

# 양극성장애 환자의 뇌자기공명영상에서 보이는 피질하 고신호광도의 임상적 상관변수에 관한 예비적 연구\*

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## Clinical Correlates of Subcortical Hyperintensities on Magnetic Resonance Imaging in Patients with Bipolar Disorder : Preliminary Study\*

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### ABSTRACT

**Objective :** Accumulating evidence suggests a greater number of subcortical hyperintensities in the brain of patients with bipolar disorder. We studied the Clinical correlates of subcortical hyperintensities on magnetic resonance imaging in patients with Bipolar Disorder :

**Methods :** Magnetic resonance images of the brain were obtained for 32 patients with bipolar disorder. The presence and location of hyperintensities were assessed. We compared clinical variables between patients with subcortical hyperintensities and patients without them.

**Results :** Seven patients(21.8%) had subcortical hyperintensities, but among 8 patients who were 40 years or older, 5 patients(62%) had them. Age and age at onset of patients with subcortical hyperintensities were significantly older than patients without them. Psychotic symptoms were more frequent in patients with hyperintensities. Patients without hyperintensities had more familial loadings.

**Conclusion :** Given the limitations of the study, our results should be seen as preliminary. This study, however, provides preliminary evidence supporting the notion that the onset, clinical feature and course of some bipolar disorders of late onset may be determined by underlying subcortical abnormalities, with such abnormalities being the consequence of factors related to aging or neurodegeneration(such as impaired cerebral circulation) rather than genetic factors which predispose to early-onset bipolar disorders.

**KEY WORDS :** Magnetic resonance imaging · Bipolar disorder · Hyperintensity.

서 론

1980 (Magnetic Re - sonance Imaging ; MRI) (Computed Tomography ; CT) (sagittal plane), (coronal plane), (axial plane) , 가 (high - resolution) MRI 가 (sulci) (gyri) (Pearson Marsh 1993). 가 , T<sub>1</sub> (T<sub>1</sub>-weighted image)

\* 1994 (050) 가 ( 1992). 가 3 가

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† : , 110 - 744 28 , T<sub>1</sub> (T<sub>1</sub>-weighted image) (02) 760 - 2457, (02) 744 - 7241



256 × 210, 5mm thick) 10, Siemens 1.0T (TR/TE 5000/90 - 119, Matrix size 190 × 256, 5mm thick) 8, Siemens 1.5T (TR/TE 3700 - 6000/90 - 96, Matrix size 192 × 256, 5mm thick) 6, GE 1.5T (TR/TE 3700, Matrix size 256 × 224, 5mm thick) 1.

(axial) T<sub>2</sub> Coffey (1990) 가 가  
2 가 가  
Coffey (periventricular white matter), (deep white matter), (subcortical gray matter nuclei)

1) Periventricular hyperintensity, grade 0 = absent, 1 = caps or pencil - thin lining, 2 = smooth halo, 3 = irregular periventricular hyperintensity extending into the deep white matter 2) Deep white matter hyperintensity, grade 0 = absent, 1 = punctate foci, 2 = beginning confluence of foci, 3 = large confluent areas 3) Changes in the subcortical gray matter nuclei (basal ganglia, thalamus), absent Vs. present, & single Vs. multiple, left - right asymmetries).

가  
3) 통계처리 SAS, Wi-  
Icoxon ranked sum test, 2-tailed Fisher's exact test

Spearman (correlation analysis),  
Kruskal - Wallis test

결 과

1. T<sub>2</sub> 강조-고신호광도(T<sub>2</sub>-weighted hyperintensities)  
Fig. 1 T<sub>2</sub>  
32 T<sub>2</sub> - 8 40  
7 (21.8%) 5 62%  
(periventricular white matter)  
3 (deep white matter)  
6 (subcortical gray matter nuclei)  
5 1  
, 3 1, 2 2, 1 3  
가 5  
, 1 multiple

(Kruskal - Wallis test, p = 0.46).

2. 인구학적 변수 및 위험인자  
Table 1

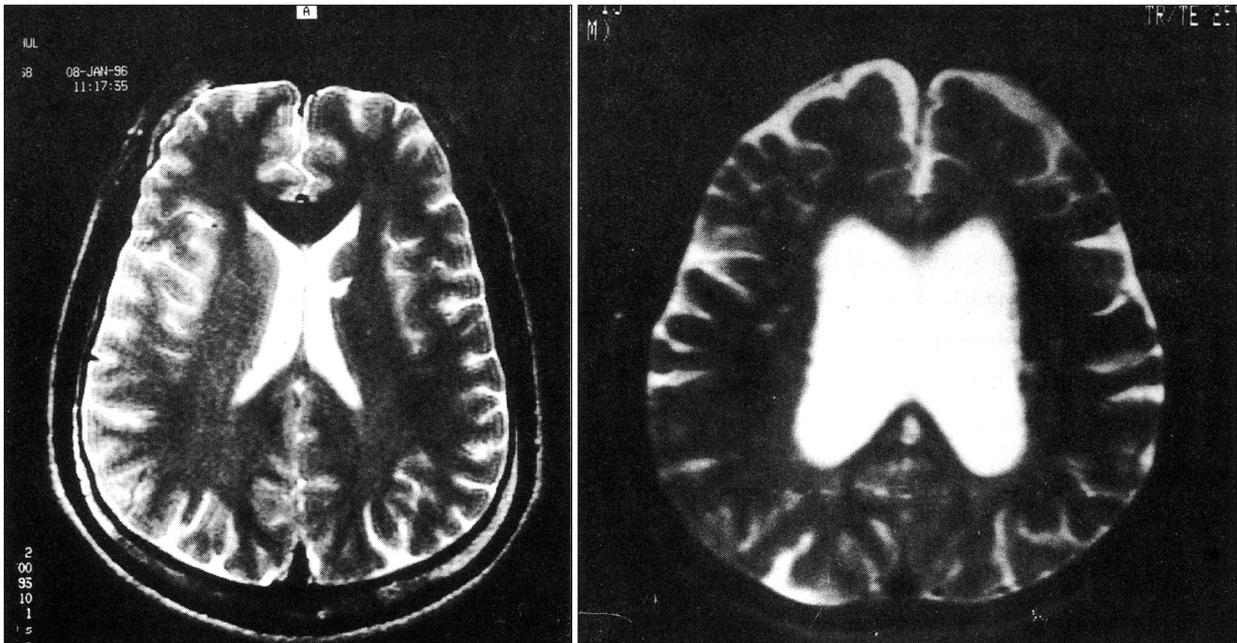


Fig. 1. T2-weighted MR images demonstrates left single periventricular hyperintensity(left) and multiple periventricular and deep white matter hyperintensities(right).

**Table 1.** Demographic characteristics and risk factors in patients with hyperintensities and without hyperintensities

	Total (n=32)	Patients with hyperintensities (n=7)	Patients without hyperintensities (n=25)
Age, years, mean ± SD	32.5 ± 16.2	50.5 ± 21.2	27.4 ± 10.3 <sup>a</sup>
Height, cm, mean ± SD	165.1 ± 6.9	160.7 ± 9.7	166.4 ± 5.6
Educ, score, mean ± SD	2.8 ± 1.2	2.5 ± 1.3	2.8 ± 1.2
History of			
Hypertension	1 ( 3.1%)	0	1
Smoking	12(37.5%)	4	8
Heavy Drinking	6(18.7%)	1	5
DM	0	0	0
Coronary HD	0	0	0
Cerebrovascular D	0	0	0
Hyperlipidemia, n(%)	0	0	0

a : Wilcoxon ranked sum test, p<0.01

**Table 2.** Clinical variables in patients with hyperintensities and without hyperintensities

	Total (n=32)	Patients with hyperintensities (n=7)	Patients without hyperintensities (n=25)
Age at onset, years, mean ± SD	25.3 ± 11.8	37.4 ± 16.5	21.9 ± 7.5 <sup>a</sup>
Psychotic sx, n(%)	22(68.7%)	7(100%)	15( 60%) <sup>b</sup>
Familial loading, n(%)	14(43.7%)	1(14.3%)	13(52.0%) <sup>c</sup>
Duration of illness, years, mean ± SD	10.7 ± 7.2	13.1 ± 15.4	5.5 ± 8.8
No of previous episode	2.1 ± 2.3	3.1 ± 2.9	1.8 ± 2.1
First episode, mania(%)	20(62.5%)		
Duration of current episode, days, mean ± SD	73.7 ± 31.8	67.8 ± 20.5	75.4 ± 34.4
Hospitalization days of current episode, mean ± SD	43.9 ± 29.5	35.4 ± 15.3	46.3 ± 32.3
GOS <sup>d</sup> , score, mean ± SD	7.3 ± 1.1	7.2 ± 0.9	7.3 ± 1.2

a : Wilcoxon ranked sum test, p<0.01

b : 2-tailed Fisher's exact test, p=0.06

c : 2-tailed Fisher's exact test, p=0.1

d : GOS : Global Outcome Scale

50.5 ± 21.2 ,  
27.4 ± 10.3  
(Wilcoxon ranked sum test, p = 0.007).

(r=0.51, p=0.0026).

165.1 ± 6.9 ,

(160.7 ± 9.7 versus 166.4 ± 5.6, p=0.16).

1 , 2 , 3 , 4 ,

5 , 2.8 ± 1.2

(2.5 ± 1.3

versus 2.8 ± 1.2, p=0.65).

가 가 1 (3.1%), 가 가 ,

12 (37.5%), 가 가 6 (18.7%)

### 3. 임상적특성

Table 2

versus 21.9 ± 7.5, p=0.01). (37.4 ± 16.5  
22 (68.7%)

100%가

60%

, T<sub>2</sub>

가 (p=0.06).

가

43.7% , T<sub>2</sub> -

52.0%

가

14.3%

가

(p=0.01).

가

가

### 고 찰

32

7

21.8%

66%

AI -

tshuler (1995)

59%

Alyward (1994)

Hickie (1995)

60%

가

32.5

63.4

41.6 , 39.3 ,

40

62%가

T<sub>2</sub> -

가

가

가



1) 32 (21.8%), 8, 40, 5 (62%)

2) (p<0.01),

(r=0.51, p<0.01).

3) 가 (p=0.06), 가 (p=0.01).

가, 가

중심 단어 :

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