

남자 정신분열병 환자에서 성기능장애에 대한 검토*

최영태** · 전진숙*** · 오병훈****

Review of Sexual Dysfunction in Male Schizophrenics

Yeong Tae Choi, M.D.,** Jin Sook Cheon, M.D.,*** Byoung Hoon Oh, M.D.****

ABSTRACT

Objective : There are four possible explanations for the sexual dysfunction of schizophrenics. The first is the possibility of a real structural aspect. The second possibility is that sexual function changes secondary to the illness. The third possibility is that there are medical and sociocultural barriers to sexual expression for chronic schizophrenics. The fourth possibility is that sexual dysfunction due to antipsychotic medication.

However, we didn't know the precise cause of sexual dysfunction in schizophrenics. Therefore, the purpose of this study was to explore the mechanism of illness itself and antipsychotics on sexual dysfunction in male schizophrenics.

Methods : The serum prolactin(PRL), testosterone(TST), and the plasma serotonin(5-HT) concentrations were measured by radioimmunoassay and high performance liquid chromatography method for 100 healthy male schizophrenics according to the DSM-IV. Concomitantly, the severity of psychotic symptoms using Clinical Global Impression(CGI), Brief Psychiatric Rating Scale(BPRS), Positive and Negative Syndrome Scale(PANSS), and the severity of side effects for antipsychotics using Extrapyramidal Side Effects Scale(EPSE), Anticholinergic Side Effects Scale(ACSE), the cognitive function using PANSS-Cognitive Function(PANSS-CF), Mini Mental State Exam-Korean(MMSE-K), and the sexual dysfunction using Sexual Functioning Questionnaire(SFQ), Questionnaire for Sexual Dysfunction in Men were assessed. The PRL, TST, and 5-HT levels of 50 healthy male controls who had no medical, neurological, and psychiatric illnesses were evaluated. The sexual function using SFQ(items FGa, FNa) were also assessed. Furthermore, the correlation with age, education, religion, economic status, age at onset, duration of illnesses, duration of admission, levels of PRL, TST, 5-HT, antipsychotic dosages, potency, benvotriprone, total duration of medication, EPSE, ACSE, CGI, BPRS, PANSS, PANSS-CF, MMSE-K and sexual dysfunctions were identified in male schizophrenics.

Results : 1) The frequencies of sexual dysfunctions for schizophrenics(80%) were significantly($p<0.001$) higher than those for controls(42%). The sexual dysfunctions according to sexual response cycle were 'low sexual desire' 76%, 'impairment of achieving erection' 75%, 'impairment of maintaining erection' 75%, 'impairment of obtaining orgasm' 32%, 'impairment in the quality of orgasm' 61%, 'impairment in quantity of ejaculate' 44%, 'premature ejaculation' 15%, and 'delayed ejaculation' 50%.

2) The PRL, 5-HT levels of schizophrenics(28.5 ± 20.6 ng/ml, 298.5 ± 89.1 ng/ml) were significantly($p<0.001$) higher than those of controls(10 ± 5.6 ng/ml, 169.2 ± 37.8 ng/ml), while the TST levels of schizophrenics(4.3 ± 1.5 ng/ml) and controls(4.5 ± 1.2 ng/ml) were not significantly different. The sexual dysfunctions of schizophrenics who had abnormal 5-HT levels(4.7 ± 1.3 scores) were significantly($p<0.05$) higher than those of who had normal 5-HT levels(3.8 ± 1.6 scores) on item D7.

3) The sexual dysfunctions of unmarried schizophrenics were significantly($p<0.01$: $p<0.05$) higher than those of married schizophrenics(6.1 ± 2.8 scores, 4.7 ± 1.3 scores on item FGa : $r = -0.211$ on item FNa). The sexual dysfunctions were positively correlated with the rise of 5-HT levels($r=0.209$, $p<0.05$ on

1999

, 2000 2

Department of Psychiatry, Busan Dong In Hospital, Busan, Korea

Department of Neuropsychiatry, College of Medicine, Kosin University, Busan, Korea

Department of Psychiatry, College of Medicine, Seoul, Korea

† : , 617 - 020

164

) (051) 601 - 7773,

) (051) 326 - 3270

item D4 and $r=0.241$, $p<0.05$ on item D7), the higher age at onset($r=0.275$, $p<0.01$ on item FNa : $r= - 0.202$, $p<0.05$ on item FDa), the longer duration of illnesses($r=0.237$, $p<0.05$ on item D6), the longer duration of admission($r=0.234$, $p<0.05$ on item D4 : $r=0.328$, $p<0.05$ on item D6), the longer total duration of medication($r=0.237$, $p<0.05$ on item D6).

However, age, education, religion, economic status, PRL, TST levels, antipsychotics dosage, potency, benztropine, ACSE, CGI, BPRS, PANSS, PANSS-CF, MMSE-K scores were not correlated with increased sexual dysfunctions.

Conclusions : Male schizophrenics have significantly more sexual dysfunction to compare with controls. The higher frequencies of sexual dysfunctions were low sexual desire and erectile disorder. The unmarried, higher age at onset, and longer duration of diseases were positively correlated with increased sexual dysfunctions. Also high 5 - HT levels were positively correlated with increased sexual dysfunctions. This means that studies of plasma 5 - HT levels, albeit questionable indicators of central 5 - HT function, offer some additional support for the association of sexual dysfunction with excess 5 - HT activity as primary pathology of schizophrenia. Our findings suggest that excess 5 - HT activity seems to affect the patient's sexual function.

KEY WORDS : Male schizophrenics · Sexual dysfunctions · Serotonin · Prolactin · Testosterone.

서 론

- adrenergic
(Ferini - Strambi 1992).

가 , dopamine(DA)
- adrenergic - adrenergic
Lukianowicz(1963) , 1 - adrenergic
가 , serotonin(5 - HT)
, DA, testosterone(TST)
(autoerotic) , (Sadock 1995 ; Segraves 1989). DA prolactin(
PRL) PRL DA
hormone PRL
(1981) Verhulst Schneidman , 가 PRL
가 , zman 1985), DA, 5 - HT peptide
(Meco 1985). PRL
1961 thioridazine (Ca - bromocriptine DA (agonist)가
rlson Sadoff 1971 ; Singh 1961) (Ambrosi 1980 ; Koppelman 1987),
가 PRL DA
(Mitchell Popkin 1982). Shen Ma - PRL 가
llya(1983) anticholinergic DA
antiadrenergic (Segraves 1989).
가 , atropine (non - compliance)
가 (Zajecka 1991).
(Yager 1986). - adrenergic , 가
, - adrenergic
(Luk -

off 1986).
TST (luteinizing hormone, LH) Leydig TST TST 가 TST 가 (Meltzer 1980 ; Sternbach 1998). 5-HT (Nestoros 1981 ; Pierini Nusimovich 1981). Segraves 5-HT 5-HT (antagonist)가

Coat - A - Count Total Testosterone Y - count 가 - 10 가, benztropine chlorpr - omazine 가 chlorpr - omazine 100mg 가 (equivalent dose) 4mg 가, 41mg 가, 5~40mg 가 (Marangell 1999).
Extrapyramidal Side Effects Scale(EPSE) Anti - cholinergic Side Effects Scale(ACSE)(McEvoy 1991) Clinical Global Impression(CGI) Brief Psychiatric Rating Scale(BPRS) Kay (1987) Positive and Negative Syndrome Scale(PANSS) PA - NSS (P2), (N2), (G10), (G11), (G15) 5 PANSS - Cognitive Function(PANSS - CF)(Kopala 1996) Mini Mental State Exam - Korean(MM - SE - K) 가 (Burke 1994) (Gh - adirian 1982) 가 DSM - IV 2 (FGa) 2 (FNa) 가 가 가 가(FDa) 가 가(FRa) 가 가 가

대상 및 방법

1. 연구대상

1999 2 1999 3 DSM - IV(American Psychiatric Association 1994) 18 45 100 18 45 50

2. 연구방법

9 8ml ED - TA 가 plastic 3ml Bio - Rad High - Performance Liquid Chromatography 5 - HT PRL 5ml Diagnostic Products Co Coat - A - Count Prolactin IRMA (radioimmunoassay) TST Diagnostic Products Co

3. 통계분석

t - test chi - square test 2 PRL, TST 5 - HT PRL, TST 5 - HT t - test chi - square test 가

(one - way ANOVA) (85%), 15 (30%) (p<0.001).
 Scheffe's multiple comparison '가' 71 (71%), 11 (22%) (p<0.001).
 Pearsons correlation (multiple regression) 24.5 ± 5.7 (14 36), 118.0 ± 62.0
 , 34.2 ± 36.4 ,
 , PRL, TST 5 - 68.6 ± 55.5 .
 HT , 가, benztropine,
 , EPSE, ACSE, CGI, BPRS, PANSS, PACSS - CF,
 MMSE - K , FGa, FNa, FDa,
 FRa D1 D7, PE, RE
 SPSS 8.0 for Windows ,
 p<0.05

결 과

1. 대상군의 특성

1
 34.4 ± 8.0 (18 45) ,
 34.4 ± 6.5 (23 45)
 10.2 ±
 3.0 (3 16) , 14.2 ± 3.1 (9 22
) (p<0.001).
 가 69 (69%), 33
 (66%) 가 , 85

Table 1. Demographic characteristics between controls and schizophrenics

	Controls n=50	Schizophrenics n=100	p-value*
Age(Yrs)	34.4 ± 6.5	34.4 ± 8.0	
Education(Yrs)	14.2 ± 3.1	10.2 ± 3.0	p<0.001
Religion			
Yes	33(66%)	69(69%)	
No	17(34%)	31(31%)	
Marriage			
Unmarried	15(30%)	85(85%)	p<0.001
Married	35(70%)	15(15%)	
Economic status			
Above middle(I - III) class	39(78%)	29(29%)	p<0.001
Below low(IV - V)class	11(22%)	71(71%)	
Clinical characteristics			
Age at onset(Yrs)		24.5 ± 5.7	
Duration of illness(Months)		118.0 ± 62.0	
Duration of admission(Months)		34.2 ± 36.5	
Total duration of medication(Months)		68.6 ± 55.5	

*2-tailed t-test or chi-square test

•These data represent Mean ± S.D.

2. 정신분열병군과 대조군에서 prolactin, testosterone 및 serotonin 농도의 변화
 PRL 28.5 ± 20.6ng/ml , (p<0.001).
 10 ± 5.6ng/ml
 TST 4.3 ± 1.5ng/ml, 4.5 ± 1.2ng/ml
 가 . 5 - HT
 298.5 ± 89.1ng/ml, 169.2 ± 37.8ng/ml
 (p<0.001, 1).

3. 성기능장애의 원인

1) 신경학적 원인

EPSE ((r=0.206, p<0.05 : =0.226, p<0.05), ACSE (2, 3).

2) 내분비적 원인

5 - HT (D4)(r=0.209, p<0.05) (D7) (r=0.241, p<0.05 : =0.241, (2, 3), 5 - HT (D7)

3.8 ± 1.6 , 4.5 ± 1.3 5 - HT가 (p<0.05) (4). PRL

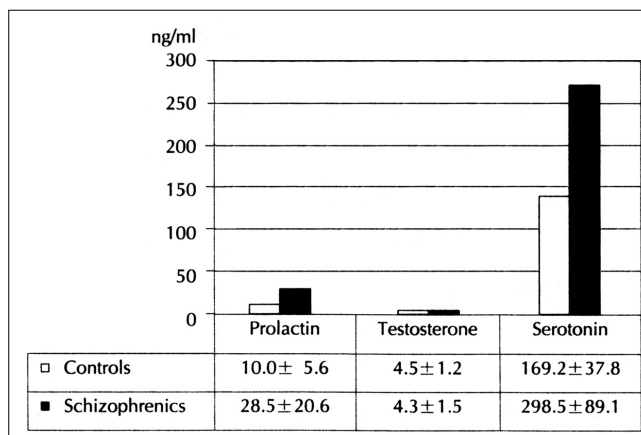


Fig. 1. Comparison of hormonal levels between controls and schizophrenics. • These data represent Mean ± S.D. 2-tailed t-test between controls and schizophrenics on prolactin and serotonin levels p<0.001.

Table 3. Multiple regression analysis among variables in schizophrenics

Variables		B	S.E.	Beta	t	p-value
Dependent	Independent					
FNa	Age at onset	.184	.055	.332	3.353	p<0.01
	Marriage	- 1.029	.483	-.211	- 2.131	p<0.05
D4	DOA	1.126E - 02	.005	.232	2.406	p<0.05
	5-HT	4.094E - 03	.002	.206	2.136	p<0.05
D7	5-HT	4.145 - 03	.002	.241	2.455	p<0.05
PE	EPSE	.281	.121	.226	2.329	p<0.05
	TST	.185	.081	.223	2.290	p<0.05

•B : Regression coefficient Beta ; Standardized coefficient
 5-HT : Serotonin
 TST : Testosterone
 D4 : Obtaining of orgasm(frequency)
 PE : Premature ejaculation
 DOA : Duration of admission
 EPSE : Extrapyramidal Side Effects Scale
 FNa : Sexual functioning over the past 2 weeks
 D7 : Difficulty in sexual functioning at the present time

Table 4. Comparison of sexual dysfunctions in schizophrenics according to the serotonin levels

Sexual dysfunction items	Normal serotonin levels † (n=77) Mean ± S.D.		Abnormal serotonin levels(n=23) Mean ± S.D.		df	t-value	p-value
D1	3.6 ± 1.9		4.0 ± 1.7		98	-.941	N.S.
D2	3.7 ± 1.8		4.2 ± 1.6		98	- 1.273	N.S.
D3	3.6 ± 1.9		4.3 ± 1.6		43.586	- 1.717	N.S.
D4	2.2 ± 1.7		2.7 ± 2.1		30.595	- 1.040	N.S.
D5	2.9 ± 1.8		3.6 ± 1.8		98	- 1.526	N.S.
D6	2.7 ± 2.0		2.5 ± 2.0		98	.469	N.S.
D7	3.8 ± 1.6		4.5 ± 1.3		98	- 2.072	p<0.05
PE	1.6 ± 1.3		1.3 ± 1.0		98	.883	N.S.
RE	2.4 ± 1.6		3.0 ± 2.1		30.139	- 1.323	N.S.
DT	26.6 ± 10.5		30.3 ± 9.5		98	- 1.533	N.S.

•N.S.=statistically non significant by 2-tailed t-test
 D1 : Sexual desire
 D2 : Achieving of erection
 D3 : Maintaining of erection
 D4 : Obtaining of orgasm (frequency)
 D5 : Quality of orgasm
 D6 : Quantity of ejaculate
 D7 : Difficulty in sexual functioning at the present time
 PE : Premature ejaculation
 RE : Retarded ejaculation
 DT : Total scores of sexual dysfunction
 † Normal level : 40 - 350ng/ml

(2), PRL 3.1 7 7 가
 가 (5). TST , 8 가
 (r=0.201, p<0.05 : =0.223, p<0.05) , 80 (80%), 21 (42%)
 TST (p<0.001)가 (7).
 1.5 ± 1.2 , 1.3 ± 0.9 가
 (2, 3, 6). 1(absent) 2(minimal) 가
 3) 정신사회적 원인 3(mild) 가 3 ,
 CGI, BPRS, PANSS 가 76%,
 PANSS - CF 75%, 75%, 61%,
 MMSE - K (2). 50%, 44%,
 4. 성기능장애의 빈도와 유형 32%, 15% (8), DSM -
 2 (FNa) IV .
 10.1 ± 3.1 , 7.1 ± 2.0 (D7) 87%
 (p<0.001) , 10.1 80%

Table 5. Comparison of sexual dysfunctions in schizophrenics according to the prolactin levels

Sexual dysfunction items	Normal PRL levels [†] (n=34) Mean ± S.D.	Abnormal PRL levels(n=66) Mean ± S.D.	df	t-value	p-value
D1	3.6 ± 1.8	3.8 ± 1.9	98	-.441	N.S.
D2	4.0 ± 1.7	3.7 ± 1.8	98	.679	N.S.
D3	4.1 ± 1.8	3.7 ± 1.9	98	1.050	N.S.
D4	2.6 ± 2.0	2.1 ± 1.6	54.722	1.429	N.S.
D5	3.4 ± 1.9	2.9 ± 1.8	98	1.341	N.S.
D6	2.8 ± 1.8	2.6 ± 2.1	98	.489	N.S.
D7	4.0 ± 1.3	3.9 ± 1.6	98	.096	N.S.
PE	1.5 ± 1.3	1.5 ± 1.2	98	-.174	N.S.
RE	2.9 ± 1.8	2.4 ± 1.6	98	1.572	N.S.
DT	28.9 ± 10.6	26.6 ± 10.2	98	1.055	N.S.

•N.S.=statistically non-significant by 2-tailed t-test

D1 : Sexual desire

D3 : Maintaining of erection

D5 : Quality of orgasm

D7 : Difficulty in sexual functioning at the present time

RE : Retarded ejaculation

[†]Normal level : 3.1 - 16.5ng/ml

D2 : Achieving of erection

D4 : Obtaining of orgasm (frequency)

D6 : Quantity of ejaculate

PE : Premature ejaculation

DT : Total scores of sexual dysfunction

Table 6. Comparison of sexual dysfunctions in schizophrenics according to the testosterone levels

Sexual dysfunction items	Normal testosterone levels [†] (n=90) Mean ± S.D.	Abnormal testosterone levels(n=10) Mean ± S.D.	df	t-value	p-value
D1	3.7 ± 1.8	3.9 ± 2.3	98	-.310	N.S.
D2	3.8 ± 1.8	4.2 ± 1.8	98	-.740	N.S.
D3	3.7 ± 1.8	4.6 ± 2.0	98	-1.477	N.S.
D4	2.3 ± 1.7	2.4 ± 2.3	98	-.244	N.S.
D5	3.0 ± 1.8	3.6 ± 2.2	98	-.908	N.S.
D6	2.8 ± 1.9	1.7 ± 1.9	98	1.706	N.S.
D7	3.9 ± 1.5	4.8 ± 1.8	98	-1.871	N.S.
PE	1.5 ± 1.2	1.3 ± 0.9	98	.549	N.S.
RE	2.5 ± 1.6	3.0 ± 2.3	98	-.838	N.S.
DT	27.2 ± 10.2	29.5 ± 11.9	98	-.668	N.S.

•N.S.=statistically non significant by 2-tailed t-test

D1 : Sexual desire

D3 : Maintaining of erection

D5 : Quality of orgasm

D7 : Difficulty in sexual functioning at the present time

RE : Retarded ejaculation

[†]Normal level : 2.45 - 18.36ng/ml

D2 : Achieving of erection

D4 : Obtaining of orgasm (frequency)

D6 : Quantity of ejaculate

PE : Premature ejaculation

DT : Total scores of sexual dysfunction

(r = -0.201, p<0.05) (2),

(3)

5. 성기능장애에 영향을 미치는 요인

2 (FGa)

6.1 ± 2.8

(p<0.01)

(FNa)

(p<0.05)(3).

4.7 ± 1.3

(9),

가

가

2 (FNa)

p<0.01),

= -0.202, p<0.05)

(2).

(r = 0.237, p<0.05),

(D4)

(r = 0.234, p<0.05 : r = 0.328, p<0.01),

(D6)

0.237, p<0.05)(2).

(r = 0.275,

가(FDa)

(r

가 가

(D6)

(D6)

(r =

(r =

가

D1)

가 (p<0.05), Scheffe

가

가

가 가

PRL (Meco 1985 ; Schwartz 1982 ; Weizman 1985) DA

고 찰

가

(Bansal 1988 ; Harrison 1986 ; Moon 1993)

가

(Ver-

hulst Schneidman 1981)

(Gross 1982 ; Saenz de Tejada

1988 ; Shen Mallya 1983), DA

Table 7. Comparison of sexual functioning over the past 2 weeks (item FNa) between controls and schizophrenics

	Controls (n=50)	Schizophrenics (n=100)	p-value*
Score of item FNa(Mean ± S.D.)	7.1 ± 2.0	10.1 ± 3.1	p<0.001
% of sexual dysfunction	21 (42%)	80(80%)	

*2-tailed t-test

Table 8. Comparison of sexual dysfunctions according to the sexual response cycle in schizophrenics(n=100)

Variables\Groups	Sexual dysfunctions	
	Yes(3)	F(%)*
D1	76(76)	
D2	75(75)	
D3	75(75)	
D4	32(32)	
D5	61(61)	
D6	44(44)	
D7	87(87)	
PE	15(15)	
RE	50(50)	

•The score above 3 means sexual dysfunction

*F : frequency

D1 : Sexual desire

D2 : Achieving of erection

D3 : Maintaining of erection

D4 : Obtaining of orgasm(frequency)

D5 : Quality of orgasm

D6 : Quantity of ejaculate

D7 : Difficulty in sexual functioning at the present time

PE : Premature ejaculation

RE : Retarded ejaculation

Table 9. Comparison of sexual dysfunctions according to the marital status in schizophrenics(n= 100)

Sexual dysfunction items	Unmarried schizophrenics (n=85) Mean ± S.D.	Married schizophrenics (n=15) Mean ± S.D.	df	t-value	p-value
FGa	6.1 ± 2.8	4.7 ± 1.3	42.821	3.095	p<0.01
FNa	10.2 ± 3.2	9.5 ± 2.5	98	.885	N.S.
FDa	14.4 ± 4.0	13.3 ± 3.6	98	.937	N.S.
FRa	2.3 ± 1.0	2.2 ± 1.0	98	.450	N.S.
D1	3.7 ± 1.8	3.9 ± 2.3	98	-.310	N.S.
D2	3.8 ± 1.8	4.2 ± 1.8	98	-.740	N.S.
D3	3.7 ± 1.8	4.6 ± 2.0	98	-1.477	N.S.
D4	2.3 ± 1.7	2.4 ± 2.3	98	-.244	N.S.
D5	3.0 ± 1.8	3.6 ± 2.2	98	-.908	N.S.
D6	2.8 ± 1.9	1.7 ± 1.9	98	1.706	N.S.
D7	3.9 ± 1.5	4.8 ± 1.8	98	-1.871	N.S.
PE	1.5 ± 1.2	1.3 ± 0.9	98	.549	N.S.
RE	2.5 ± 1.6	3.0 ± 2.3	98	-.838	N.S.
DT	27.2 ± 10.2	29.5 ± 11.9	98	-.668	N.S.

•N.S.=statistically non-significant by 2-tailed t-test

FNa : Sexual functioning over the past 2 weeks

FRa : Interviewer's global assessment

D2 : Achieving of erection

D4 : Obtaining of orgasm(frequency)

D6 : Quantity of ejaculate

PE : Premature ejaculation

DT : Total scores of sexual dysfunction

FGa : Usual sexual functioning over the past 2 years

FDA : Patient assessment of change

D1 : Sexual desire

D3 : Maintaining of erection

D5 : Quality of orgasm

D7 : Difficulty in sexual functioning at the present time

RE : Retarded ejaculation

(De Leo Magni 1983), 가 . Sch - 가 가 , 가 가 . 가 가 . Thioridazine 가 가 anti - ch - , 50 TST bioavail - olinergic antiadrenergic (Ba - 가 . PRL 가 , su - PRL ipiride PRL Weizman (1985) 가 가 PRL haloperidol 가 가 PRL Me - co (1985) 가 가 (1995) PRL PRL DA DA 가 PRL 가 가 PRL 80%, 42% 7 PRL DA DA PRL 가 가 1 , 3~5 2 , 1~2 3 () Gross(1982) S₂₋₄ beth - 7 가 anechol benztropine (1976) thioridazine . Kotin ACSE Verhulst Schneidman(1981) , Lukianowicz(1963) (Althof 1995 ; Segraves 1995), 가 15% . -adrenergic 가 2 가 가 , Murali CGI, BPRS PANSS 가 12.5% 가 . 가 . (Weinb - 가 14 36 가 erger Gallhofer 1997), PANSS - CF MMSE - K 가 가 가

5-HT가

Beumont (1974) PRL 가 , TST DA PRL DA 가
 . Kammen Marder(1995) 가 5-HT
 PRL (folli - 가 .
 cle - stimulating hormone) 가 , ,
 TST , Stevenson Um - , 5-HT 가
 stead(1984) 가 5-HT
 . Franks (1978) 가 5-HT
 PRL 가 TST
 가 PRL 가 , 5-HT
 TST 가 가
 TST 가
 가 PRL TST
 TST
 가 PRL TST
 TST . 5 - 1) 80%
 HT PRL , Syvlahti (1979) 42% (p<0.001).
 5 - HT zimelidine 76%, 75%, 75%,
 PRL 61%, 50%,
 . 5 - HT (Ha - 44% 32%
 rrisson 1986), 5 - HT 15%
 (Segraves 1989). Za - 2) PRL 5 - HT 28.5 ± 20.6ng/ml,
 jecka (1991) 5 - HT , 298.5 ± 89.1ng/ml 10 ± 5.6ng/ml, 169.2 ± 37.8
 가 ng/ml (p<0.001). TST
 5 - HT 5 - HT 4.3 ± 1.5ng/ml, 4.5 ± 1.2ng/ml
 5 - HT
 noradrenaline 3) 가 (), ,
 5 - HT
 HT . Lawson Gala(1975) 5 - HT 가
 HT - , serotonin
 creatinine sulfate 5 5 - HT 가 , PRL TST
 가 , Conwell Henderson(1996) BPRS, PANSS, PANSS - CF, MMSE - K
 5 - HT 가 5 - HT
 5 - HT 가 (Delisi
 1981 ; Freedman 1981 ; Garelis 1975 ; Stahl 1983), , 5 - HT 가
 Wyatt (1995) 5 - HT₂ , 5 - HT 가 5 - HT 가 5 -
 HT
 5 - HT 가
 5 - HT , , 가
 5 - HT 가 중심 단어 : . Serotonin · Prola -
 ctin · Testosterone.

참고문헌

- 한상재 · 최종혁 · 이영호(1995) : 만성 정신분열병 남자환자의 성 기능에 대한 연구. *신경정 신의학* 34 : 1470-1484
- Ambrosi B, Gaggini M, Moriondo P, Faglia G(1980) : Prolactin and sexual function. *JAMA* 244 : 2608
- American Psychiatric Association(1994) : *Diagnostic and Statistical Manual of Mental Disorders 4th ed (DSM-IV)*. Washington, DC, American Psychiatric Association, pp273-290
- Althof SE(1995) : Pharmacologic treatment of rapid ejaculation. *Psychiatr Clin North Am* 18 : 85-94
- Bancroft J(1989) : *Human sexuality and it's problems*. 2nd ed, Edinburgh, Churchill Livingstone, pp282-298
- Bansal S(1988) : Sexual dysfunction in hypertensive men : A critical review of the literature. *Hypertension* 12 : 1-10
- Beumont PJV, Corker CS, Friesen HG, Kolakowska T, Mandelbrote BM, Marshall J, Murray MAF, Wiles DH(1974) : The effects of phenothiazines on endocrine function : II. Effects in men and post-menopausal women. *Br J Psychiatry* 124 : 420-430
- Burke MA, McEvoy JP, Ritchie JC(1994) : A pilot study of a structured interview addressing sexual function in men with schizophrenia. *Biol Psychiatry* 35 : 32-35
- Carlson BE, Sadoff RL(1971) : Thioridazine in schizophrenia. *JAMA* 217 : 1705
- Conwell Y, Henderson RE(1996) : Neuropsychiatry of suicide. In : *Neuropsychiatry*. Ed, by Fogel BS, Schiffer RB, Rao SM, Baltimore, Maple Press, pp485-521
- De Leo D, Magni G(1983) : Sexual side effects of antidepressant drugs. *Psychosomatics* 24 : 1976-1082
- DeLisi LE, Neckers LM, Weinberger DR, Wyatt RJ(1981) : Increased whole blood serotonin concentrations in chronic schizophrenic patients. *Arch Gen Psychiatry* 38 : 647-650
- Ferini-Strambi L, Zucconi M, Rigatti P, Grasso M, Montorsi F, Smirne S(1992) : Male impotence : A possible beta-adrenergic dysfunction in some patients. *Eur Urol* 21 : 332-334
- Franks S, Jacobs HS, Martin N, Nabarro JDN(1978) : Hyperprolactinemia and impotence. *Clin Endocrinol* 8 : 277-287
- Freedman DX, Belendiuk K, Belendiuk GW, Crayton JW(1981) : Blood tryptophan metabolism in chronic schizophrenics. *Arch Gen Psychiatry* 38 : 655-659
- Garelis E, Gillin JC, Wyatt RJ, Neff N(1975) : Elevated blood serotonin concentrations in unmediated chronic schizophrenic patients : A preliminary study. *Am J Psychiatry* 132 : 184-186
- Ghadirian AM, Chouinard G, Annable L(1982) : Sexual dysfunction and plasma prolactin levels in neuroleptic-treated schizophrenia outpatients. *J Nerv Ment Dis* 170 : 463-467
- Gross MD(1982) : Reversal by bethanechol of sexual dysfunction caused by anticholinergic antidepressants. *Am J Psychiatry* 139 : 1193-1194
- Harrison WM, Rabkin JG, Ehrhardt AA, Stewart JW, McGrath PJ, Ross D, Quitkin FM(1986) : Effects of antidepressants medication on sexual function : A controlled study. *J Clin Pharmacol* 6 : 144-149
- Kay SR, Fiszbeina A, Opler LA(1987) : The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bull* 13 : 261-276
- Kopala LC, Fredrikson D, Good KP, Honer WG(1996) : Symptoms in neuroleptic-naive, first-episode schizophrenia : Response to risperidone. *Biol Psychiatry* 39 : 296-298
- Koppelman MCS, Parry BL, Hamilton JA, Alagna SW, Loriaux DL(1987) : Effect of bromocriptine of affect and libido in hyperprolactinemia. *Am J Psychiatry* 144 : 1037-1041
- Kotin J, Wilbert DE, Verburg D, Soldinger SM(1976) : Thioridazine and sexual dysfunction. *Am J Psychiatry* 133 : 82-85
- Lawson DM, Gala RR(1975) : The influence of adrenergic, dopaminergic, cholinergic and serotonergic drugs on plasma prolactin levels in ovariectomized, estrogen-treated rats. *Endocrinology* 96 : 313-318
- Lukianowicz N(1963) : Sexual drive and it's gratification in schizophrenia. *Int J Soc Psychiatry* 9 : 250-258
- Lukoff D, Gioia-Hasick D, Sullivan G, Golden JS, Nuechterlein KH(1986) : Sex education and rehabilitation with schizophrenia male outpatients. *Schizophrenia Bull* 12 : 669-677
- Marangell LB, Yudofsky SC, Silver JM(1999) : Psychopharmacology and electroconvulsive therapy, In : *Textbook of Psychiatry*. 3rd ed, Ed by Hales RE, Yudofsky SC, Talbott JA, Washington, DC, American Psychiatric Press, pp1025-1132
- McEvoy JP, Hogarty GE, Steingard S(1991) : Optimal dose of neuroleptic in acute schizophrenia. *Arch Gen Psychiatry* 48 : 739-745
- Meco G, Falaschi P, Casacchia M, Rocco A, Petrini P, Rosa M, Agnoli A(1985) : Neuroendocrine effects of haloperidol decanoate in patients with chronic schizophrenia. *Adv Biochem Psychopharmacol* 40 : 89-93
- Meltzer HY(1980) : Effect of psychotropic drugs on neuroendocrine function. *Psychiatr Clin North Am* 3 : 277-297
- Mitchell JE, Popkin MK(1982) : Antipsychotic drug therapy and sexual dysfunction in men. *Am J Psychiatry* 139 : 633-637
- Moon JH, Kang SW, Chun SI(1993) : Pudendal somatosensory evoked potential and bulbocavernosus reflex testing in erectile dysfunction. *Yonsei Med J* 34 : 71-77
- Murali R, John CJ, Gopinath PS(1983) : Phenothiazines and dysfunction. *Am J Psychiatry* 140 : 645-646
- Nestoros JN, Lehmann HE, Ban TA(1981) : Sexual behavior of the male schizophrenia : The impact of illness and medications. *Arch Sex Behav* 10 : 421-442
- Pierini AA, Nusimovich B(1981) : Male diabetic sexual impotence : Effects of dopaminergic agents. *Arch Androl* 6 : 347-350
- Saenz de Tejada I, Blanco R, Goldstein I, Azadzi K, de las Morenas A, Krane RJ, Cohen RA(1988) : Cholinergic neurotransmission in human corpus cavernosum. I. Responses of isolated tissue. *Am J Physiol* 254 : H459-H467
- Schiavi RC, Schreiner-Engel P, Mandeli J, Schanzer H, Cohen E(1990) : Healthy aging and male sexual function. *Am J Psychiatry* 147 : 766-771
- Schiavi RC, White D, Mandeli J, Schreiner-Engel P(1993) : Ho-

- hormones and nocturnal penile tumescence in healthy aging men. *Arch Sex Behav* 22 : 207-215
- Schiavi RC, Segraves RT(1995)** : *The biology of sexual function.* *Psychiatr Clin North Am* 18 : 7-23
- Schwartz MF, Bauman JE, Masters WH(1982)** : *Hyperprolactinemia and sexual disorders in men.* *Biol Psychiatry* 17 : 861-876
- Segraves RT(1989)** : *Effects of psychotropic drugs on human erectile and ejaculation.* *Arch Gen Psychiatry* 46 : 275-284
- Segraves RT(1995)** : *Psychopharmacological influences on human sexual behavior.* In : *Review of Psychiatry.* vol 14, Ed by Oldham JM, Riba MB, Washington, DC, American Psychiatry Press, pp 697-717
- Singh H(1961)** : *A case of inhibition of ejaculation as a side effect of mellaril.* *Am J Psychiatry* 117 : 1041-1042
- Shen WW, Mallya AR(1983)** : *Psychotropic-induced sexual inhibition.* *Am J Psychiatry* 140 : 514-515
- Stahl SM, Woo DJ, Mefford IN, Berger PA, Ciaranello RD(1983)** : *Hyperserotonemia and platelet serotonin uptake and release in schizophrenia and affective disorders.* *Am J Psychiatry* 140 : 26-30
- Sternbach H(1998)** : *Age-associated testosterone decline in men : Clinical issues for psychiatry.* *Am J Psychiatry* 155 : 1310-1318
- Stevenson JG, Umstead GS(1984)** : *Sexual dysfunction due to antihypertensive agents.* *Drug Intelligence and Clinical Pharmacy* 18 : 113-121
- Syvähti E, Nagy A, van Praag HM(1979)** : *Effects of zimelidine, a selective 5-HT uptake inhibition, on serum prolactin levels in man.* *Psychopharmacology* 64 : 251-253
- van Kammen DP, Marder SR(1995)** : *Dopamine receptor antagonists,* In : *Comprehensive Textbook of Psychiatry.* 6th ed, Ed by Kaplan HI, Sadock BJ, Baltimore, Williams & Wilkins, pp1987-2022
- Verhulst J, Schneidman B(1981)** : *Schizophrenia and sexual functioning.* *Hosp Community Psychiatry* 32 : 259-262
- Weinberger DR, Gallhofer B(1997)** : *Cognitive function in schizophrenia.* *Intern Clin Psychopharmacol* 12 : S29-S36
- Weizman A, Maoz B, Treves I, Asher I, Ben-David M(1985)** : *Sulpiride-induced hyperprolactinemia and impotence in male psychiatric outpatients.* *Prog Neuro Psychopharmacol Biol Psychiatry* 9 : 193-198
- Wyatt RJ, Kirch DG, Egan MF(1995)** : *Schizophrenia : Neurochemical, viral, and immunological studies,* In : *Comprehensive Textbook of Psychiatry.* 6th ed, Ed by Kaplan HI, Sadock BJ, Baltimore, Williams & Wilkins, pp1987-2022
- Yager J(1986)** : *Bethanechol chloride can reverse erectile and ejaculation dysfunction induced by tricyclic antidepressants and mazindol : Case report.* *J Clin Psychiatry* 47 : 210-211
- Zajacka J, Fawcett J, Schaff M, Jeffriess H, Guy C(1991)** : *The role of serotonin in sexual dysfunction : Fluoxetine-associated orgasm dysfunction.* *J Clin Psychiatry* 52 : 66-68

□ 부 록 1 □

성기능 설문지(Sexual Functioning Questionnaire)

가. 지난 2년간의 일상적 성기능(FGa)

- 가
1. ?
 2. ? ()
 3. ? () ?

나. 최근 2주간의 성기능(FNa)

4. ?
 5. ? ()
 6. ? () ?
- ;
- 1 = 2 = 3 = 1~2
 4 = 5 = 3~5 1~3

다. 변화에 대한 환자의 평가(FDa)

- ;
- 1 = 2 = 3 =
 - 4 = 5 =
 7. , ?
 8. ?
 9. ?
 10. ?
 11. ?
 12. ?
 13. ?
 14. , () ?

라. 평가자의 전체평가(FRa)

- 가. , 가
- _____ _____ _____
- 1 2 3 4 5 6 7

□ 부 록 2 □

성기능장애 설문지
(Questionnaire for Sexual Dysfunction in Men)

약을 먹지 않을 때와 비교하여,

1. (D1)?
2. (D2)?
3. (D3)?
4. (D4)?
5. (D5)?
6. (D6)?
7. , (D7)?
8. (PE)?
9. (RE)?
10. (DT)?

- 1 = (absent)
2 = (minimal)
3 = (mild)
4 = (moderate)
5 = (moderately severe)
6 = (severe)
7 = (extremely severe)