

1

2 3 4

가
52
6 96 30:22,
23:29 (14), (22),
(16) (26), (13),
(13) . T1
, ,

가
($p < 0.05$).
가 가
($p < 0.05$).
가

가 가 가 (3-5).
가 가
가

2/3 가 (3, 4).
, 1/3 가
가

(Computed tomography, CT)

(1, 2).

가

1994 1999

52

¹가

²

³

⁴가

2000 1 3

2000 8 14

6

6

96

(4).

(median) 19 . 13-24 19 가
 , 36 16 . 가
 , 30 , 22 . 37 , 13 , 13 . 26
 37 가 23 29
 가 32
 가 16 , 4 , 4 , 2 ,
 2 , Moyamoya 2 , 1 , 1 .

0.5T (Gyrosan T5, Philips, Eindhoven, Netherlands)
 (FOV) 20 cm , 5-6 mm, 0.6-1 mm, matrix size 256×256, 2

가 .
 가 52
 , (vertigo),

26 (50%)가
 , 가 1 가 8 , 2 가 7 ,
 3 가 3 . 가 7 , 9 , 15
 , 22 가 1 .
 (spastic hemiplegia),
 (spastic diplegia),
 (spastic quadriplegia) 14 , 22 , 16

가
 가
 , 가

가 .
 , 13 , 13 .
 가 ,
 가 .

1 T1 (TR/TE = 600/18)

(Fig. 1, 2).

(genu) :
 (body) :
 (transitional zone) :
 (splenium) :

(length):
 (height):

가 가 가
 , t-
 95% 0
 , 3
 , 3

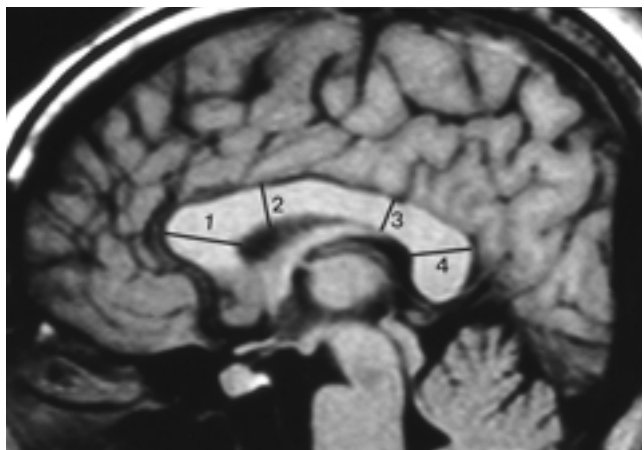


Fig. 1. Midsagittal T1-weighted MR image
 Thickness of the genu (1), body (2), transitional zone (3), and splenium (4) of the corpus callosum (4) are measured.

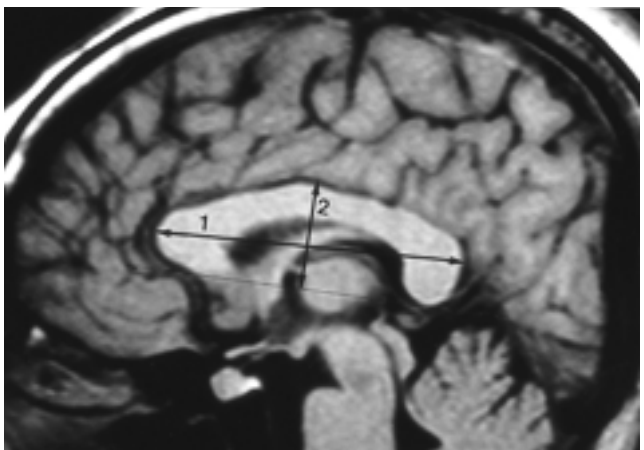


Fig. 2. Midsagittal T1-weighted MR image
 Length (1) and height (2) of the corpus callosum are measured.

6가

ANOVA

Scheffe

3

(Table 3).

가

가

가

Table 1. Difference of the Measured Values (mm) between Matched Patients with Cerebral Palsy and Controls

Sites or Index	Means of differences	SD	95% CI	p-value*
Genu	2.94	3.06	2.11, 3.77	0.0001
Body	2.65	1.86	2.14, 3.16	0.0001
TZ	1.63	1.40	1.25, 2.01	0.0001
SPLM	3.15	2.84	2.37, 3.92	0.0001
Length	4.35	8.70	1.98, 6.71	0.0006
Height	1.21	4.92	- 0.13, 2.54	NS

TZ: transitional zone, SPLM: splenium, SD: standard deviation, CI: confidence interval

NS: no significant

*p-value of paired t-test

(Table 1).

3

(Table 2).

가 가

가

Table 2. Difference of the Measured Values (mm) between Matched Sets according to the Clinical Severities

Sites or Index	Mild			Moderate			Severe			p-value*
	Means of differences	SD	95% CI	Means of differences	SD	95% CI	Means of differences	SD	95% CI	
Genu	1.65	3.08	0.47, 2.83	3.85	2.54	2.47, 5.23	4.62	2.47	3.28, 5.96	0.006
Body	1.88	1.90	1.15, 2.61	3.38	1.56	2.53, 4.23	3.46	1.45	2.67, 4.25	0.0089
TZ	1.11	1.37	0.58, 1.64	2.31	1.44	1.52, 3.09	2.00	1.08	1.41, 2.59	0.0208
SPLM	1.92	2.88	0.81, 3.03	4.00	2.19	2.81, 5.19	4.77	2.31	3.51, 6.03	0.0042
Length	1.12	9.33	- 2.47, 4.71	7.32	5.45	4.73, 10.65	7.46	8.09	3.06, 11.86	0.0244
Height	- 0.42	4.46	- 2.13, 1.29	3.92	4.73	1.34, 6.49	1.77	5.02	- 0.96, 4.50	0.0273

TZ: transitional zone, SPLM: splenium, SD: standard deviation, CI: confidence interval

*p-value of ANOVA

Table 3. Difference of the Measured Values (mm) between Matched Sets according to Clinical Types of the Cerebral Palsy

Sites or Index	Hemiplegia			Diplegia			Quadriplegia			p-value*
	Means of differences	SD	95% CI	Means of differences	SD	95% CI	Means of differences	SD	95% CI	
Genu	1.00	3.80	- 0.99, 2.99	3.05	1.96	2.23, 3.87	4.5	2.8	3.13, 5.87	0.0054
Body	1.71	2.20	0.56, 2.86	2.64	1.53	2.00, 3.28	3.5	1.63	2.70, 4.30	0.0282
TZ	0.79	1.63	- 0.06, 1.64	1.68	0.89	1.31, 2.05	2.31	1.45	1.60, 3.02	0.0090
SPLM	1.93	3.60	0.04, 3.82	3.09	2.31	2.12, 4.06	4.31	2.44	3.11, 5.51	0.0694
Length	- 1.79	10.3	- 7.18, 3.61	5.82	5.51	3.52, 8.12	7.69	8.54	3.51, 11.87	0.0049
Height	- 0.86	4.88	- 3.42, 1.69	1.91	3.91	0.27, 3.54	2.06	5.9	- 0.83, 4.95	0.1854

TZ: transitional zone, SPLM: splenium, SD: standard deviation, CI: confidence interval

*p-value of ANOVA

:

Table 4. Difference of the Measured Values (mm) between Matched Sets according to Gestational Age

Sites or Index	Preterm			Full-term			p-value*
	Means of differences	SD	95% CI	Means of differences	SD	95% CI	
Genu	3.26	2.12	2.39, 4.13	2.69	3.66	1.36, 4.02	NS
Body	2.83	1.80	2.09, 3.57	2.52	1.92	1.82, 3.22	NS
TZ	1.87	1.06	1.44, 2.30	1.45	1.62	0.86, 2.04	NS
SPLM	3.87	2.91	2.68, 5.06	2.59	2.71	1.60, 3.58	NS
Length	9.30	7.05	6.42, 12.18	0.41	7.92	- 2.47, 3.29	0.0001
Height	4.35	3.97	2.73, 5.97	- 1.28	4.16	- 2.79, 0.23	0.0001

TZ: transitional zone, SPLM: splenium, SD: standard deviation, CI: confidence interval, NS: no significant

*p-value of paired t-test

1.00, 3.05, 4.50

가 ,

가

(2, 6).

37 가

(Table 4).

(7, 8).

Hayakawa 가 97%

가 (9).

가 (axonal commissure)

(10).

4 , 4 , Moyamoya 2 , (multicystic encephalomalatic change) 1 , (band)

1 , 1 , 가 , (corresponding part)

1 가 6 , 2 , 7 ,

5 , 1 , 1 , (demyelination),

가 2 , (Wallerian degeneration)

(polymicrogyria) 1 ,

(heterotopia) 가 1 .

가 가 . (10, 11).

8 , (rostrum), (genu), (body),

가 6 가 , 1 (splenium) .

(transitional zone)

(12).

75%

8 -20

callosum as demonstrated by MR imaging. *AJNR Am J Neuroradiol* 1988;9:487-491

17. Shaefer GB, Bodensteiner JB, Thompson JN, Wilson DA. Clinical

and morphometric analysis of the hypoplastic corpus callosum. *Arch Neurol* 1991;48:933-6

J Korean Radiol Soc 2000;43:509 - 514

Clinical Significance of the Corpus Callosum in Cerebral Palsy¹

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Purpose: To evaluate, using magnetic resonance (MR) imaging, the clinical significance of the corpus callosum by measuring the size of various portions of the corpus callosum in children with cerebral palsy, and in paired controls.

Materials and Methods: Fifty-two children [30 boys and 22 girls aged between six and 96 (median, 19) months] in whom cerebral palsy was clinically diagnosed underwent MR imaging. There were 23 term patients and 29 preterm, and the control group was selected by age and sex matching. Clinical subtypes of cerebral palsy were classified as hemiplegia (n = 14), spastic diplegia (n = 22), or spastic quadriplegia (n = 16), and according to the severity of motor palsy, the condition was also classified as mild (n = 26), moderate (n = 13), or severe (n = 13). In addition to the length and height of the corpus callosum, the thickness of its genu, body, transitional zone and splenium, as seen on midsagittal T1-weighted MR images, were also measured. Differences in the measured values of the two groups were statistically analysed and differences in the size of the corpus callosum according to the clinical severity and subtypes of cerebral palsy, and gestational age, were also assessed.

Results: Except for height, the measured values of the corpus callosum in patients with cerebral palsy were significantly less than those of the control group ($p < 0.05$). Its size decreased according to the severity of motor palsy. Compared with term patients, the corpus callosum in preterm patients was considerably smaller ($p < 0.05$).

Conclusion: There was statistically significant correlation between the severity of motor palsy and the size of the corpus callosum. Quantitative evaluation of the corpus callosum might be a good indicator of neurologic prognosis, and a sensitive marker for assessing the extent of brain injury.

Index words : Brain, MR

Corpus callosum, MR

Cerebral palsy

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