정신분열병 환자에서 손톱 주름 총 시도(   )
(Nailfold Plexus Visibility)와 임상양상,
신경심리 기능과의 관계[*]

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Relationships between Nailfold Plexus Visibility, and Clinical Variables and Neuropsychological Functions in Schizophrenic Patients[*]

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ABSTRACT

Objectives   High nailfold plexus visibility can reflect central nervous system defects as an etiologic factor of schizophrenia indirectly. Previous studies suggest that this visibility is particularly related to the negative symptoms of schizophrenia and frontal lobe deficiency. In this study, we examined the relationships between nailfold plexus visibility, and various clinical variables and neuropsychological functions in schizo-phrenic patients.

Methods   Forty patients(21males, 19 females) satisfying the DSM-Ⅳ criteria for schizophrenia and thirty eight normal controls(20 males, 18 females) were measured for Plexus Visualization Score(PVS) by using the capillary microscopic examination. For the assessment of psychopathology, process-reactivity, premorbid adjustment, and neuropsychological functions, we used Positive and Negative Syndrome Scale(PANSS), Ullmann-Giovannoni Process-Reactive Questionnaire(PRQ), Phillips Premorbid Adjustment Scale(PAS), Korean Wechsler Adult Intelligence Scale(KWIS), Continuous Performance Test(CPT), Wisconsin Card Sort Test(WCST), and Word Fluency Test. We also collected data about clinical variables.

Results   PVS was correlated with PANSS positive symptom score and composite score negatively. There were no correlations between PVS and PRQ score, PAS score and neuropsychological variables respectively.

Conclusions   This study showed that nailfold plexus visibility was a characteristic feature in some schizo-phrenic patients, and that higher plexus visibility was associated with the negative symptoms of schizophrenia. There was no association between plexus visibility and neuropsychological functions.

KEY WORDS   Schizophrenia· Nailfold plexus visibility· Negative symptoms· Neuropsychological function.

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서　론

1948

(subpapillary plexus)　　　　1980　　　　　20

,　　　　　　　　　,　　　　　　　　　.

(proximal edge)　　　　　(nailfold)　　　　　　　17　　72%　　　　　　(

visible plexus)　　　　[1,8,10,12-15]

,

6%　　　　　　　　　　　　[1,16]

.　　　　　　　　　　　　　　　　　　(PVS)[17]　　　　　,　　　　　,

,

6%　　　　　　　　　.　　　　　　　　[1,8,12,16,18]

15

,　　　　　　　　,

[1-5]　　　　　　　　　　　　　　　　　　　　　　　　　　[19,20]

.　　　　　　　　　　　　　　　　　　　　　.

[6-8]　　,

,

.　　,　　,　　,　　　PVS　　　　　　　[12,21-23]

,　　　　　　　　　　　　PVS　　　　　.

,　　　　　　　　,

.　　　　　　　　　　,　　　　　,

,　　　　lithium　　　　　　　　　　　　[10,24,25] Poole　　[26]

[1,9]　　　　　　　　　　PVS　　　　　　　　　　,

.　　　　　　　　　　　,

Maricq[10]　　10　　　　　　　　　　　　　　　　　,

(plexus visualization score　PVS)　　　Crow[27]　　　　　　"　　"　　　　　　　,

,　　　　　　　　　　　　.

0.83~0.99　　　　　　　　　　　　[11]

40　　　　　　　　　　　　　　　　　　　(　)

,　　　　　　　　　PVS　　　　　　　　　　　.　,

PVS(high PVS)　　10　　　　　(　)

.　　　　　　　　　　　　　　　　　[13,28]　　PVS

(transpa-　　　　75%　　　　　　　　(trait)

rency)　　　　　　　　.　　,　　　PVS　　　　7%

(en-　　　　　　　　. Poole　[29]

drow loop)　　　　[8,12]　　　　　　　,　　,

(deficit symptoms),

.　　　　　　　　　　　　,

(ectodermal)　　　　　　　　　　　　　　　　,

.   .

연구 대상 및 방법

1. 연구 대상

.

. Al-
son [30]   PVS   Diagnostic and Statistical Manu-
                PVS   al of Mental Disorders Fourth Edition(DSM-   )[33]

,   ,

.   ,

                                                            40 (21 ,   19)

            .   Poole   .   ,

[15]   PVS   ,   4

,   ,   ,   ,   ,

            .   Poole [26]   ,

                PVS   .

                                                                ,   ,   .

(flat affect),   (poverty of speech)

        (catatonic behavior)   38

        .   Curtis [31]   (20 ,   18)   .

                                                ,   1   .

            ,   ,

    ,   ## 2. 연구방법

                                .   ### 1) 모세관 현미경 검사 방법

                                                                    Maricq[11]

Table 1. Demographic data for schizophrenic pa-
tients and normal controls

	Schizophrenic patients(N=40) mean± SD* (range)	Normal controls(N=38) mean± SD* (range)
Age(years)**	43.8± 10.3 (19- 61)	40.0± 8.6 (25- 61)
Sex male	21(52.5%)	20(52.6%)
female	19(47.5%)	18(47.4%)
Age of first symptom(years)	25.2± 7.3 (14- 45)	
Duration of illness(years)	18.6± 9.1 (1- 36)	
Number of hospitalization	5.3± 3.9 (1- 15)	
Education(years)	9.3± 3.7 (0- 16)	
PVS*** score	7.2± 5.3 (0- 18)	3.4± 4.20 (0- 13.5)

*SD standard deviation,
**t-test t=- 1.74, p=0.085
***PVS Plexus Visualization Score

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[32]
.

.

, PVS

,   ,

.

,

(Plexus Visibility Score　PVS)　　　　　　　　　　　　, 10　　　　　　　　PVS

.　(　)　　　　　　　　　　　　　　　　　　　　　　　　.　　　　　　　PVS

　　　　　　　　　　　　　　　　　　　B

(type B immersion oil)　　　　　　　　　　　　　　　.

12　　　　　　　　　(　　　　　OSM- 1)

.

45

2) 임상 변인 및 증상의 평가

,　　　　　,

.

Maricq　　　　　　　　(scale of

plexus visualization)　　　　　　　　.[11] PVS

Ullmann- Giovannoni Self- Report Process- Reactive　　　　　　　　　　　　　[34]　　　　　　　,

24　　　　　　　　　　　　　　　　　　,

.

(　)　　　　　　　　　(lateral

and proximal extent of visible plexus)

.　　　　10　　　　　　　　　　,

0 (　　　　)　　4 (

)　　　　0.5　　　　　　.

2　　3　　　　　　2.5　　　　.

0~ 40　　　.

(　　1).

Phillips　　　　　　　　(Abbreviated Phillips Premorbid Adjustment Scale)[35]　　　　　　　　　　　　,

,　　　,　　　　　　　　　　　2

5

.

Positive and Negative Syndrome Scale(PANSS)[36]

. PANSS　7　　　　　, 7

, 16

7　　　　　　　　　　　　　.

4=　　　　　,　　　　　　　　　　　　　,

3=　　　　　　　　,

.

2=　　　　　,　　　　　　　　,

1=　　　　　　　　,

(composite sc-ale score)[36]

.

0=　　　　　　　　　　.

3) 신경생리학적 검사

Maricq[24]

(1)　　　　　　　　　　　(Korean Wechsler Adult Intelligence Scale　KWIS)

[37]

40　　PVS　10　　　　　　　　　　　　　.
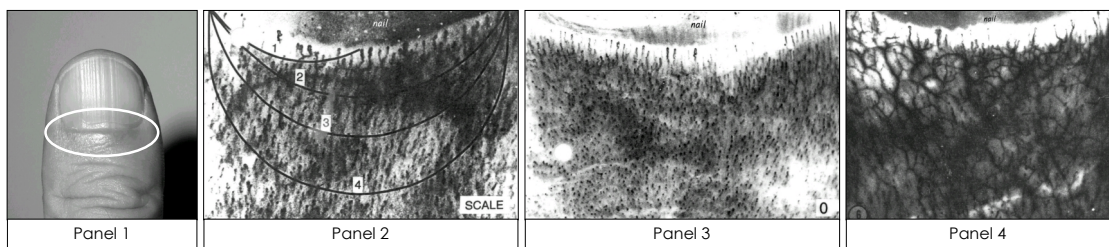
Fig. 1. Plexus Visibility Rating Scale. Panel 1　The usual field of nailfold observation is shown by the circle(The nail's proximal edge is positioned at the top of each photo in panel 2, 3 and 4　plexus is the netlike vascular structure near that edge). Scale Panel 2　plexus score is based on the lateral and longitudinal extent of visible plexus, in proportion to the width of the nailfold. Panels 3 to 4　examples of plexus scores, 0 and 4. 0　plexus trait absent(normal)　the small dots and hairpin shapes are typical capillary endloops　4　plexus trait very prominent. The sum of scores for all ten fingers yields the plexus visibility score(PVS).

(2)　　　　　　　　　　　　　(Continuous Performance
Test CPT)

CPT

Nuechterlein [38]　De-
graded Stimulus Continuous Performance Test (DS-
CPT) Program for IBM- Compatible Microcompu-
ters Version 8.12　　　　. CPT

(hit rate HR),
(false alarm FAR),
(sen-
sitivity A),　　　(response bias B)　　.

(3)　　　　　　　　　　(Wisconsin Card Sort
Test WCST)

128　　　　　　　　　　　　　,　,

(total correct),　　　(per-
centage perseverative errors),　　(cate-
gories completed)　　　　　　　.

(4)　　　　　　(Word Fluency Test)
[39]

(semantic word fluency),
(phonemic word fluency)
.

4) 통계 분석

KWIS

phonetic
(square root transformation), CPT　false
alarm　　log 10　　　　(log 10 tranformation)
　　　. PVS
,
PVS(10　　　PVS)　　　PVS (10
PVS)　　　　　　　Student's t-
test　　　　　two- tailed test　　　.
　　　　　　PVS　　　PVS
^{2} test　　　.
PVS, PANSS　　,　　　　,

(Pearson's correlation coefficient)　　　.
Statistical Package for the
Social Science(SPSS) version 9.0 for Windows
0.05　　　　.

결 과

1. 환자군과 대조군의 인구통계학적 자료
(21 , 19)
43.8± 10.3(18~60) ,
(20 , 18) 40.0± 8.6(
25~61) . 25.2± 7.3
(15~50) , 18.6± 9.1(1~
36) , 5.3± 3.9(1~ 15) ,
9.3± 3.7(0~16) (1).

2. 총 시도에서 환자군과 대조군 간 차이
(7.2± 5.3) (3.4± 4.2)
PVS (t= - 3.48, p=
0.001). PVS 10 PVS, 10
PVS ,
PVS 17(42.5%) , 4(10.5%)

$(^2= 10.12, p= 0.001) (2. 2).$

3. 환자군에서 총 시도와 각 임상변인 및 신경심리검사 점수와의 상관관계

(PVS)

.

PVS PANSS

$(r= - 0.318,$
$p= 0.023$ $r= - 0.411, p= 0.004),$ PVS

, , PANSS

. PVS Ullmann- Giovannoni Self-
Report Process- Reactive

.

$(r= - 0.290, p= 0.035),$, WCST,
.

Table 2. Comparisons of between schizophrenic pa-
tients and normal controls in Plexus Visuali-
zation Score(PVS)

	Patients (N=40) mean± SD*	Controls (N=38) mean± SD*	t**	p
PVS	7.2± 5.3	3.4± 4.2	- 3.48	0.001

	Patients(%)	Controls(%)	^{2}	
High PVS***	17(42.5)	4(10.5)	10.12	0.001
Normal PVS***	23(57.5)	34(89.5)		

*SD standard deviation
**t t value
***PVS Plexus Visualization Score(High PVS 10, Nor-
mal PVS < 10)
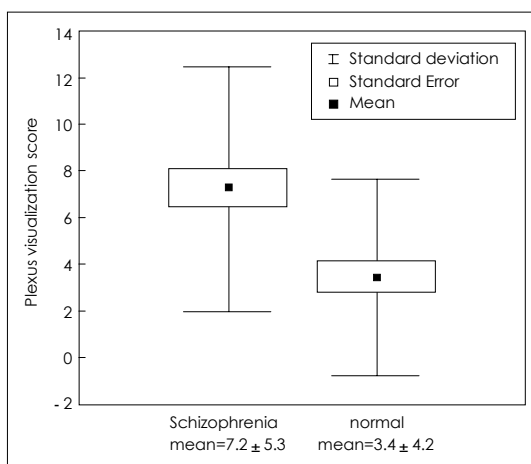
Fig. 2. Plexus Visualization Score(PVS) in schizophrenic
patients and normal controls(t=- 3.48, p=0.001) .

Table 3. Correlation of Plexus Visualization Score (PVS[1])
and clinical variables in forty schizophre-
nic subjects

	PVS[1]	
	Pearson's r[2]	p
Age of onset	0.227	0.080
Duration of illness	- 0.146	0.185
PANSS[3]		
Positive symptom score	**- 0.318**	**0.023***
Negative symptom score	0.113	0.245
General symptom score	- 0.146	0.184
Composite score	**- 0.411**	**0.004****
Total score	- 0.141	0.192
PRQ[4] score	- 0.020	0.452
PAS[5] score	0.032	0.422
KWIS[6]		
IQ	- 0.087	0.298
Verbal IQ	- 0.063	0.349
Performance IQ	- 0.168	0.150
Information	0.101	0.268
Arithmetics	- 0.184	0.128
Similarities	- 0.163	0.158
Digit span	- 0.020	0.452
Digit symbol	- 0.074	0.325
Picture completion	- 0.128	0.215
Block design	- 0.048	0.384
WCST[7]		
Total correct	- 0.150	0.177
Total error	0.203	0.104
Perseverative response	- 0.044	0.393
Conceptual level response	- 0.207	0.100
Categories completed	- 0.179	0.134
Trial to complete 1st category	- 0.209	0.098
CPT[8]		
Hit rate	0.082	0.307
False alarm	- 0.036	0.413
Sensitivity	- 0.028	0.431
Response bias	**- 0.290**	**0.035***
Word fluency		
Semantic	- 0.104	0.261
Phonetic	- 0.218	0.088
Total	- 0.210	0.097

1 PVS Plexus Visualization Score, 2 r correlation
coefficient, 3 PANNS Positive and Negative Syndr-
ome Scale, 4 PRQ score Ullmann-Giovannoni Pro-
cess-Reactive Questionnaire, 5 PAS Phillips Premor-
bid Adjustment Scale, 6 KWIS Korean Wechsler
Adult Intelligence Scale, 7 WCST Wisconsin Card
Sort Test, 8 CPT Continuous Performance Test
* p<0.05, ** p< 0.01

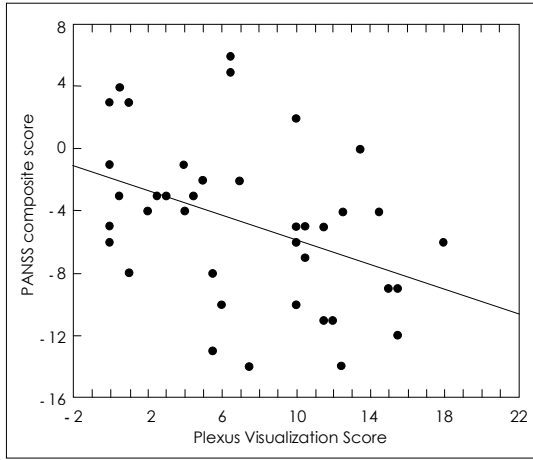**Fig. 3.** Correlation of Plexus Visualization Score(PVS) with PANSS composite score(Pearson's r=- 0.411, p=0.004).

(3,   3).

4. 임상적, 신경심리학적 변인에 있어서 고도 및 저도의 PVS 군간의 차이

PVS   (N= 17)

PVS(N= 23)   PVS

PVS   PANSS   (t= 2.179, p= 0.036)   (t= 2.379, p= 0.022)

, Ullmann- Giovannoni Self- Report Process- Reactive   ,   ,

(4).

고   찰

.   ,

PVS   7.2± 5.3   3.4± 4.2

.

PVS   17(42.5%)   4(10.5%)

.

,[32]   17~ 72%

PVS   6%

1) 4) 8) 10) 12) 16) 18) 21) 23) 40) .

32)

,

, PVS   ,

,

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PVS

.

PANSS

(r= - 0.318, p= 0.023),   (r= - 0.411, p= 0.004)   ,   ,

, PANSS

.   PVS

PVS   PANSS

(t= 2.179, p= 0.036   t= 2.379, p= 0.022)

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.

.[36] Poole

[15]   PVS

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,

, Ullmann- Giovannoni Self- Report Process- Reactive   ,

.

,   ,

12) 21- 23) 25) 32)

Table 4. Comparisons between high Plexus Visualization Score(PVS[1]) and low PVS in clinical variables

	High PVS[1](N=17)	Low PVS[1](N=23)	t[2]	p
Age	43.9 ± 12.1	43.7 ± 9.1	- 0.062	0.951
Age of onset	27.7 ± 8.2	23.5 ± 6.1	- 1.899	0.065
Duration of illness	16.2 ± 11.3	20.3 ± 6.8	1.327	0.197
PANSS[3]				
Positive symptom score	**14.7 ± 4.3**	**18.0 ± 5.0**	**2.179**	**0.036***
Negative symptom score	21.5 ± 5.4	21.1 ± 4.2	- 0.253	0.801
General symptom score	35.9 ± 6.7	39.2 ± 7.6	1.423	0.163
Composite score	**- 6.8 ± 4.2**	**- 3.1 ± 5.3**	**2.379**	**0.022***
Total score	72.0 ± 15.1	78.2 ± 14.8	1.303	0.200
PRQ score[4]	9.4 ± 4.5	9.7 ± 2.9	0.312	0.758
PAS score[5]	103.3 ± 17.2	102.5 ± 16.1	- 0.154	0.878
KWIS[6]				
IQ	93.1 ± 12.4	95.0 ± 10.7	0.524	0.603
Verbal IQ	96.9 ± 14.0	99.0 ± 11.1	0.534	0.596
Performance IQ	87.4 ± 12.8	90.7 ± 11.3	0.837	0.408
Information	9.6 ± 2.7	9.7 ± 2.4	0.184	0.855
Arithmetics	6.9 ± 3.0	7.8 ± 2.8	0.908	0.370
Similarities	9.5 ± 3.3	10.5 ± 2.8	1.208	0.310
Digit span	10.2 ± 3.1	10.3 ± 3.0	0.131	0.896
Digit symbol	7.5 ± 3.0	7.8 ± 2.3	0.352	0.727
Picture completion	7.1 ± 2.6	7.4 ± 1.8	0.392	0.697
Block design	8.0 ± 3.7	7.8 ± 3.9	- 0.179	0.859
WCST[7]				
Total correct	61.7 ± 22.6	65.8 ± 16.5	0.677	0.503
Total error	65.9 ± 23.4	60.3 ± 19.5	- 0.832	0.411
Perseverative response	35.7 ± 23.6	35.5 ± 20.8	- 0.026	0.979
Conceptual level response	37.5 ± 28.0	44.2 ± 22.4	0.841	0.406
Categories completed	1.9 ± 2.1	2.4 ± 1.7	0.672	0.506
Trial to complete 1st category	71.4 ± 56.5	51.8 ± 41.1	- 1.252	0.221
CPT[8]				
Hit rate	0.497± 0.318	0.480± 0.239	- 0.185	0.855
False alarm	0.103± 0.094	0.140± 0.174	0.795	0.432
Sensitivity	0.752± 0.153	0.772± 0.115	0.472	0.640
Response bias	0.293± 0.365	0.459± 0.269	1.657	0.106
Word fluency				
Semantic	19.8 ± 8.8	23.0 ± 8.4	1.179	0.246
Phonetic	11.4 ± 8.5	16.5 ± 14.7	1.282	0.208
Total	31.2 ± 14.9	39.5 ± 20.8	1.406	0.168

1 PVS Plexus Visualization Score   2 t t-value
3 PANNS Positive and Negative Syndrome Scale
4 PRQ score Ullmann-Giovannoni Process-Reactive Questionnaire
5 PAS Phillips Premorbid Adjustment Scale   6 KWIS Korean Wechsler Adult Intelligence Scale
7 WCST Wisconsin Card Sort Test   8 CPT Continuous Performance Test
* p<0.05

.　　　　　　　　　　　　　, WCST,

,　　　　　　　　　　　　　　　　　　　　　,

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[31)]　　　　　　　　　　　　　　　　　.

Curtis　　　　　　　　　　　,　　,　　　　　　　Meehl[44)]　　　　　　　　　　.

,　　　　　　　　　　Maricq　[14)]

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(　3,　　　　　,

4)　　Curtis　[31)]　　　　　　　　　　　　　　　　　　　　　　　　　[14)].

.　　　　　　　　　　　　,　　　　　PVS　　　　　　　　　　,

[4)]

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PVS

PVS

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PVS

PVS

. Strauss　[41)]

.　　　　　　PVS

,　　　　　PVS

[42)]　　,　　　　　　,　　　　　,

,　　　　　　　　　　　　　　　　　　,　　[14) 17) 47)]　　　　　[46)],

[19) 20)]　　　　.　　　　　　　　　　　　　[14) 21)]

[43)]　　(　)　(visible　　.　McConnell[48)]　　　　　　(fibroblast)

plexus)

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PVS

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Maricq[14)]

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,　　　　　(biogenic amine)　　　　　　Meehl[49)]　　　　　　　" schizotaxia"

." schizotaxia" , ,
,

, . ,
, [1][14][52] PVS

, , [50] [53] PVS

. Iacono Clementz[1]

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. ,
, , PVS
1 .
43.8± 10.3 , PVS P50,
25.2± 7.3 , 18.6± 9.1 , , ,
5.3± 3.9 ,

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요   약

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DSM-
. 40 38
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. , (7.2± 5.3)
(3.4± 4.2) (PVS)
(t= - 3.48, p= 0.001), PVS
. , ([2]
= 10.12, p= 0.001).
. Curtis [31]
, PVS PANSS
, Beiser [51] (r=
18 - 0.318, p= 0.023 r= - 0.411, p= 0.004), ,
. , PANSS
.
. , PVS PVS PAN-
SS (t= 2.179, p= 0.036) (t=
2.379, p= 0.022) .
. , , PVS

(r= - 0.290,
p= 0.035),　　　, WCST,

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중심 단어 :　　　　.　　　.　　.

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