

고령군 뇌동맥류 환자의 치료

박현선 · 이재환 · 김진영 · 신용삼 · 주진양 · 허승곤 · 이규창

= Abstract =

Management of Elderly Patients with Intracranial Aneurysm

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Objectives : A clinical analysis was performed to provide management strategy and to improve management outcome of elderly patients with intracranial aneurysm.

Patients and Methods : We reviewed medical records of 746 consecutive patients with intracranial aneurysm who were admitted from July 1991 to December 1996. They were divided into two age groups : elderly(120 patients aged 65 years or older) and non - elderly(626 patients aged 64 years or younger). We investigated the differences between the two groups in clinical characteristics, management outcome and surgical results.

Results : Female(80.0%), internal carotid artery aneurysm(48.9%), poor clinical grade(Hunt and Hess Grade , : 39.8%), postoperative subdural fluid collection(38.2%), and postoperative hydrocephalus(39.7%) were more frequent in the elderly patients. There were no significant differences in the incidence of hypertension, multiple aneurysm, unruptured aneurysm, rebleeding, delayed ischemic neurological deficits, postoperative hemorrhage, and low density on the postoperative brain CT scan. In some cases, surgical clipping of ruptured aneurysm could not be performed due to moribund state or refusal of surgery by the elderly patient's family. Both management outcome and surgical results in elderly aneurysm patients at 3 months after rupture were worse than those of the non - elderly group. The most common reason of unfavorable outcome was poor clinical grade in both groups, while serious medical illness causing unfavorable outcome was more common in the elderly group.

Conclusion : Surgical treatment of a ruptured aneurysm should not be avoided in elderly patient solely on the basis of advanced age. If the patients are in good clinical grade, early aneurysm surgery followed by early ambulation should be recommended. Further improvements in outcome may be achieved by thorough knowledge of poor resilience of brain, CSF flow dynamics, and diminished cardiopulmonary reserve in elderly patients with intracranial aneurysm.

KEY WORDS : Elderly patients · Intracranial aneurysm · Management · Surgical results.

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50 , 가 30~ 가 6)8)10)14)

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12)

대상 및 방법

1. 대상
 1991 7 1996 12 가 3 4
 Hunt and Hess Grade⁷⁾,
 Fisher Group³⁾
 “good”,
 “fair”,
 “poor”, 3
 “dead”
 SPSS for window version 5.0 chi-square
 test
 687 59
 746
 (Table 1). 653

결 과

2. 방 법

746 65 65 87 가
 120 , 가 87
 626
 113 , 574 ,
 7 , 52 . (Table 1).
 687
 94
 559 113 ,
 27.4% , 39.8%
 69 , 3
 45.1%
 477 ,
 가 (Ta-
 ble 2).

2. 고령군의 치료 성적

746 605
 687 546 (79.5%)
 59
 575 ,
 balloon 16
 , Guglielmi detachable coil

14 (Table 3). (25, 56.8%) . 가
 574 477 (83.1%) , 가 10 ,
 69 (61.1%) (Table 2). 가 7 , 2 ,
 가 가 (Ta-

Table 1. Comparison of the characteristics of elderly patients with intracranial aneurysm with non-elderly patients

Category	Age(%)		Total(%)
	65yr	<65yr	
Sex			
Men	23(19.2)	261(41.7)	284(38.1)
Women	97(80.8)	365(58.3)	462(61.9)
Type			
Ruptured	113(94.2)	574(91.7)	687(92.1)
Unruptured	7(5.8)	52(8.3)	59(7.9)
Hypertension			
No	68(56.7)	346(55.2)	414(55.5)
Yes	52(43.3)	280(44.7)	332(44.5)
Location of aneurysm			
ACA	24(25.5)	203(36.3)	227(34.8)
ICA	46(48.9)*	183(32.7)	229(35.1)
MCA	17(18.1)	130(23.3)	147(22.5)
BAVA	7(7.4)	43(7.7)	50(7.7)
Number of aneurysm			
Single	78(83.0)	479(85.7)	557(85.4)
Multiple	16(17.0)	80(14.3)	96(14.7)

ACA : anterior cerebral artery, ICA : internal carotid artery
 MCA : middle cerebral artery, BAVA : vertebrobasilar artery
 * : indicate p<0.05

746 575 (77.1%)
 (" Good " and " Fair "outcome) , 131 (17.6%)
 520 (75.7%) , 129
 (18.8%) 113
 67 (59.3%),

Table 2. Comparison of the clinical characteristics of elderly patients with ruptured intracranial aneurysm with non-elderly patients

Category	Age(%)		Total(%)
	65yr	<65yr	
Hunt-Hess grade			
1	31(27.4)	246(42.9)	277(40.3)
2	37(32.7)	161(28.0)	198(28.8)
3	45(39.8)	167(29.1)	212(30.9)
Fisher group			
1, 2	33(29.2)	215(37.5)	248(36.1)
3	51(45.1)	224(39.0)	275(40.0)
4	29(25.7)	135(23.5)	164(23.9)
Rebleeding			
No	97(85.8)	459(80.0)	556(80.9)
Yes	16(14.2)	115(20.0)	131(19.1)

Table 3. Treatment modalities of 746 patients with intracranial aneurysm

Type of aneurysm & age of patients	Treatment modality				Total
	Open surgery	Proximal balloon occlusion	Detachable coil packing	Supportive care	
Ruptured aneurysm					
65	68		1	44	113
<65	465	8	97	574	465
Unruptured aneurysm					
65	5	1	1		7
<65	37	11	4	52	37

Table 4. Management outcomes of 746 patients with intracranial aneurysm

Type of aneurysm and age of patients	Outcome (%)				Total
	Good	Fair	Poor	Dead	
Ruptured					
65yr	49 (43.4)	18 (15.9)	10 (8.8)	36 (31.9)	113
<65yr	414 (72.1)	39 (6.8)	28 (4.9)	93 (16.2)	574
Unruptured					
65yr	3 (42.9)	3 (42.9)		1 (14.3)	7
<65yr	44 (84.6)	5 (9.6)	2 (3.8)	1 (1.9)	52
Total	510 (68.4)	65 (8.7)	40 (5.4)	131 (17.6)	746

36 (31.9%) , “good” outcome 가 (Table 7). , 7

(Table 5). 6

3. 고령군의 치료 합병증

69 56 2 가

(81.2%) , 6 (8.7%)

(,) 27 24 (88.9%), (,) 19 12 (63.2%) (“ Good ”and “ fair ”outcome) , 68 27 (39.7%) , 574

(Table 6). 95 (20.4%)

15.

Table 5. Causes of unfavorable outcome

Causes	65yr		<65yr		Total
	Rup	Unrup	Rup	Unrup	
Direct effect of SAH	30		49		79
DIND	1		11		12
Surgery		1	10	2	13
Preoperative rebleeding	6		39		45
Medical complication	7*		11**		18
Angiography	2		1	1	4
Total	46	1	121	3	171
	47		124		

* : Pulmonary embolism : 2, congestive heart failure : 2, intestinal obstruction : 1, end stage renal disease with infection : 1, cerebral infarction due to cardiac embolus : 1

** : Gastrointestinal bleeding : 2, neurogenic pulmonary edema : 1, adult respiratory distress syndrome : 2, pulmonary embolism : 1, liver cirrhosis : 2, sepsis : 1, end stage renal disease : 1, acute renal failure : 1

Rup : ruptured aneurysm, Unrup : unruptured aneurysm, SAH : subarachnoid hemorrhage, DIND : delayed ischemic neurological deficits

Table 6. Surgical results of patients with ruptured intracranial aneurysm according to clinical grade on admission and age

Hunt & hess grade age of patients	Result(%)				Total(%)
	Good	Fair	Poor	Dead	
>65	21(77.8)	3(11.1)	2(7.4)	1(3.7)	27(39.1)
<65	229(95.8)	3(1.3)	5(2.1)	2(0.8)	239(50.1)
>65	16(69.6)	4(17.4)	2(8.7)	1(4.3)	23(33.3)
<65	127(88.2)	7(4.9)	7(4.9)	3(2.1)	144(30.2)
>65	8(42.1)	4(21.1)	3(15.8)	4(21.1)	19(27.5)
<65	54(57.4)	20(21.3)	10(10.6)	10(10.6)	94(19.7)
Subtotal					
>65	45(65.2)	11(15.9)	7(10.1)	6(8.7)	69(100.0)
<65	410(86.0)	30(6.3)	22(4.6)	15(3.1)	477(100.0)
Total	455(83.3)	41(7.5)	29(5.3)	21(3.8)	546(100.0)

Table 7. Surgical results in patients with ruptured intracranial aneurysm according to the timing of surgery and age*

Timing of surgery** and age of patients	Outcome(%)				Total(%)
	Good	Fair	Poor	Dead	
0 - 3					
65	9(60.0)	3(20.0)	2(13.3)	1(6.7)	15(25.9)
< 65	83(88.3)	8(8.5)	3(3.2)		
4 - 10					
65	21(80.8)	3(11.5)	1(3.8)	1(3.8)	26(44.8)
< 65	173(92.5)	6(3.2)	5(2.7)	3(1.6)	
>11					
65	11(64.7)	3(17.6)	2(11.8)	1(2.6)	17(29.3)
< 65	80(84.2)	10(10.5)	4(4.2)	1(1.1)	
Total	377(86.9)	33(7.6)	14(3.2)	10(2.3)	434(100.0)

* : Cases with multiple bleeding and significant intracerebral hematoma were excluded

** : The day after rupture

Table 8. Perioperative complications

Complication	Age of patients(%)	
	65	<65
Delayed ischemic neurological deficit		
Incidence	16(23.5)	117(25.2)
Severe DIND	2(12.5)	18(15.4)
Subdural effusion	26(38.2)*	73(15.7)
Hydrocephalus		
Incidence	27(39.7)*	95(20.4)
Shunt surgery	9(13.2)	32(6.9)
Postoperative infarction		
Incidence	4(5.9)	36(7.8)
Symptomatic	0(0.0)	10(2.2)
Postoperative hemorrhages	3(0.6)	31(6.4)
Medical complication	8(11.8)*	13(2.8)

DIND : Delayed ischemic neurological deficits

* : indicate p<0.05

7% , 1 가
38.2% , 2 가
4.4% 4 가
5.9% (Table 8). 가
(favorable outcome) 83.9%
21 (favorable outcome) 88.9%
(unfavorable outcome)

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12) . 가 , Inagawa⁸⁾ 가

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13) . , , 가 가

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, 26.7% . ,

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. Aoki²⁾

, <hman¹⁴⁾

가 , Takeuchi²⁰⁾ . 4)16)

가 (un - 1)19)21)

favorable outcome) . Inagawa⁹⁾

가 , 가 , . Inagawa⁹⁾¹⁰⁾ 가

가 , 가 65

가 , 가 , Inagawa⁸⁾ 가 , 가

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가

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