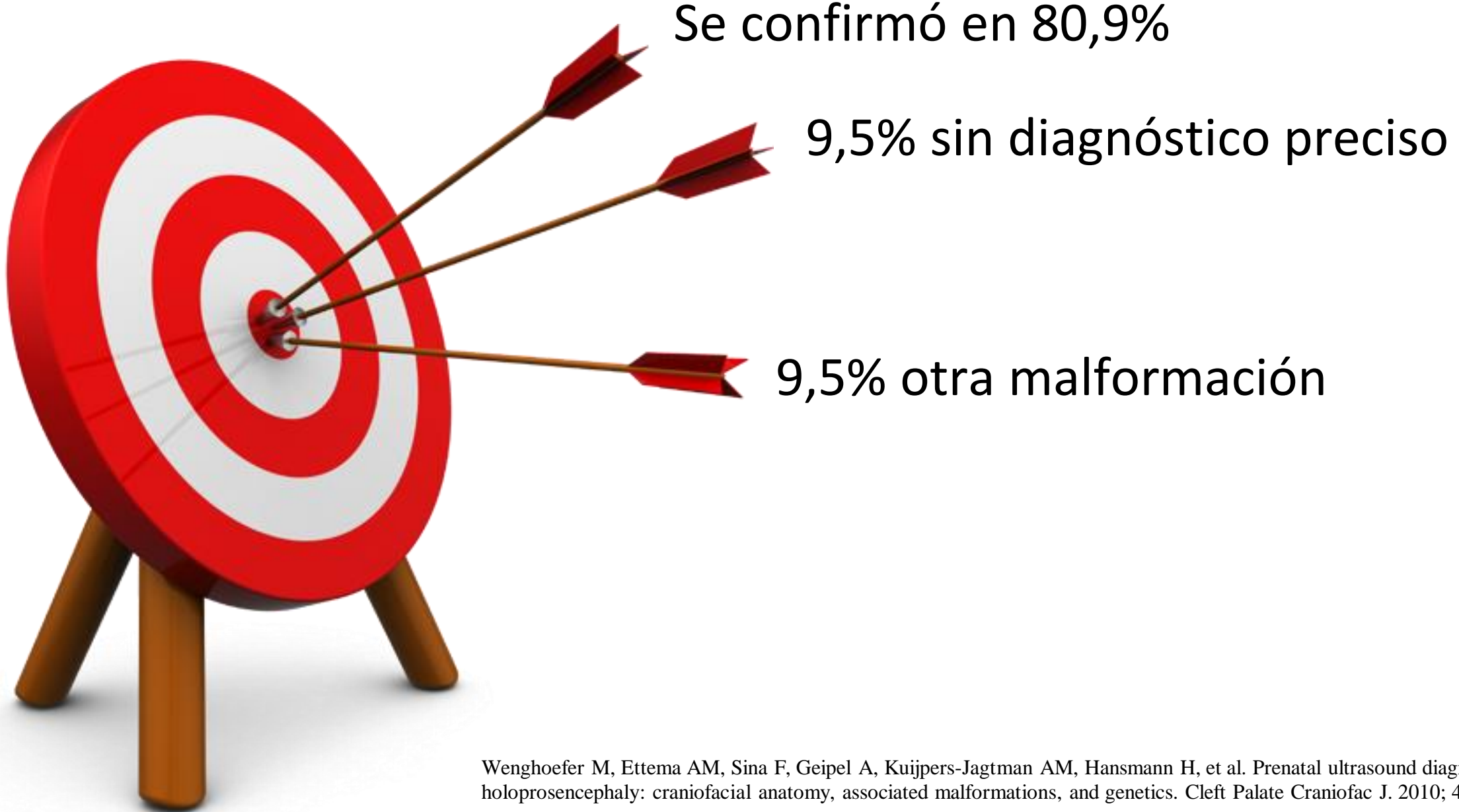
c.

Figure 18. Lobar HPE. (a) Axial US image shows a continuous midline echo anteriorly (arrow). We were not able to demonstrate the cavum septum pellucidum in any plane. (b) Axial fetal MR image shows apparent complete division of the cerebral hemispheres (arrowheads). (c) Coronal fetal MR image shows anterior inferior gyral continuity between the frontal lobes (arrow). This was not demonstrable at US; the index finding was inability to demonstrate a normal cavum septum pellucidum.

DIAGNÓSTICO POST NATAL

- RM
- Eco cerebral
- TAC







- Ciclopía o Etmocefalia: Mueren la primera semana
- Alobar: 50% fallece antes 4-5 meses
– 20% sobrevive el primer año
- Semilobar o lobar: > 50% sobrevive al año
- Variante interhemisférica: Depende de otras malformaciones

CERPO

Centro de Referencia Perinatal Oriente

Facultad de Medicina, Universidad de Chile



HOLOPROSENCEFALIA

Dr. Nicolás Zapata Lara
Becado Ginecología y Obstetricia
Universidad de Concepción
CERPO