

## 후기발병 정신분열병 환자에서의 뇌자기공명촬영 소견에 관한 연구 : 조기발병 정신분열병, 진행성 정신분열병, 노인성 치매 및 대조군과의 비교\*

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### Brain MRI Findings for the Patient with the Late Onset Schizophrenia : Comparison among Patients with the Early Onset Schizophrenia, Progressive Schizophrenia, Senile Dementia and Controls\*

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#### ABSTRACT

With increasing tendency of incidence and interest for the late onset schizophrenia, concerns about whether this disorder is etiologically or phenomenologically distinctive entity or not have increased also. To clarify the disease entity of the late onset schizophrenia and the role of structural brain changes in its etiology, authors tried to prove following hypothesis : Are there any evidences of structural brain changes in the late-onset schizophrenia? ; If present, are they not different from those of the early-onset schizophrenia or progressive schizophrenia? ; And are they not different from those of senile dementia? Subjects were 6 patients with the late-onset schizophrenia, 6 patients with the early-onset schizophrenia, 6 patients with progressive schizophrenia, 6 patients with Alzheimer's dementia, and 6 controls. We measured regions of interest of the magnetic resonance images by computer assisted planimetry using the AutoCad and digitizer. Our study results may suggest that the third ventricular enlargement and a reversal of normal difference between left and right temporal lobe and left-right difference in posterior lateral ventricle are common brain pathology for all types of schizophrenia including the late onset schizophrenia. And also suggest that brain structural changes of the late onset schizophrenia are related with neurodevelopmental abnormality rather than degenerative change.

**KEY WORDS** : Late onset schizophrenia · Early onset schizophrenia · Progressive schizophrenia · Senile dementia · Brain MRI.

#### 서 론

(Volavka 1985),  
가

Feighner (1972) DSM - III(American Psychiatric Association 1980) 40 , 45  
, DSM - III - R(American Psychiatric Association 1987)

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39  
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† : , 100 - 032 2가 85  
) (02) 270 - 0069, ) (02) 270 - 0344

45

. Kraepelin(1919)  
(dementia praecox)

1987 ; Rabins 1987 ; Weinberger 1979a, 1979b)

(paraphrenia)

가

(Jermigan 1991),  
(degenerative disease)

가,  
(neurodevelopmental anomaly)

(Bleuler 1943 ; Castle Murray 1993 ;  
Kay 1964 ; Sjogren 1964).

Harris Jeste(1988)가

(late onset schizophrenia) 13%

가

가

가

가

1991). 가 ( 가

. Cr-

aig Bregman(1988), Holden(1987), Lesser (1989), Mi-  
ller (1991) 가 가 가

가

가  
가

(disease entity)

가

가

. 1970

## 연구 대상 및 연구 방법

, 1980

가 가

### 1. 연구 대상

1991

4 1994 4

DSM - III - R(American Psychiatric Association 1987)

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2 ), 6 ( 2 , 4 )

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가(Jemigan 1991),

(Andreasen 1986),

가(Losonczy

1986), (Suddath 1989),

(Young 1991),

(Nasrallah 1986 ; Ure-

matsu Kaiya 1988)

가(Swayze 1992)

(Sh-

elton Weinberger 1986)

McKhann (1984)

가 (pr-

obable)

가 (Andreason 1982 ; Johnstone

1976 ; Krull 1991 ; Naguib Levy 1987 ; Pearlson

**Table 1.** Demographic data and prior treatment variables

	EOS(6)	PS(6)	LOS(6)	SD(6)	CON(6)	p
Age(yrs)	20.3 ± 3.4	36.9 ± 3.1	55.3 ± 7.9	64.0 ± 4.9	60.2 ± 5.0	0.0000
Edu(yrs)	12.2 ± 2.1	11.5 ± 3.6	8.8 ± 2.7	8.7 ± 4.3	8.2 ± 2.2	0.0000
Age of onset(yrs)	17.3 ± 3.1	33.0 ± 8.0	52.3 ± 7.6	63.3 ± 5.2		0.0000
Duration of illness(months)	37.0 ± 32.7	52.2 ± 80.9	37.8 ± 29.0	8.3 ± 9.3		0.0000
Duration of med. (months)	18.7 ± 31.6	34.0 ± 84.3	3.8 ± 6.0	3.7 ± 5.7		0.0000
Sex(%) male	4(66.7)	2(33.3)	2(33.3)	4(66.7)	1(16.7)	0.2777*
Female	2(33.3)	4(66.7)	4(66.7)	2(33.3)	5(83.3)	

\*chi-square, others : ANOVA  
LOS : late onset schizophrenia

EOS : early onset schizophrenia  
SD : senile dementia

PS : progressive schizophrenia  
CON : control

20.3 ± 3.4  
36.9 ± 3.1  
55.3 ± 7.9  
64.0 ± 4.9  
60.2 ± 5.0  
17.3 ± 3.1  
33.0 ± 8.0  
52.3 ± 7.6  
63.3 ± 5.2  
37.0 ± 32.7  
52.2 ± 80.9  
37.8 ± 29.0  
8.3 ± 9.3  
(Table 1).

2. 연구 방법

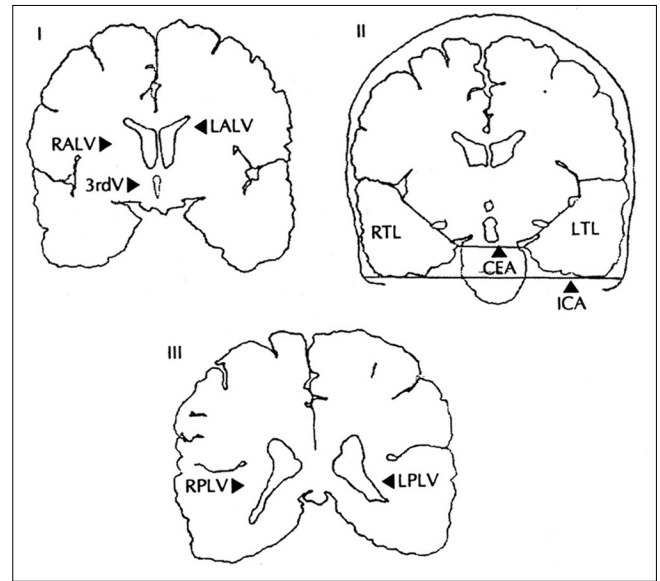
1) 자기공명 촬영 및 구조물 측정

Tosiba 0.5 Telsa (To - siba MRT 50T MR System ; Aquision Matrix 256 2, Field of View 25cm, Number of Average 4)

11 (slice thickness) 7mm,  
(slice gap) 2mm  
(spin echo) (time of repetition) 400msec,  
(time of echo) 15msec T<sub>1</sub> 가 (T<sub>1</sub> wei -  
ghted image) 가  
7, 8, 10 . 7 3  
(anterior lateral ventricle) , 8  
, , 10  
(posterior lateral ventricle)

가 가

가 가



**Fig. 1.** Illustrations of measurement areas in selected magnetic resonance imaging sections I. section 7 II. section 8 III. section 10 RTL-right temporal lobe LTL-left temporal lobe 3rdV- 3rd ventricle ICA-intracranial area CEA-cerebral area RPLV-right posterior lateral ventricle LPLV-left posterior lateral ventricle RALV-right anterior lateral ventricle LALV-left anterior lateral ventricle.

가 가

(Fig. 1).

(1994) AutoCad (Rel -  
ease 12 386 DOS Extender) Digitizer(WACOM SD 422 -  
A)  
2 가  
0.90 (cr -

(VBR : ventricle to brain ratio)

2) 통계 처리

SPSS/PC + V5.0

(Analysis of Variance : ANOVA) chi - square test

(Analysis of Covaria -

nance : ANCOVA)

(Analysis of Variance : ANOVA)

연구 결과

1. 조기발병 정신분열병군, 진행성 정신분열병군, 후기발병 정신분열병군, 노인성 치매군, 대조군들의 뇌구조물에 대한 자기공명 측정치의 비교

3 (p= 0.000), (p=0.010), (p=0.000, p=0.001, p=0.005) (p=0.002, p=0.000)

(Table 2).

2. 세 정신분열병군에 있어서 뇌구조물에 대한 자기공명 측정치의 비교

3 (Table 3).

3. 후기발병 정신분열병군, 노인성 치매군, 대조군에 있어서 뇌구조물에 대한 자기공명 측정치의 비교

가 3 0.72 ± 0.25, 0.36 ± 0.09, 0.18 ± 0.12 (p=0.0002). (p=0.0046), (p=0.0017)

Table 3. Comparison of measurable\* values among schizophrenia groups

	EOS	PS	LOS	p**
pRTL	11.15(0.68)	10.49(0.94)	10.60(1.26)	0.882
pLTL	10.99(0.80)	10.10(0.98)	9.87(1.01)	0.744
p3rdV	0.20(0.09)	0.34(0.09)	0.36(0.09)	0.313
pCEA	79.46(3.32)	74.09(1.71)	74.40(4.00)	0.202
VBRp	2.39(1.56)	2.41(1.32)	3.26(1.53)	0.699
VBRa	0.03(0.01)	0.04(0.20)	0.06(0.28)	0.908
pRPLV	1.24(0.73)	1.21(0.62)	1.66(0.81)	0.357
pLPLV	1.03(0.69)	1.21(0.72)	1.60(0.72)	0.970
pRALV	0.57(0.15)	0.75(0.34)	0.94(0.40)	0.989
pLALV	0.70(0.20)	0.81(0.45)	1.16(0.44)	0.801

\*Values are mean(S.D.) : % of ROI / Intracranial area

\*\*ANOVA : age as a covariate

EOS : early onset schizophrenia

PS : progressive schizophrenia

LOS : late onset schizophrenia

RTL : right temporal lobe

LTL : left temporal lobe

3rdV : 3rd ventricle

CEA : cerebral area

VBRp : posterior ventricular-brain ratio

VBRa : anterior ventricular-brain ratio

RPLV : right posterior lateral ventricle

LPLV : left posterior lateral ventricle

RALV : right posterior lateral ventricle

LALV : left anterior

Table 4. Demographic data and measurable\* values in LOS, SD and control group

	EOS(6)	PS(6)	LOS(6)	SD(6)	CON(6)	p**
pRTL	11.15(0.68)	10.49(0.94)	10.60(1.26)	9.51(1.15)	9.82(1.02)	0.641
pLTL	10.99(0.80)	10.10(0.98)	9.87(1.01)	9.27(1.31)	10.06(1.12)	0.652
p3rdV	0.20(0.09)	0.34(0.09)	0.36(0.09)	0.72(0.25)	0.18(0.12)	0.000
pCEA	79.46(3.32)	74.09(1.71)	74.40(4.00)	68.59(2.60)	75.16(2.64)	0.010
VBRp	2.39(1.56)	2.41(1.32)	3.26(1.53)	8.16(3.35)	3.18(0.96)	0.002
VBRa	0.03(0.01)	0.04(0.20)	0.06(0.28)	0.13(0.04)	0.05(0.01)	0.000
pRPLV	1.24(0.73)	1.21(0.62)	1.66(0.81)	3.82(1.37)	1.57(0.68)	0.005
pLPLV	1.03(0.69)	1.21(0.72)	1.60(0.72)	4.34(1.91)	1.61(0.37)	0.001
pRALV	0.57(0.15)	0.75(0.34)	0.94(0.40)	2.34(0.73)	0.84(0.19)	0.000
pLALV	0.70(0.20)	0.81(0.45)	1.16(0.44)	2.74(0.98)	0.89(0.19)	0.000

\*Values are mean(S.D.) : % of ROI/Intracranial area

EOS : early onset schizophrenia

SD : senile dementia

LTL : left temporal lobe

VBRp : posterior ventricular-brain ratio

LPLV : left posterior lateral ventricle

\*\*ANCOVA : age as a covariate

PS : progressive schizophrenia

CON : control

3rdV : 3rd ventricle

VBRa : anterior ventricular-brain ratio

RALV : right posterior lateral ventricle

LOS : late onset schizophrenia

RTL : right temporal lobe

CEA : cerebral area

RPLV : right posterior lateral ventricle

LALV : left anterior lateral ventricle

**Table 4.** Demographic data and measurable\* values in LOS, SD and control group

	LOS(1)	SD(2)	Control(3)	p**	Scheffe's
Age(yrs)	53.33(7.92)	64.00(4.86)	60.17(5.04)	0.0779	
Education(yrs)	8.83(2.71)	8.67(4.32)	8.17(2.23)	0.9328	
pRTL	10.60(1.26)	9.51(1.15)	9.82(1.02)	0.0709	
pLTL	9.87(1.01)	9.27(1.31)	10.06(1.12)	0.4818	
p3rdV	0.36(0.09)	0.72(0.25)	0.18(0.12)	0.0002	2>1,3 ; 1>3
pCEA	74.37(4.00)	68.58(2.56)	75.16(2.64)	0.0046	2<1,3
VBRp	3.26(1.53)	8.16(3.35)	3.18(0.96)	0.0017	2>1,3
VBRa	0.06(0.28)	0.13(0.04)	0.05(0.01)	0.001	
pRPLV	1.66(0.81)	3.82(1.37)	1.57(0.68)	0.0000	2>1,3
pLPLV	1.60(0.72)	4.34(1.91)	1.61(0.37)	0.0015	2>1,3
pRALV	0.94(0.40)	2.34(0.73)	0.84(0.19)	0.001	
pLALV	1.16(0.44)	2.74(0.96)	0.89(0.19)	0.001	

\*Values are mean(S.D.) : % of ROI/Intracranial area  
 LOS : late onset schizophrenia SD : senile dementia  
 LTL : left temporal lobe  
 VBRp : posterior ventricular-brain ratio  
 LPLV : left posterior lateral ventricle

\*\*ANOVA  
 CON : control  
 3rdV : 3rd ventricle  
 VBRa : anterior ventricular-brain ratio  
 RALV : right anterior lateral ventricle  
 RTL : right temporal lobe  
 CEA : cerebral area  
 RPLV : right posterior lateral ventricle  
 LALV : left anterior lateral ventricle

**Table 5.** Differences between left and right values of temporal and lateral ventricles in each groups

	PT	PVp	Pva
EOS	0.38(0.78)	0.34(0.29)	-0.13(0.12)
PS	0.84(1.19)	0.00(0.33)	-0.06(0.20)
LOS	0.73(0.38)	0.06(0.37)	-0.22(0.08)
SD	0.24(1.30)	-0.53(0.51)	-0.39(0.41)
CON	-0.04(0.62)	-0.23(0.32)	-0.05(0.13)

EOS : early onset schizophrenia  
 PS : progressive schizophrenia  
 LOS : late onset schizophrenia  
 SD : senile dementia  
 CON : control  
 PT : Value of right temporal lobe - Value of left temporal lobe  
 PVp : Value of right posterior lateral ventricle - Value of left posterior lateral ventricle  
 Pva : Value of right anterior lateral ventricle - Value of left anterior lateral ventricle

( p=0.0000, p=0.0015)

(Table 4).

4. 각 군에서 좌우 측두엽과 전후 좌우 측뇌실 측정치의 차이 비교

가

(Table 5).

고찰

가

가

가

가

(Jeste 1988 ; Pearson 1987).

(Harris Jeste 1988)

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가

(Jeste 1995),

가 (Castle Murray

1993 ; Harris Jeste 1988),

가 (Ro-

th 1987)

Jeste (1988)

(sensory impai-

ment)

(female gender)

가

가

가

D<sub>2</sub> 가

(Seeman 1981).

Wong

(1984)

D<sub>2</sub> 가

가

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D<sub>2</sub> 가

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$D_2$  가 , DeLisi (1991)  
 3 , (habenule)  
 ( 1992). Houston (1986)  
 3 homovanillic acid  
 -0.90 , 3 Johnstone (1989)  
 3 가  
 (Iacono 1988).  
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 (Daniel 1989 ; Luchin 1982 ; Lee  
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 Johnstone (1989)  
 (temporal horn) 42%,  
 26%가  
 20 (Witelson  
 Kigar 1992). Crow (1989)  
 가 (Bartley 1993)  
 가  
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 ( 1995). 가  
 가  
 (Friston 1992),  
 (Shenton 1992)가 가  
 Bogerts (1993) 가  
 Rossi (1990a, 1990b) (peripheral atrophy)  
 (central atrophy)  
 . Coffman  
 (1989) 가



가 . (p=0.0017) ( p=0.0000,  
가 가 p=0.0015) ,

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## 결 론

가

가

가

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(disease entity)

중심 단어 :

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4 ), 6 ( 4 , 2 ),

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6 (

4 , 2 ) 6 ( 1 , 5 )

1)

(p=0.000),

(p=0.010),

p=0.000, p=0.000, p=0.001, p=0.005)

(p=0.002, p=0.000)

2)

3)

(p=0.0002).

(p=0.0046),

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