

# Fetal CNS

## I.

(central nervous system, CNS)

(alpha-fetoprotein, AFP)

( 24 )

가

,  
가 (viability) 가

가

가

( , , ) 가

(fetal echocardiography)

(termination)

가 가

가

1. (Hydrocephalus/Ventriculomegaly)

1)

(ventricular system)가

2) : 0.12-2.5/1,000

3)

50%, (cerebral capillaries)  
50% (foramen of Monro) 3  
, 3 (aqueduct of Sylvius) 4 가 . 4  
(foramen of Magendie) (spinal subarachnoid space)  
, (foramen of Luschka) (basal cistern)  
(superior sagittal sinus) (arachnoid granulation)  
(bloodstream) 가 . 가  
가 .

4)

width ratio) , LVW: HW ratio (lateral ventricular to hemispheric  
atrial diameter  
1,2). Atrial diameter 15 35 가 7 mm  
10 mm가  
(dangling) .  
가 .

5)

85% ( 15%), 30%  
(intracranial) 65% (extracranial) 3)  
10% 4). (spina  
bifida, 30%) ( 15%) 30% 1).

6)

, , .  
(hydranencephaly), alobar ,  
, 가 . 가  
70% 59% 가  
5).

7)

, ,  
, ,

(toxoplasmosis), (rubella), (cytomegalovirus), (syphilis),  
가 (idiopathic isolated hydrocephalus)  
20% (agenesis of corpus callosum),  
(tracheoesophageal fistula), (imperforated anus), (ventricular  
septal defect, VSD)

가 가 37 cm  
(cephalocentesis) (macrocrania)가

2. (Agenesis of corpus callosum)

1)

(corpus callosum) 3

3

가

2)

, Dandy-Walker syndrome, ,

3)

3

atrium

(teardrop appearance)

4)

85%

15%

(handicap)

10%

6).

7).

3. Dandy-Walker malformation (DWM)

1)

Dandy-Walker malformation, (cerebellar vermis)  
, 4 . DWM variant (cerebellar  
dysgenesis) (vermian hypoplasia) 4 가  
가 8).

2) : 1/25,000-1/35,000

3)

50% (agenesis of corpus callosum)  
1 50%, ( ,  
, 가 , ) 60% 9).

4)

(cisterna magna)가 (>10 mm), (agenesis)  
4 가 ,  
가

5)

가 50%  
(handicap) 가 60% 1).

6)

20 가 가 ,  
가  
, 10).

4. (Holoprosencephaly)

1)

(forebrain, prosencephalon) (sagittal division)  
(midline facial structure) (differentiation)  
가 (proboscis, cyclopia, cebocephaly,  
median cleft lip/palate)

2) : 4/1,000

3)

(cerebral cortex), (thalamus), (hypothalamus)  
alobar, semilobar, lobar 11). Alobar (lobe), (interhemispheric  
fissure) (brain cortex) (thalamic fusion) , (cerebellum)  
(midbrain) (single ventricle) .

4)

Alobar, semilobar (midline echo)가  
(posterior  
fossa) (hypotelorism, central cleft, facial asymmetry)  
. Lobar (frontal horn)  
(cavum septum pellucidum) .

5)

가 . Alobar, semilobar  
(amentia) , lobar 가 가  
1).

6)

Alobar, semilobar 가  
, 가 ,  
, 가 6  
가 가  
12).

5.

(Neural tube defects, NTD)  
(neural tube) 18-20 (invagination)  
(neural groove) 24-27 (rostral opening,  
anterior neuropore) (caudal neuropore) .

(encephalocele), (spina bifida) , 가  
( 90%) (multifactorial) 1/500-600

2-10% 13). CDC (Center for disease control)

1 3 1 4 mg (folic acid)  
14)15).

**(1) (Anencephaly)**

1)

, (hindbrain),  
(vascular membrane, rea cerebrovasculosa )  
解 (brain stem)  
(basal ganglia)

2) : 1/1,000

3)

(cranial vault) (froglike  
appearance) 10-12 가  
13 16).

4)

50% (swallowing)  
5% (amniotic band syndrome)  
17).

5)

(fatal) 가  
가 ,

**(2) (Encephalocele)**

1)

(bony defect) (herniated sac)

2) : 1/2,000

3)

Meckel syndrome (polycystic kidney, encephalocele, polydactyly)

, (80%), (7-15%), (20%), ,

4)

(fluid) (brain-filled sac)  
, (septum) (occipital, 75%),  
(frontal, 13%), (parietal region, 12%)  
(cystic hygroma), 가 (branchial cleft cyst), (teratoma), (hemangioma)  
(internal septum) (hydrops)

5)

1) , 2)  
, 3) 1).  
40%, 가 80%  
(pure meningocele) 50%  
18,19). 가 가 ,  
40% 18).

6)

가

19).

**(3) (Spina bifida)**

1)

(neural canal)  
(spina bifida cystica) (spina bifida occulta)  
(posterior arch) (spinal  
cord) (meninges),  
(meningocele), (nerve roots) (meningomyelocele)  
(dimple)

2) : 1/1,000

3)

가 (inferior cerebellum), 4 (caudal displacement) (medulla)  
 가 (cervical spinal canal) 가 Arnold-Chiari malformation type  
 , (peripheral nerve) 가 (clubfoot,  
 rockerbottom foot) 1,4). ( 10%)  
 ( , , , ) 1,12).

4)

가 , (segment)  
 (transverse scan) (posterior ossification center) V  
 U 가 .  
 (soft tissue) ( ) ,  
 가 (echogenic structure) 가  
 . (coronal scan) (vertebral body)  
 (transverse view)  
 . 80% , 20  
 (effacement, <4 mm, banana sign) (lemon sign)  
 1,4,20).  
 (sacroccygeal teratoma), (hemangioma) .

5)

가 가  
 (high level) 가  
 98.6% 가 ,  
 4). 가  
 가 가

6)

가 가 ,  
 , 14)  
 16-20



AFP cholinesterase

, 가  
4,21,22).

6. (Microcephaly)

1)

가 (mental retardation)  
가 23).

2)

: 1.6/1,000

3)

, (porencephaly), (agyria), , , ,  
,

4)

(head perimeter)가 3SD (standard deviation)

24). Chervenak 24)

가 3SD  
(sensitive) 가 4SD  
(specific) . (biparietal

diameter, BPD)

5)

. 가 가  
( 4SD ) .

7. (Choroid plexus cyst)

1)

: 0.18-2.5/100

2)

(atrium of lateral ventricle) (level)

3)

16 21 24

25-28). trisomy 18, trisomy 21  
가 1-1.5% 가 .

4) 醜 가  
가 10 mm 가

29). Trisomy 18, trisomy 21  
(clench) 28).  
trisomy 18 가 ,  
, , ,  
30,31).

1  
transventricular, transthalamic, transcerebellar , longitudinal  
(sagittal/coronal), transverse , 가,  
3  
(geneticist), 가  
(team approach)가 .

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