

A Clinical Study on the Seizure and Spontaneous Lobar Intracerebral Hemorrhage

**Sung-dong Yu, M.D., Eun-Hee Sohn, M.D., Tae-Woo Kim, M.D.,
Do-Hyoung Kwon, M.D., Ki-Young Jung, M.D., Jae-Moon Kim, M.D.**

Department of Neurology, College of Medicine, Chungnam National University

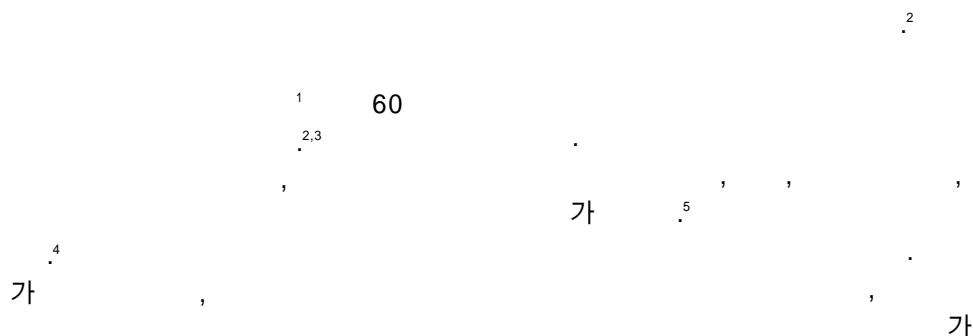
Background and Objective : Epileptic seizures are frequent complication of lobar hemorrhage. We investigated the factors affecting development of epilepsy following spontaneous lobar ICH.

Methods : From January 1986 to July 1999, 114 patients were admitted to Chungnam National University Hospital with spontaneous lobar ICH. We analyzed 75 patients. Excluded were no follow-up(8 patients) and patients died within few days(31 patients). All the patient was followed up at least two years aside from two patients who underwent epileptic seizure and died five and eight months later each. Medical history was obtained through medical record and by telephone interview. Statistical analyses were performed using Chi-square test, Student's t - test, Fisher's exact test.

Results : Seizure occurred in 19 patients. As three patients had previous history of seizures, 16 patients(22.2%) showed first onset early- and late- seizures. Early seizure occurred in 14 patients(19.4%). Three out of 14 were heavy alcoholics. Five patients developed late recurrent seizure 61 days to 800 days after the early seizure. Late seizure with no acute seizure occurred in two patients. The types of seizure were diverse as generalized tonic clonic seizure(10), partial seizure with secondary generalization(5), and complex partial seizure(1). The common risk factors for lobar ICH were hypertension(HT), arteriovenous malformation(AVM), and excessive use of alcohol. We could not find any causes in 23 patients. Although size of hematoma, age of onset, sex, incidence of HT or AVM were not different between patients with seizure and without seizure, the history of excessive alcohol drinking was more frequent in patients with seizure. Five patients with late recurrent seizure had ICH involving temporal area.

Conclusions : This study suggests that the risk of seizure in patients with lobar ICH was increase in chronic alcoholics and patient with late recurrent seizure had ICH frequently involving temporal area.

Key Words : Epilepsy, Seizure, Spontaneous Intracerebral Hemorrhage



Address for correspondence

Jae-Moon Kim, M.D.

Department of Neurology, Chungnam National University Hospital,

640 Daesa-dong, Jung-gu, Daejeon, 301-721, Korea

Tel : +82-42-220-7807 Fax : +82-42-252-8654

E-mail : jmoonkim@hanbat.chungnam.ac.kr

1986 1 1999 7

Table 1. Clinical features of patients

Age	Sex	Chief complain	Cause	ICH site	ICH volume	History of Sz	Interval ICH-Sz	Interval Sz-Sz	Sz type
41	M	Seizure	Unknown	Frontal	12	Y	0		GTC
46	M	Seizure	AVM	P-O	16	Y	0		GTC
49	F	Seizure	Unknown	Frontal	6	Y	0		GTC
73	F	Mental change	HT	T-P	15	N	1		GTC
82	F	Mental change	HT	Temporal	54	N	1		P-G
59	M	Mental change	HT	T-P	15	N	3		CPS
40	M	Headache	Unknown	P-O	16	N	1		P-G
21	M	Mental change	AVM	Frontal	45	N	1		GTC
67	M	Seizure	Unknown	Parietal	30	N	0		P-G
53	M	Headache	HT	Temporal	18	N	1	61	GTC
46	M	Headache	Other	Temporal	NA	N	1	800	GTC
37	F	Seizure	HT	T-P	30	N	0	722	P-G
33	M	Headache	Unknown	T-P	24	N	5	186	GTC
41	M	Seizure	HT	T-P	6	N	0	310	GTC
55	M	Seizure	HT, Alc	T-P	6	N	0		GTC
29	M	Seizure	Alc	Frontal	12	N	0		GTC
68	M	Seizure	Alc	Frontal	3.6	N	0		P-G
17	M	Mental change	AVM	T-P	24	N	180		GTC
68	F	Motor weakness	Others	Frontal	15	N	2000		GTC

AVM: arteriovenous malformation, Alc: excessive use of alcohol, P-G: partial seizure with secondary generaion, GTC:generalized tonic clonic seizure, CPS:complex partial siezure, NA: not available

114 가
 10 8 2 31
 가
 75
 5 8 2 10
 2 2 75 32 Student's t-test, Chi-square test, Fisher's exact test
 43
 , Moyamoya 72
 6,10 17 82 55.4
 (mean 55.4±16.9) 가 40 가 32
 가 34 가 3
 1 121 g (2 1.7) , Moyamoya 1 ,
 1 300 g (2 4.2) 가 23 .72 16
 , Moyamoya (22.2%) 3
 .3 72 1
 , 2 가 72 16
 가 .7 1 14 2
 , 1 2
 8,9,19 5

13 5.8% , -
 5 , 1 11.1% ,
 가 6 가 7 40.0%
 가 3 , 가 1 , - 가 7 46.2% , 22.2%
 , - 가 2 .
 1 .
 가
 .(p = 0.07)
 가 가 3 16
 14 5
 50.9 .(Mean : 0 .78 day) 3 가
 18.62 cc, 16.22 cc 3
 2 11 6 5
 7 , 16 , 61 - 800 (Mean : 415 days)
 7 , 6 , -
 9 , - 8 ,
 - 1 , - - 가 6 3
 - - 1 .
 6 ,
 1 , 2 , -
 6 , - 1
 , - , , .
 가
 15%~39%
 22.2%
 가
 4,9-14
 International League
 Against Epilepsy 7
 , ,
 N - methyl-
 D - aspartate ,

Table 2. Risk factor and seizure occurrence

Risk factors	Sz(-)	Sz(+)	p-value
Sex F	26	5	0.274
M	30	11	
AVM (-)	50	13	1.000
(+)	6	3	
Alc (-)	56	13	0.009
(+)	0	3	
HT (-)	25	10	0.259
(+)	31	6	
Age(years)	57.64 ± 16.86	49.31 ± 19.36	0.096
Volume(cc)	18.97 ± 30.90	15.22 ± 17.10	0.639

AVM: arteriovenous malformation,
 Alc: excessive use of alcohol, HT: hypertension,
 Sz: seizure

Table 3. Hemorrhage site and seizure

Sz	Frontal	Parietal	Temporal	Occipital	T-P	P-O	F-T	F-T-P	T-P-O	Total
Sz(-)	7	16	7	6	9	8	1	1	1	56
Sz(+)	6	1	2		6	1				16
Total	13	17	9	6	15	9	1	1	1	72

T-P: temporo-parietal, P-O: parieto-occipital, F-T: fronto-temporal,
 F-T-P: fronto-temporo-parietal, T-P-O: temporo-parieto-occipital, Sz: seizure

가
 가 46.1%(13 6)
 37.5%(16 6)
 16 14 (7.5%)
 2
 가 1997 가
 가
 가 19.4 %(72 14)
 가 23 34
 Labovitz 14 (14.3%)
 60 15.9%(69 11)
 가 Brun 15 So 16
 가 14
 gradient echo MR image
 가 3 11
 9 5 (45.5%)
 3 (33.3%)
 37 6 (6 가
 3),
 (5 5)
 가
 가
 가
 Labovitz
 가 가 가
 가
 가 가 가
 가 가 가
 가 가 가

REFERENCES

1. Roberts R, Shorvon S, Cox T, et al. Clinically unsuspected cerebral infarction reveal by CT scanning in late onset epilepsy. *Epilepsia* 1988;29:190-4
2. Ludorf K, Jensen LK, Piesener AM. Etiology of seizure in the elderly. *Epilepsia* 1986;27:458 -463
3. Roberts M, Godfrey J, Caird F. Epileptic seizures in the

- elderly. Aetiology and type of seizure, *Age ageing* 1982;11:24-8
4. Faught E, Peters D, Bartolucci A, et al. Seizure after primary intracerebral hemorrhage. *Neurology* 1989;39:1089-1093
 5. Broderick JP, Brodt TG, Duldner JE, et al. Intracerebral hemorrhage. *Stroke* 1997;15: 974-979
 6. Qureshi A, Tuhim S, Broderick J, et al. Medical progress spontaneous intracerebral hemorrhage. *New Engl J Med* 2001;344:1450-1460.
 7. Commission on Classification and Terminology of the International League Against Epilepsy. Proposal for revised clinical and electroencephalographic classification of epileptic seizure. *Epilepsia* 1981;22: 489-501
 8. Gupta SR, Naheedy MH, Elias D, et al. Postinfarction seizure. A clinical study. *Stroke* 1988;19:1477-1481
 9. Sung CY, Chu NS. Epileptic seizures in intracerebral haemorrhage. *J Neurol Neurosurg Psychiatry* 1989;52:1273-1276
 10. Broderick JP, Brodt TG, Duldner JE, et al. Volume of intracerebral hemorrhage. a powerful and easy to-use predictor of 30-day mortality. *Stroke* 1993;24:987-993
 11. Shinton RA, Gill JS, Melnick SC, et al. The frequency, characteristics and prognosis of epileptic seizure at the onset of stroke. *J Neurol Neurosurg Psychiatry* 1988;51:273-276
 12. Lo YK, Yin CH, Hu HH, et al. Frequency and characteristics of early seizure in Chinese acute stroke. *Acta Neurol Scand* 1994;90:83-95
 13. Sacco R. Lobar intracerebral hemorrhage. *New Engl J Med* 2000; 342:276-279
 14. LaBovitz DL, Allen HW, Sacco RL. Prevalence and predictors of early seizure and status epilepticus after first stroke. *Neurology* 2001;57:200-206
 15. Brun J, Dennis M, Bamford J, et al. Epileptic seizure after a first stroke: the Oxfordshire community stroke project. *BMJ* 1997; 315:1582-1587
 16. So E, Annegers JF, Hauser WA, et al. Population-based study of seizure disorder after cerebral infarction. *Neurology* 1996;46: 350-355
 17. Broderick JP, Brodt TG, Duldner JE, et al. Intracerebral hemorrhage. *Stroke* 1990; 33; 646-655
 18. Leon A, Morteza S, Debra E. Seizure caused by nontraumatic parenchymal brain hemorrhage. *Neurology* 1991;41:1197-1199
 19. Seppo J, Matti H, Heikki P. Risk factors for spontaneous intracerebral hemorrhage. *Stroke* 1995;25:1558-1564