



:

:

100

400

, , , (1), (2), (3), (4) , (1), (2), (3), (4) , (漸減型)(1), (2) . ,

: 400 (1) 293 (73%), (2) 50 (13%), (3) 44 (11%), (4) 13 (3%) , (1) 263 (65.7%), (2) 70 (17.5%), (3) 38 (8.5%), (4) 29 (7.3%) , (1) 233 (58%), (2) 167 (42%) . $7.17 \pm 0.12\text{mm}(95\% \text{ CI})$, $7.13 \pm 0.19\text{mm}(95\% \text{ CI})$ $8.13 \pm 0.24\text{mm}(95\% \text{ CI})$, $8.57 \pm 0.29\text{mm}$, ,

:

가

가

(epndy-
(lep-

가

ma)
tomeninx)

(1).

(temporal horn)

(foramen of Monroe)

3

4

(recess)

(tuft)

(glomus)

가

1996 1

1996 3

100 200

3

 $39+3 \pm 0.8$ ¹
가3370 ± 215
400;ATL,USA)

(Apogee RX

1998 10 8

1998 1 4

4-10MHz
가

6 MHz

3

(glomus)

200 , 400

(1) 293 (73%),
(2) 50 (13%), (3) 44 (11%),
(4) 13 (3%) (Fig.3) (Table 1).

(1) 263 (65.7%),

1

(tubular),
(cresecent), (anteri-
or tapering) 1 (2).

가
(posterior clubbing)(2), 가
(notching)
(bulging) (mid-bulging)(3),
(double choroidal pattern)(4)
(Fig.1).

(superior notching)(2).
(dorsal bulging)(3),
(inferior notching)(4) (Fig.2).

가
(clubing shape)(2)

Fisher's exact test(2-Tail)

paired t-test , x2-test

Table 1. Coronal Configuration of the Normal Choroid Plexus

	Type 1	Type 2	Type 3	Type 4
Right				
Male	75	8	14	3
Female	79	8	10	3
Left				
Male	69	17	9	5
Female	70	17	11	2
Total	293	50	44	13
(%)	(73%)	(13%)	(11%)	(3%)

Table 2. Glomus Patterns of the Normal Choroid Plexus

	Type 1	Type 2	Type 3	Type 4
Right				
Male	71	18	4	7
Female	76	8	8	8
Left				
Male	53	25	15	7
Female	63	19	11	7
Total	263	70	38	29
(%)	(65.7%)	(17.5%)	(9.5%)	(7.3%)

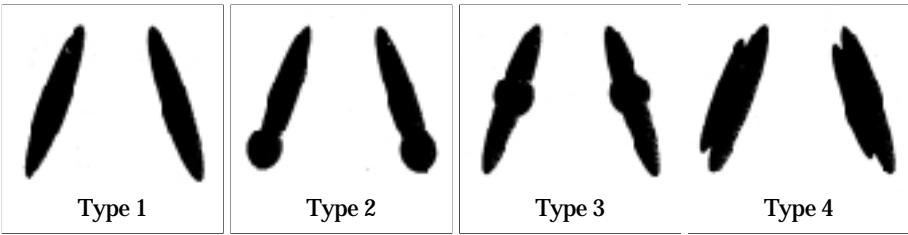


Fig. 1. Schematic drawing of various patterns of the choroid plexus on posterior coronal scan.

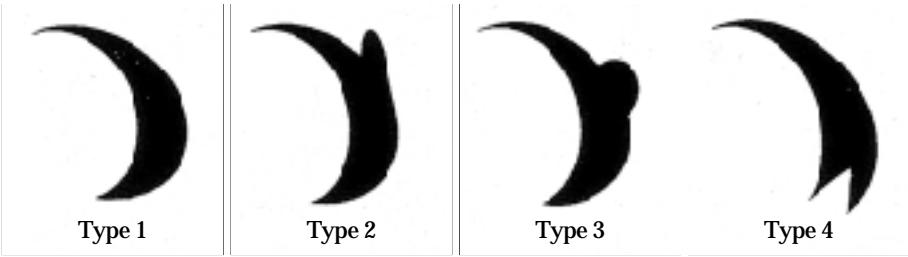


Fig. 2. Schematic drawing of various patterns of glomus on parasagittal scan.

(2) 70 (17.5%), (3) 38 (8.5%),
 (4) 29 (7.3%) (Fig.4)(Table 2),
 (1) 233 (58%), (2) 167
 (42%) (Fig.5). 가
 가 2 ,3 ,4
 400 107 (27%) , 2 ,3 ,4
 137 (34.3%) , 2 167
 (42%) . 가
 51 (25.5%),
 60 (30%), 18 (9%) ,
 16 , 34
 43
 27 ,
 4 , 15 , 400
 가
 7.17 ± 0.12
 mm(95% confidence interval[CI]), 5.1mm-8.9mm ,
 7.13 ± 0.19mm (95% CI), 4.8mm -
 9.2mm .
 8.13 ± 0.24mm(95% CI), 6.1mm-12.9mm

, 8.57 ± 0.29mm(95% CI), 6.4mm-
 13.3mm ,
 (p > 0.05). 400 395
 (98.8%) 12mm , 1.25
 ± 0.07mm, 0-5.5mm , 399 (99.8%) 5mm
 .
 4 (ependymal roof)
 (mesenchyma) (pia
 mater)
 (tela choroidea)
 4 (invagination)
 (diencephalic plexus) 3 ,
 (telencephalic plexus)
 (3). ,
 (stroma)
 4 ,



A



B



C

Fig.3. Posterior coronal scans of brain sonography in normal full-term infants show tubular shape of right choroid plexus and posterior clubbing of left choroid plexus (A), mid-bulging of left choroid plexus(B), and double choroid patterns of both choroid plexus(C).

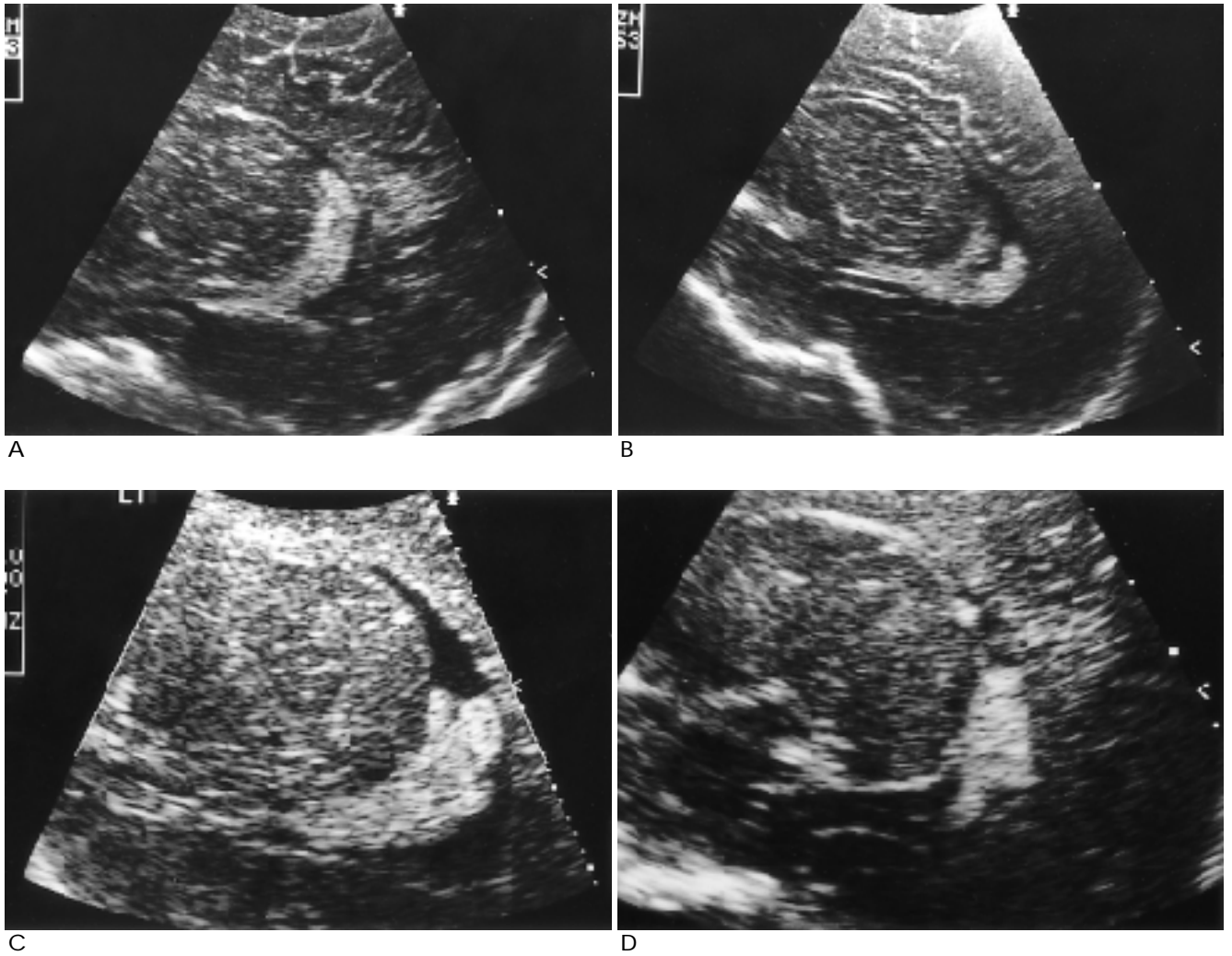


Fig. 4. Parasagittal scans of brain sonography in normal full-term infants show crescent shape(A), superior notching(B), dorsal bulging(C) and inferior notching(D) of the glomus.

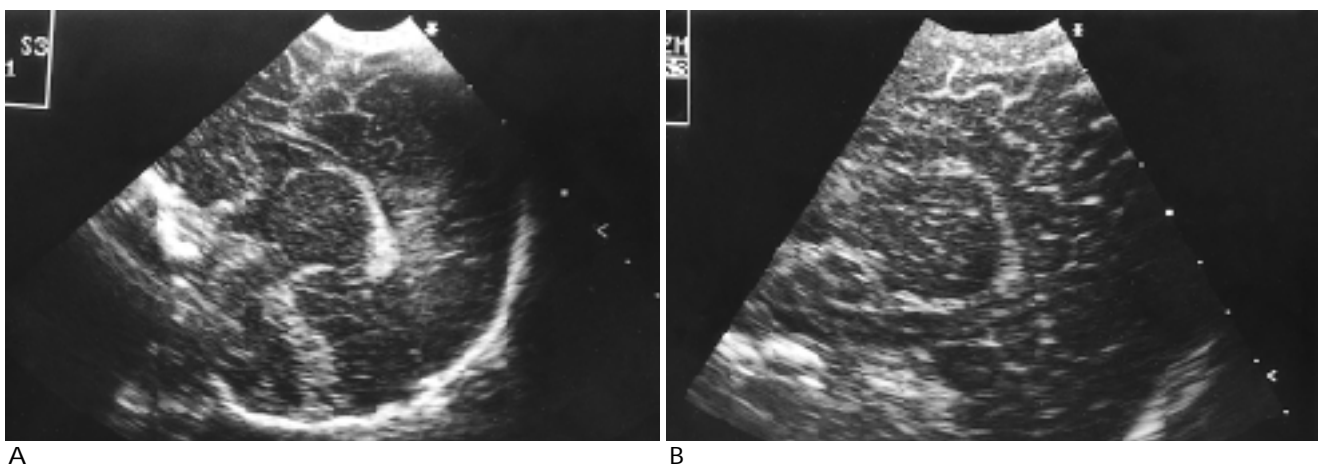


Fig. 5. Oblique parasagittal scans of brain sonography in normal full-term infants show smooth tapering of anterior end of the choroid plexus(A) and anterior clubbing(B).

(myelencephalic plexus),
(4). 29
4
(meningo-
cyste), 400 가
(tubules) (villi)
(leptomeninges) 가
(connective tissue core) (1,5).
가
(6). Reeder
(7) 가
12mm 가 5mm 가
400 395
(98.8%) 12mm 가 399 (99.8%)
5mm Reeder (7)
27-42%
가 12mm
가 5mm
가
(germinal matrix hemorrhage)
(caudothalamic groove)

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The Choroid Plexus in Normal Full-term Neonate : A Study of Morphological Variety on Sonography¹

Young Seok Lee, M.D., Ji Hye Kim, M.D.²

¹Department of Diagnostic Radiology, Dankook University Hospital

²Department of Diagnostic Radiology Chung-Ang Gil Hospital

Purpose : The purpose of this study was to evaluate the sonographic features of normal choroid plexus, thus helping avoid misinterpretations such as intraventricular hemorrhage or abnormality.

Materials and Methods : Posterior coronal, parasagittal, and oblique sagittal scans of 400 choroid plexus in normal full-term neonates(100 girls, 100 boys) were reviewed with special attention to coronal configuration, glomus patterns, and the shape of anterior ends. Sonographic features were classified as follows ; tubular(type 1), posterior clubbing(type 2), mid-bulging(type 3), or double choroidal pattern(type 4), as seen on posterior coronal scans; crescent(type 1), superior notching(type 2), dorsal bulging(type 3), or inferior notching(type 4), as seen on parasagittal scans; and anterior tapering(type 1) and clubbing shape (type 2) on oblique parasagittal scans. Maximal diameters of the choroid plexus on posterior coronal scan and the glomus on parasagittal scan were measured. All sonographic measurements of normal choroid plexus were statistically analysed according to gender and side.

Results : Four hundred normal choroid plexus were classified as 293 cases(73%) of tubular pattern(type 1), 50 cases(13%) of posterior bulging(type 2), 44 cases (11%) of mid-bulging(type 3) and 13 cases(3%) of double choroidal pattern (type 4) as seen on posterior coronal scans ; 263 cases(66%) of crescent shape(type 1), 70 cases(17%) of superior notching (type 2), 38 cases(9%) of dorsal bulging(type 3), and 29 cases(7%) of inferior notching(type 4), as seen on parasagittal scans; and 233 cases(58%) of anterior tapering(type 1) and 167 cases(42%) of anterior clubbing (type 2), as seen on oblique parasagittal scans. Maximal diameters of the choroid plexus on posterior coronal scan were 7.17 ± 0.12 mm (95% confidence interval [CI]) on the right side and 7.13 ± 0.19 mm (95% CI) on the left side, and 8.13 ± 0.24 (95% CI) mm on the right and 8.57 ± 0.29 mm on the left side glomus on parasagittal scan. There were no significant statistical differences with regard to gender and side.

Conclusion : We have observed the morphological variety of the choroid plexus in normal full-term neonates on ultrasonograms and believe that a knowledge of the various sonographic patterns involved can help differentiating normal choroid plexus from intraventricular hemorrhage or choroidal abnormality.

Index words : Choroid plexus

Brain, US

Infants, newborn, central nervous system

Address reprint requests to : Young Seok Lee, M.D., Department of Diagnostic Radiology, Dankook University Hospital,
#16-5 Anseo-Dong, Cheonan, Chung Nam, 330-714, Korea.
Tel. 82-417-550-6921 Fax. 82-417-552-9674 E-mail. dkrad@anseo.dankook.ac.kr