

뇌동맥류 수술 환자에서 급성 수두증 병발후 단락술이 요하는 만성 수두증 합병의 임상적 및 형태학적 비교

신용환 · 황정현 · 함인석 · 성주경 · 황성규 · 박연묵 · 김승래

= Abstract =

The Clinical and Radiological Analysis of Shunt-Dependent Hydrocephalus after Acute Hydrocephalus in Surgical Aneurysmal Patients

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Objectives : The incidence of acute hydrocephalus(AHC) after aneurysmal subarachnoid hemorrhage reported as 13 - 31%. The AHC resolves spontaneously in some cases(simple AHC), but about 30% of the AHC progresses to shunt - dependent hydrocephalus(SDHC). The aim of this study was to understand clinical predisposing factors causing SDHC with performing differential clinical analyses between 2 subgroups, the simple AHC and the progressed SDHC.

Methods : The 250 surgically treated patients with aneurysmal SAH over last two years were evaluated. Forty four patients(17.6%) of them showed the AHC. Of these 37 cases were retrospectively analyzed, excluding 7 patients who died within 2 weeks after hemorrhage attack. Of the 37 AHC cases, 21 patient(56.8%) were complicated with the simple AHC, and 16 cases(43.2%) were progressed SDHC.

Results : The older age($p < 0.05$), poor clinical grade($p = 0.03$), larger amount of SAH in perimesencephalic cistern on CT scan($p = 0.005$) were significantly related to the SDHC. No significant difference was noted in aneurysm location, multiplicity, rebleeding, hypertension and Fisher grade between 2 subgroups.

Conclusion : Of the total 37 AHC, the simple AHC was 56.8% and the progressed SDHC 43.2%. The older age, poor clinical grade, large amount of SAH in perimesencephalic cistern were significant predisposing factors causing the SDHC. The large amount of SAH in perimesencephalic cistern is the single most important predisposing factor developing the progressed SDHC.

KEY WORDS : Aneurysmal SAH · Acute hydrocephalus · Shunt - dependent hydrocephalus.

	7)9)10)19)20)22)27 - 29)	2	
서			7~34%
론	7)16)19)27)		
	1/3		가
	7)10)		
7)20)27)28)	3		17)
20(13~31)%			,

19)20)27)28)
 7)9)11)16)20)22)27)28)
 가
 가
 가

95 percentile , 72
 30%
 Bicaudate index
 (caudate nuclei) 가
 (frontal horn)
 (width)
 Monro
 28)

대상 및 방법

1997 1 1998 12 2
 250
 44 (17.6%) , 2
 7 37
 가
 (pterional approach)

(simple acute hydrocephalus group : simple AHC)
 (shunt - dependent hydrocephalus group : SDHC)
 Hunt - Hess grade
 12),
 (transcranial doppler)
 가가

가
 Lilliequist
 (lamina terminalis)
 3
 bicaudate index²⁸⁾가

(Fisher grade⁶⁾),
 (basal cistern), (sylvian cistern),
 (interhemispheric cistern) (perimesencephalic cistern) (cistern)
 van Gijn²⁸⁾
 (dependent portion)
 (sedimentation) 2
 3 (cistern)
 t - test Chi - square

p<0.05

결 과

3 44
 250 17.6%
 가 37
 21 (56.8%),
 16 (43.2%)
 1. 환자의 성별 및 연령 분포
 37 17 , 20
 36~74 54.7
 (Table 1).

Table 1. Age & Sex distribution

	Simple AHC* (%) (n = 21)	SDHC** (%) (n = 16)	Total (%)
Sex			
Male	10 (47.6)	7 (43.8)	17 (45.9)
Female	11 (52.4)	9 (56.3)	20 (54.1)
Age (years)			
Range	37-71	36-74	
Mean	51.6	58.8	54.7

AHC* : acute hydrocephalus
 SDHC** : shunt-dependent hydrocephalus

Table 2. Age distribution and mean age

Age (years)	Simple AHC (%) (n = 21)	SDHC (%) (n = 16)	Total (%)
30-39	1 (4.8)	2 (12.5)	(8.1)
40-49	9 (42.8)	2 (12.5)	11 (29.7)
50-59	6 (28.6)	3 (18.7)	9 (24.3)
60-69	4 (19.0)	5 (31.3)	9 (24.3)
70-79	1 (4.8)	4 (25.0)	5 (13.6)
Mean ± SD	51.62 ± 9.74	58.81 ± 12.31*	54.72 ± 11.35

* : p<0.05

Table 1 2

37~71 , 36~74
 58.81
 51.62
 (p<0.05).

2. 임상적 요인

Table 3

Hunt - Hess grade 1

가
 grade 2 가 12
 가
 Hunt - Hess Grade 3 9
 (42.9%), 14 (87.5%)
 가
 (p=0.03).

Table 4

4 가
 2 가
 1 20 6.54

가 2

Table 3. Preoperative Hunt-Hess grade

Hunt-Hess Grade	Simple AHC (%) (n = 21)	SDHC (%) * (n = 16)	Total (%)
1	0 (0.0)	0 (0.0)	0 (0.0)
2	12 (57.1)	2 (12.5)	14 (37.8)
3	4 (19.0)	7 (43.8)	11 (29.7)
4	4 (19.0)	7 (43.8)	11 (29.7)
5	1 (4.8)	0 (0.0)	1 (2.7)

* : p=0.03

Table 4. Clinical factors not significantly related to development of simple AHC and SDHC

Factor		Simple AHC (%) (n = 21)	SDHC (%) (n = 16)	Total (%)	p Value
Rebleeding	(+)	3 (14.3)	4 (25.0)	7 (18.9)	0.41
	(-)	18 (85.7)	12 (75.0)	30 (81.1)	
Vasospasm	(+)	2 (9.5)	2 (12.5)	4 (10.8)	0.77
	(-)	19 (90.5)	14 (87.5)	33 (89.2)	
EVD* duration	Days	6.53 ± 4.55	6.56 ± 2.99	6.54 ± 3.90	0.98
Location of aneurysm	ICA**	6 (28.6)	5 (31.3)	11 (29.7)	0.83
	ACA***	12 (57.1)	8 (50.0)	20 (54.1)	
	MCA****	2 (9.5)	1 (6.3)	3 (8.1)	
	Post. circulation	1 (4.8)	2 (12.5)	3 (8.1)	

EVD* : Extraventricular drainage
 ACA*** : Anterior cerebral artery

ICA** : Internal carotid artery
 MCA**** : Middle cerebral artery

Table 5. Radiological factors not significantly related to development of simple AHC and SDHC

Factor	Simple AHC (%) (n = 21)	SDHC (%) (n = 16)	Total (%)	p Value
Fisher grade				0.29
0	0 (0.0)	0 (0.0)	0 (0.0)	
1	0 (0.0)	0 (0.0)	0 (0.0)	
2	3 (14.3)	0 (0.0)	3 (8.1)	
3	12 (57.1)	11 (68.8)	23 (62.2)	
4	6 (28.6)	5 (31.3)	11 (29.7)	
IVH*				0.86
(+)	6 (28.6)	5 (31.3)	11 (29.7)	
(-)	15 (71.4)	11 (68.7)	26 (70.3)	

IVH* : Intraventricular hemorrhage

Table 6. Distribution of cisternal blood associated with the development of simple AHC and SDHC

Cistern	Simple AHC (%) (n = 21)	SDHC (%) (n = 16)	Total (%)	p Value
Basal				0.84
(+)	20 (95.2)	15 (93.8)	35 (94.6)	
(-)	1 (4.8)	1 (6.2)	2 (5.4)	
Sylvian				0.72
(+)	19 (90.5)	15 (93.8)	34 (91.9)	
(-)	2 (9.5)	1 (6.2)	3 (8.1)	
Interhemispheric				0.38
(+)	20 (95.2)	16 (100)	36 (97.3)	
(-)	1 (4.8)	0 (0.0)	1 (2.7)	
Perimesencephalic				0.005
(+)	6 (28.6)	12 (75.0)	18 (48.6)	
(-)	15 (71.4)	6 (25.0)	19 (51.4)	

가

3

3. 방사선학적 요인

Table 5

Fisher grade	grade
3	18 (85.7%),
5	30%

Table 6

(28.6%)	6
12 (75.0%)	
(p=0.005).	
(cistern)	

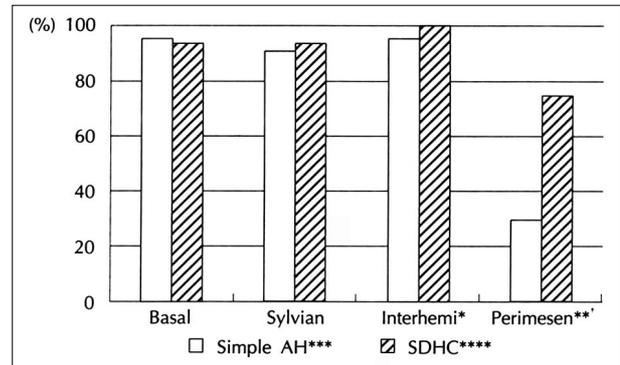


Fig. 1. Proportion of patients with a cisternal blood in relation to acute hydrocephalus. Interhemi* : Interhemispheric cistern, Perimesen** : Perimesencephalic cistern. Simple AH*** : Simple acute hydrocephalus, SDHC**** : Shunt-dependent hydrocephalus, † : p = 0.005

Fig. 1

고찰

(0~3), (4~13) (14)
27)
가
(Sylvian aqueduct), 4

(arachnoid granulation) 가
3)17), - (piaarachnoid)

24)29).
가 10
14).
20)28) - 가

17.6% , van Gijn
28), Hasan 10) Milhorat²⁰⁾ 20%
13~31% 7)19)29).

10) 가 가
20)28), (rostral part)
(periaqueductal gray matter)
Parinaud's syndrome
26).

가 (Fisher grade) 가 37 30%

가 37 가 16(43.2%) 11

Hunt - Hess grade 3 poor grade 가 가 (cistern) 가

23 (62.1%) 가 (Fig. 1).

가 7)27) 7)9)19)20)27) Vale 27) 가

가 7)9) 9)23) 가 7) 7)19)

1/3~1/2 9)23)28) Doczi 5) 가 가 7)

(cisternogra- 가 가 ,

Hasan Ranghe⁹⁾ 20% 가 가 ,

47% 31% 4 가 4

가 가 가

(ambient cistern) 7)

Rinkel ²³⁾ 40 (non - 15) 가 Vale

aneurysmal perimesencephalic hemorrhage) 11 27) 가

가 (crural cistern), (interpeduncular cistern) 29 5

(17%) 가 가 , Milhorat²⁰⁾

(tentorial hiatus) 가 , Milhorat²⁰⁾

Lilliequist, Sindou²⁵⁾

16)

Lilliequist

가

결 론

1997	1	1998	12
44		250	17.6%
		가	37

1) 17.6%

2) 43.2%

3)

가

4)

- : 2000 6 14
- : 2000 8 28
- : 700 - 412 2가 50

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