

행동장애에 있어서 Serotonin계의 개체발생적인 과정과 정신병리와의 상호관계에 관한 연구*

STUDY ON THE RELATIONSHIP BETWEEN ONTOGENY OF SEROTONIN SYSTEM AND PSYCHOPATHOLOGY IN CONDUCT DISORDER

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목 적 :

5-HT 5-HIAA

방 법 : 1999 3 2002 3

41

가 DSM - 가 5-HT 5-HIAA
HPLC

결 과 : 1) 5-HT 5-HIAA

(5-HT, $F=2.37$, df 2, 61, $p>0.05$). 2) 5-HT 5-

HIAA (aggression) (rule violation)

. 3) 5-HT (oppositional behavior) .(

, Pearson 0.43, $p<0.05$, , Pearson 0.48, $p<0.05$). 4) (

,) 5-HT 5-HIAA .

결 론 :

serotonin 가

가

serotonin

중심 단어 :

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2. 세 군간의 5-HIAA의 농도비교
 5 - HIAA 17.94ng/ml
 (SD 12.63), 20.17ng/ml(SD 13.25),
 26.04ng/ml(SD 15.54)
 (F=1.92, df 2,
 61, p>0.05).

3. 행동장애군(소아형+청소년형)과 대조군간의 비교
 5 - HT 21.58ng/ml(SD
 9.20), 20.34ng/ml(SD 8.53)
 . Scheffe multiple contrast
 (F=0.81, df 1, 62,
 p>0.05). 5 - HIAA 19.20
 ng/ml(SD 12.87), 26.04ng/ml(SD 15.54)
 (F=2.59,
 df 1, 62, p>0.05).

4. 연령과 5-HT 및 5-HIAA 농도간의 상관성

1) 소아형 행동장애
 , 5 - HT
 Pearson - 0.13(p>0.05)
 . 5 - HIAA Pearson
 - 0.22(p>0.05)

2) 청소년형 행동장애
 , 5 - HT
 Pearson - 0.15(p>0.05)
 . 5 - HIAA Pearson
 - 0.12(p>0.05)

3) 대조군
 , 5 - HT Pearson
 0.19(p>0.05)
 . 5 - HIAA Pearson 0.25(p>0.05)

5. 정신병리와의 상관성

1) 공격성(Aggression)과의 상관성
 5 - HT Pearson - 0.104(p>0.05),
 5 - HIAA Pearson 0.13(p>0.05)

2) 규칙위반(Rule violation)과의 관계
 5 - HT Pearson 0.059(p>0.05),
 5 - HIAA Pearson 0.02(p>0.05)

3) 반항행동(Oppositional behavior)과의 관계
 5 - HT , Pearson
 0.43(p<0.05), , Pearson
 0.48(p<0.05)
 , 5 - HIAA , Pearson
 0.17(p>0.05), , Pearson
 0.14(p>0.05)

4) 5 - HT , ,
 Pearson 5 - HIAA
 0.50(p<0.05)

고찰

serotonin 가
 3). sero-
 tonin 가
 4)5). , , ,
 serotonin
 가

, , ,
 , , ,
 , , ,

88%
 , , serotonin 가
 4)6), serotonin 가
 7), serotonin

가 ⁸⁾⁹⁾가 . serotonin tonin (higher serotonin uptake)

가 . serotonin Hoshino¹⁶⁾ Irwin serotonin 가 10 serotonin

Serotonin 가 serotonin (L - tryptophan) 5 - HT1 가 (m - chlorophenylpiperazine, m - trifluoromethylphenylpiperazine MK - 212) serotonin Shetty Chase¹⁷⁾ 5 - HIAA 가 spectrofluorometric assay 가 Shaywitz ¹⁸⁾ 5 - HIAA 가 Reimherr ¹⁹⁾ 5 - HIAA 가 Kruesi ²⁰⁾ 21 ADHD 5 - HIAA serotonin (aggression) (negative correlation) (hype-reactivity) Coleman ¹²⁾ serotonin Haslam 5 - HIAA 가 Dalby¹³⁾ 가 Irwin ¹⁴⁾ 가 ²³⁾ 가 Moffitt ²²⁾, Davidson serotonin serotonin 가 serotonin 가 ¹⁵⁾, serotonin 가 Tryptophan serotonin 가 Irwin ¹⁴⁾ serotonin serotonin (dopamine, norepinephrine serotonin) 가 tryptophan 가 Pyridoxine(vitamin B6) 5 - hydroxytryptophan 5 - HT sero- 5 - hydroxytryptophan decarboxylase

(coenzyme) pyridoxine ²⁸⁾, 5-HT₃ (

5-HT . Coleman MDL72222 odanserin)가

(1979) pyridoxine serotonin 가 ²⁹⁾

serotonin 가

가 Haslam

Dalby(1983) pyridoxine 가 .

가 Serotonin trypto- ³⁰⁾³¹⁾,
phan . Neymar 가 5-HIAA
(1986) tryptophan (hy- (Linnoila 1983) .
peractivity) amphetamine 5-HIAA
Clomio-
ramine desipramine 5-HT 가 ³²⁾,

가 (Garfinkel , 1983). Barri- ³³⁾
ckman ²⁴⁾ fluoxetine(5-HT 가 가 . 5-
) Fluoxetine HIAA 가 . 5-
3~4 ³⁴⁾, ³⁵⁾
(aggressive behavior)
(impulsive behavior) serotonin
1 . Brown (1989)

serotonin serotonin ,

가 Serotonin 5-HIAA

serotonin 가 (Brown 1986),

serotonin . Kruesi (1992)
. Serotonin (disruptive behavior disorders
5-HT_{1a} ADHD, 가)
(8-OH-DPAT, 5- serotonin, dopamine norepi-
Me-ODMT) (partial agonists, nephrine .
buspirone ipsapirone) serotonin
가 ²⁵⁾²⁶⁾ sero-

buspirone tonin 가
²⁷⁾ 5-HT₂ dopamine norepinephrine
(ketanserin ritanserin) serotonin
가

serotonin
 Manji³⁶⁾
 lithium 가
 Lithium serotonin
 lithium Serotonin (ontogenesis)
 가 serotonin . Serotonin
 가 가 . Williams
 (1982) propranolol
 propranolol serotonin , fluorescence histochemistry, auto-
 serotonin radiography enzymology
 가 . Ratey³⁷⁾³⁸⁾ 13 (F13) 가
 (1989) 가 buspi- 가³⁹⁾
 rone 12~14 (F12~14)
 buspirone 5 - HT
 가 DA 30%, NE 20%, 5 - HT 50%
 DA NE 5 - HT가
 serotonin 5 - HIAA , tyrosine
 가 200%, tryptophan 300%
 serotonin
 5 - HT 가 , 13~14 (F13~14) tryp-
 5 - HT tophan hydroxylase가⁴⁰⁾
 24.83ng/ml(SD 10.99), 19.04 28~30
 ng/ml(SD 6.71), 20.35ng/ml(SD 8.53)
 (F=2.37, df 2, 61, p>0.05). 18 , 5 - HT
 5 - HIAA (affinity)
 5 - HIAA 17.94ng/ml(SD 12.63), 가 가
 20.17ng/ml(SD 13.25), 26.04ng/ml 가
 (SD 15.54) 100 가⁴¹⁾ 5 - HT
 (F=1.92, df 2, 61, p>0.05). monoamine oxidase(MAO) 13~14
 (+) (Shimizu Morikawa 1959),
 5 - HT 21.58ng/ml(SD 가 가 20
 9.20), 20.34ng/ml(SD 8.53) .⁴²⁾ 가
 Scheffe multiple contrast 5 - HT (cell body)
 (F=0.81, df 1, 62, p>0.05). (nerve terminal) innervate
 5 - HIAA 19.20ng/ml(SD , 40
 12.87), 26.04ng/ml(SD 15.54) .⁴³⁾ 5 - HT
 (F=3.59, df 1,61,

5 - HT, 5 - HIAA

serotonin

5 - HT tryptophan

5 - HT 5 - HIAA

Anderson ⁴³⁾⁴⁴⁾ 30

tryptophan 가 1250

ng/ml , Boetz (1985)

17~56 349ng/ml, 40~68 254ng/ml

가

tryptophan 가

5 - HT

5 - HT

가 ⁴⁵⁾,

가 ⁴⁶⁾

5 - HT

5 - HIAA ⁴⁷⁾

Leckman (1980)

가

가 ⁴⁸⁻⁵²⁾

5 - HIAA ⁵³⁾⁵⁴⁾

5 - HIAA 가 가

5 - HT

5 - HIAA ⁵⁵⁾

5 - HT

5 - HIAA 가 MAO

가 serotonin

Pearson - 0.13(p>0.05)

5 - HIAA Pearson

- 0.22(p>0.05)

Pearson - 0.15(p>0.05)

5 - HT

5 - HIAA Pearson - 0.12(p>0.05)

HT

(5 - HT. Pearson 0.19, p>0.05,

5 - HIAA Pearson 0.25, p>0.05)

5 - HIAA (aggre-

5 - HT Pearson

5 - HIAA Pearson

0.13(p>0.05)

(rule violation)

5 - HT Pearson 0.06(p>0.05), 5 -

HIAA Pearson 0.02(p>0.05)

(oppositional behavior) 5 -

HT Pearson 0.48(p<0.05)

5 - HIAA

Pearson 0.14(p>0.05)

5 - HT

5 - HIAA Pearson

0.50(p<0.05) serotonin

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ABSTRACT

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**STUDY ON THE RELATIONSHIP BETWEEN ONTOGENY OF
SEROTONIN SYSTEM AND PSYCHOPATHOLOGY IN
CONDUCT DISORDER**

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Objectives : Considerable data indicate that diminished serotonergic activity is related to aggressive behavior. In order to understand the biological etiology in conduct disorder, we studied the relationships of plasma serotonin and 5-HIAA levels in conduct disorders to measures of aggression, violation of rules and oppositional defiant behavior.

Methods : Subjects were selected from inpatients and outpatients department of the Division of Child and Adolescent Psychiatry of Seoul National University Hospital. 41 conduct disorders (18 childhood-onset type, 23 adolescent-onset type) and 23 normal controls were included in this study. For the assessment of aggression, rule violation and oppositional behavior, parents completed the rating scale for conduct disorder and oppositional behavior based on the DSM-IV diagnostic criteria. Plasma serotonin and 5-HIAA levels were determined by HPLC with electrochemical detection.

Results : 1) Plasma 5-HT and 5-HIAA levels were not significantly different among childhood-onset conduct disorder, adolescent-onset conduct disorder and normal control subjects. 2) No significant correlations were found between plasma 5-HT levels and aggression or rule violation. 3) Plasma 5-HT levels showed significant positive correlations with oppositional behavior both in childhood-onset conduct disorder and adolescent-onset conduct disorder. 4) Age-related changes were not found in plasma 5-HT and 5-HIAA levels.

Conclusion : Our findings do not support the hypothesis that dysregulation of serotonergic function may be associated with aggression. Instead, our data suggest that serotonergic function is more closely related with oppositional behavior than aggression.

KEY WORDS : Plasma 5-HT · 5-HIAA · Ontogenesis · Conduct disorder.