

자발성 뇌실질내 출혈 환자에서 혈종 증가의 위험 인자에 대한 분석*

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= Abstract =

Analysis of the Risk Factors of Hematoma Enlargement in Patients with Spontaneous Intracerebral Hemorrhage

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Objective : The purpose of this study was to evaluate the risk factors of hematoma enlargement in patients with spontaneous intracerebral hemorrhage(ICH).

Methods : A series of 214 ICH patients diagnosed by brain CT scan in our neurosurgery department from June 1995 to July 1998 were reviewed with clinical status, past medical histories, laboratory findings, CT findings and prognosis.

Results : In 27 patients(12.6%), the second CT scan showed an enlarged hematoma. Age, sex, and site of hematoma were not related to hematoma enlargement. A long interval(>6 hours) between the onset and the 1st CT scan strongly reduced the incidence of hematoma enlargement. The incidence of hematoma enlargement significantly increased in patients with previous history of hypertension, cerebral infarction and ICH. This analysis also demonstrated the following independent factors predisposed to hematoma enlargement : initial high systolic blood pressure, high serum total protein, low serum albumin, low serum sodium, prolonged prothrombin time(>14 sec) and activated partial thromboplastin time(>29.5 sec), irregular hematoma shape, and combined intraventricular hemorrhage. Prognosis in the group of hematoma enlargement showed high mortality(48.1%) and poor outcome.

Conclusion : Patients with previous history of hypertension, cerebral infarction and ICH, and with high systolic blood pressure, prolonged coagulation time, irregular hematoma shape and intraventricular hemorrhage in CT scan should be observed carefully. And, early surgical therapy of large hematoma and meticulous control of blood pressure may decrease the mortality and morbidity in patients with spontaneous ICH.

KEY WORDS : Spontaneous intracerebral hemorrhage · Hematoma enlargement · Risk factors.

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1)3)6-8)12)13)

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가

C Kwak A x B x C/2

15)

1)3)6) - 8)12)13)

가 (IVH)

가

가

Glasgow outcome sc-

ale(GOS) Good Recovery(GR), Moderate Disa-
bility(MD), Severe Disability(SD), Vegetative state(VS),
Death(D)

Chi - square an-
alysis Student's t - test
p value가 0.05

대상 및 방법

1995 6 1 1998 7 31
(brain CT)

결 과

214

brain CT
187

가 가 27 가

1. 성별 및 연령, 혈종의 위치

214 가 27 (12.6%)
60.3 ± 10.6 가
13 (48.1%), 8 (29.6%),
2 (7.4%), 4 (14.8%)
가 가

Brain CT

CT

3.4 ± 3.9

CT

51.5 ± 59.2

가 CT

가

CT

6

가 brain CT

가 가 24 (88.9%)

50%

가가

가 2ml

(Table 1).

가가

brain CT

brain CT

2. 과거력

68.2%

A

B

가 88.9%

가 65.2%

10mm CT scan

가

Table 1. Clinical parameters in patients with and without hematoma enlargement

| Clinical parameters | Enlarged(n=27) | Nonenlarged(n=187) | Total(n=214) |
|------------------------------------|----------------|--------------------|--------------|
| Sex, M/F | 14/13 | 104/83 | 118/96 |
| Age(yr) | 60.3 ± 10.6 | 59.3 ± 12.8 | 59.4 ± 12.6 |
| Location of hemorrhage, No. (%) | | | |
| Putamen | 13(48.1) | 80(42.8) | 93(43.5) |
| Thalamus | 8(29.6) | 46(24.6) | 54(25.2) |
| Mixed | 2(7.4) | 3(1.6) | 5(2.3) |
| Lobar | | 38(20.3) | 38(17.8) |
| cerebellum | 4(14.8) | 18(9.6) | 22(10.3) |
| others | | 2(1.1) | 2(0.9) |
| Time from onset to 1st CT, No. (%) | | | |
| 6 hr | 24(88.9) | 162(86.6) | 186(86.9) |
| >6 hr | 3(11.1) | 25(13.4) | 28(13.1) |
| Time from onset to 1st CT, hr | 3.4 ± 3.9 | 3.2 ± 2.7 | 3.2 ± 2.9 |

($p < 0.05$).
 가 ,
 가 11.1%, 가 3.2% ,
 18.5%, 6.4% 가
 ($p < 0.05$) (Table 2).

11.2 ± 3.1 가 7.0 ±
 2.4 ,
 47.6 ± 54.8 .
 가 178.1 ± 31.5/105.6 ±
 161.9 ± 38.6/98.9 ± 18.4
 mmHg , 가
 ($p < 0.05$) (Table 3).

3. 임상 상태와 내원 당시 혈압

GCS score 가 가
 , 가 GCS score

Table 2. Past medical histories in patients with and without hematoma enlargement

| Past history, No. (%) | Enlarged (n=27) | Nonenlarged (n=187) | Total (n=214) |
|--------------------------|-----------------|---------------------|---------------|
| Hypertension* | 24(88.9) | 122(65.2) | 146(68.2) |
| Liver disease | 1(3.7) | 6(3.2) | 7(3.3) |
| Diabetes mellitus | 4(14.8) | 24(12.8) | 28(13.1) |
| CVA history* | 8(29.6) | 18(9.4) | 26(12.1) |
| Cerebral infarction | 3(11.1) | 6(3.2) | 9(4.2) |
| Intracerebral hemorrhage | 5(18.5) | 12(6.4) | 17(7.9) |

* : $p < 0.05$ Abbreviation : CVA=cerebrovascular accident

Table 3. Clinical status in patients with and without hematoma enlargement

| Clinical status | Enlarged (n=27) | Nonenlarged (n=187) | p value |
|--|-----------------|---------------------|---------|
| Initial GCS score | 11.2 ± 3.1 | 11.2 ± 3.1 | 0.976 |
| GCS score after deterioration | 7.0 ± 2.4 | | |
| Initial SBP, mmHg | 178.1 ± 31.5 | 161.9 ± 38.6 | 0.038* |
| Initial DBP, mmHg | 105.6 ± 17.8 | 98.9 ± 18.4 | 0.078 |
| Interval from onset to deterioration, hr | 47.6 ± 54.8 | | |
| duration of admission, day | 33.6 ± 40.2 | 28.1 ± 32.8 | 0.435 |

* : $p < 0.05$ Abbreviation : GCS=Glasgow coma scale ; SBP=systolic blood pressure ; DBP=diastolic blood pressure

Table 4. Laboratory parameters in patients with and without hematoma enlargement

| Laboratory parameters | Enlarged(n=27) | Nonenlarged(n=187) | p value |
|---|------------------|--------------------|--------------------|
| Aspartate aminotransferase, U/L | 36.9 ± 15.8 | 42.9 ± 46.6 | 0.512 |
| Alanine aminotransferase, U/L | 30.8 ± 17.5 | 30.9 ± 28.9 | 0.999 |
| Lactate dehydrogenase, U/L | 440.4 ± 142.7 | 444.4 ± 174.5 | 0.908 |
| Total bilirubin, mg/dL | 1.2 ± 0.7 | 1.0 ± 0.5 | 0.115 |
| Total protein, g/dL | 8.9 ± 0.7 | 7.0 ± 0.9 | 0.019* |
| Albumin, g/dL | 3.9 ± 0.8 | 4.2 ± 0.5 | 0.022* |
| Total cholesterol, mg/dL | 187.6 ± 72.2 | 220.4 ± 84.7 | 0.059 |
| Triglyceride, mg/dL | 105.1 ± 90.1 | 137.7 ± 84.5 | 0.064 |
| Glucose, mg/dL | 173.8 ± 60.6 | 164.3 ± 61.8 | 0.457 |
| Urea nitrogen, mg/dL | 16.6 ± 7.4 | 23.5 ± 37.9 | 0.349 |
| Creatinine, mg/dL | 0.9 ± 0.3 | 1.1 ± 1.0 | 0.373 |
| Alkaline phosphatase, U/L | 191.7 ± 101.4 | 184.8 ± 52.1 | 0.579 |
| Serum sodium, mEq/L | 141.9 ± 6.9 | 144.0 ± 4.0 | 0.021* |
| Serum potassium, mEq/L | 3.8 ± 0.7 | 3.9 ± 0.5 | 0.456 |
| Serum chloride, mEq/L | 110.4 ± 7.7 | 111.0 ± 3.5 | 0.496 |
| Prothrombin time, second | 13.9 ± 3.6 | 12.2 ± 1.3 | 0.000 [†] |
| aPTT, second | 27.0 ± 9.0 | 23.4 ± 2.4 | 0.000 [†] |
| White blood cell, /mm ³ | 13474.1 ± 3862.5 | 14652.9 ± 12581.6 | 0.630 |
| Hemoglobin, g/dL | 13.2 ± 2.0 | 12.7 ± 1.8 | 0.185 |
| Hematocrit, % | 38.4 ± 5.5 | 37.2 ± 4.8 | 0.240 |
| Platelet, x10 ³ /mm ³ | 195.6 ± 77.9 | 226.5 ± 93.8 | 0.104 |
| Total protein >6.5 g/dL, No. (%) | 14(51.9%) | 117(62.6%) | 0.285 |
| Albumin <3.5 g/dL, No. (%) | 5(18.5%) | 25(13.4%) | 0.471 |
| Serum sodium <135 mEq/L, No. (%) | 3(11.1%) | 6(3.2%) | 0.056 |
| Prothrombin time >14 sec. No. (%) | 8(29.6%) | 19(10.2%) | 0.004 [†] |
| aPTT >29.5 sec. No. (%) | 5(18.5%) | 6(3.2%) | 0.001 [†] |

* : $p < 0.05$ † : $p < 0.01$ Abbreviation : aPTT=Activated partial thromboplastin time

가

Table 5. Brain CT findings in patients with and without hematoma enlargement

| CT findings | Enlarged (n=27) | Nonenlarged (n=187) | Total (n=214) |
|-----------------------|-----------------|---------------------|---------------|
| V1 | 29.4 ± 24.1 | 35.2 ± 35.9 | 34.5 ± 34.6 |
| V1 25ml, No. (%) | 13(48.1) | 98(52.4) | 111(51.9) |
| V2 | 62.6 ± 42.6 | | |
| V1 - V2 | 33.2 ± 26.7 | | |
| V2/V1 | 2.7 ± 2.0 | | |
| Shape † No. (%) | | | |
| Smooth, regular shape | 9(33.3) | 144(77.0) | 153(71.5) |
| Irregular shape | 18(66.7) | 43(23.0) | 61(28.5) |
| IVH, No. (%)* | 19(70.4) | 94(50.3) | 113(52.8) |

* : p<0.05 † : p<0.01 Abbreviation : V1 = Volume in initial CT, ml V2 = Volume in 2nd CT, ml ; IVH = intraventricular hemorrhage

4. 혈액 검사 소견

가 (8.9 ± 0.7g/dL)
 가 (7.0 ± 0.9g/dL) (p<0.05),
 가
 (p<0.05), (6.5g/dL, 9)14),
 3.5g/dL, 135mEq/L)
 ,
 . PT(Prothrombin Time) aPTT(activated
 Partial Thromboplastin Time)가 가
 , (PT > 14sec, 6
 aPTT >29.5sec) 가
 (p<0.01)(Table 4).

5. 뇌전산화 단층 촬영 소견

가 29.4 ± 24.1ml,
 가 35.2 ± 35.9ml
 가 2 CT scan 가 33.2 ± 26.7ml
 , CT 2 CT 2.7 ± 2.0
 . 가 66.7%,
 가 23.0%
 가 가 (p<0.01),
 70.4%, 50.3%
 가 가
 (p<0.05)(Table 5).

6. 예 후

가 GR, MD가 11.1%, 14.8% ,
 48.1% , 가 GR
 24.1%, MD 31.6%, 24.1% , 가

Table 6. Outcome in patients with and without hematoma enlargement

| Outcome* No. (%) | Enlarged (n=27) | Nonenlarged (n=187) | Total (n=214) |
|---------------------|-----------------|---------------------|---------------|
| Good recovery | 3(11.1) | 45(24.1) | 48(22.4) |
| Moderate disability | 4(14.8) | 59(31.6) | 63(29.4) |
| Severe disability | 3(11.1) | 38(20.3) | 41(19.2) |
| Vegetative state | 4(14.8) | | 4(1.9) |
| Death | 13(48.1) | 45(24.1) | 58(27.1) |

* : p<0.01

가

(p<0.01)(Table 6).

고 찰

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 214 27 (12.6%) 가
 , 가 88.9%가 6
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 Chen 6) Kelly 13)
 , Bae 1) 60%
 가
 48.1%, 가 29.6% ,
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