

주의력결핍 과잉행동장애의 아형별 신경심리학적 특성 비교

CLINICAL AND NEUROPSYCHOLOGICAL CHARACTERISTICS  
OF DSM-IV SUBTYPES OF ATTENTION DEFICIT  
HYPERACTIVITY DISORDER

서해숙\*<sup>†</sup> · 정성덕\*\* · 이종범\*\* · 김진성\*\* · 서완석\*\* · 배대석\*\* · 천은진\*\*

Hae Sook Suh, M.D., Ph.D.,<sup>\*†</sup> Seung Deuk Cheung, M.D., Ph.D.,<sup>\*\*</sup>  
Jong Bum Lee, M.D., Ph.D.,<sup>\*\*</sup> Jin Sung Kim, M.D.,<sup>\*\*</sup> Wan Seok Seo, M.D.,<sup>\*\*</sup>  
Dai Seg Bai, M.A.,<sup>\*\*</sup> Eun Jin Chun, M.D.<sup>\*\*</sup>

연구 목적 : ADHD DSM -  
 방법 : 1998 7 2001 7  
 ADHD 6-15  
 404 DSM -  
 , ADHD - C 234 (57.9%), ADHD - 156 (38.6%), ADHD - HI 14 (3.5%)  
 9.63 ± 2.49 가 , 가 , 가 ,  
 , ADHD 가 4 가 가 - 가 (K - PIC)  
 (ADDES - HV), ADD - H comprehensive teacher s rating scale (ACTeRS),  
 (CAP) SNAP K - ABC KEDI - WISC 가 ,  
 Conner (CPT), (WCST), (SST)  
 결과 : ADHD - C 가 ADHD - , ADHD - HI  
 ADHD - C ADHD - HI ADHD - (p<.001). 가  
 ADHD - C ADHD - HI ADHD - (p<.05),  
 ADHD - C 가 ADHD - (p<.05),  
 ADHD - C ADHD - 가  
 (p<.05). , 가 가 ACTeRS ADHD - HI  
 가 (p<.05). K - ABC 가 ADHD - HI  
 가 , ADHD - C ADHD -  
 CPT, WCST, SST

*Department of Psychiatry, Inha General Hospital, College of Medicine, Inha University, Seongnam*  
*Department of Psychiatry, College of Medicine, Yeungnam University, Daegu*  
<sup>†</sup>Corresponding author

결론: ADHD , 가

중심 단어: . . .

### 서론

5). ADHD DSM -  
 , , ,  
 (Attention Deficit Hyperactivity Disorder ; ADHD ) , , 5-8)  
 , 30~40% , ADHD - C 가  
 3~5% , , , ,  
 1). 30 7), ADHD -  
 / ADHD 가  
 가 가 5)  
 가 9). ADHD - HI  
 가  
 (Diagnostic and Statistical Manual of Mental Disorders ; DSM 가 ADHD - C  
 ) ADHD 5).  
 DSM - 2) (Hyperkinetic disorder) ADHD  
 10),  
 , DSM - 3) . ADHD  
 (Attention Deficit Disorder) , ADHD -  
 가 C , ADHD -  
 , (set shifting) (plan-  
 . DSM - -R<sup>2</sup>) ning) 가 11). ,  
 , ADHD -  
 , (sensory selective attention)  
 (Attention Deficit Hyperactivity Disorder) , ADHD - C (perceptual  
 . DSM - 1) motor planning)  
 / 12).  
 ADHD 가 , (working memory) 가  
 (predominantly inattentive type ; ADHD - 11)13).  
 ), - (predominantly 가  
 hyperactive - impulsive type ; ADHD - HI , , 가  
 ), (combined type ; ADHD - C ) 가 . , /

가 , ADHD 가 , (Korean educational development institute Wechsler intelligence scale for children ; KEDI - WISC )<sup>16)</sup> 가

ADHD 가 (Korean personality inventory for children ; K - PIC )<sup>17)</sup> ADHD , 가 가 가 - 가 (Attention deficit disorder evaluation scale - home version ; AD-DES - HV )<sup>18)</sup> ADHD (Childhood attention problem scale ; CAP )<sup>19)</sup>, Swanson, Nolan, Pelham 가 가 (Diagnostic interview schedule for children and assessed via parents ' and teachers ' Swanson, Nolan, and Pelham ratings ; SNAP )<sup>20)</sup> 가 ADD - H comprehensive teacher ' s rating scale( ACTeRS )<sup>24)</sup> 가 Conner (Continuous performance test ; CPT )<sup>22)</sup> (Wisconsin card sorting test ; WCST )<sup>23)</sup>, (Stop signal task ; SST )<sup>26)</sup>, CPT Multi - Health System Inc. CPT<sup>22)</sup>, WCST<sup>23)</sup> SST<sup>24)</sup>

**방 법**

**1. 연구대상**  
1998 7 2001 7 ADHD DSM - 6~15 ADHD ADHD 404 (16.3%), DSM - ADHD 234 (57.9%), ADHD - HI 14 (3.5%) ADHD - C 156 (38.6%), ADHD - HI 14 (3.5%)

**2. 연구도구**  
12.5 Kaufman Kaufman<sup>14)</sup> Kaufman as-  
sessment battery for children( K - ABC )<sup>15)</sup>, 12.6 15.9

**3. 평가방법**  
ADHD DSM - 가 가 가 1 가 가

**4. 통계 및 분석**  
(descriptive statistics procedure)

가 , , (7.7%), ADHD - HI 14 (3.5%)  
 ADHD Pearson 11 (2.7%), 3 (0.7%), ADHD - C 234  
 chi - square ADHD (57.9%) 202 (50.0%), 32 (7.9%)  
 (one way ANOVA) 9.63 ± 2.49  
 ADHD (p<.05),  
 t ADHD - 가 (10.31 ± 2.66 ),  
 ADHD - C (9.22 ± 2.27 ), ADHD - HI(8.71 ±  
 (one way ANCO- 2.55 ) (p<0.001).  
 VA) Bonferroni  
 Statistical package ADHD - C 가 , ADHD - , ADHD - HI  
 for social science(SPSS), version 10.0 (Table 1).  
 0.05

## 2. 정신병리 평가 결과

353 K - PIC ADHD  
 가 (Table 2). 가 Lie  
 ADHD - ADHD - C  
 (p<.001), F ADHD - ADHD - HI  
 ADHD - C (p<.001).  
 (ego - resilience) ADHD -  
 ADHD - C (p<.05),

## 결 과

### 1. 세 아형간 성별, 연령 비교

ADHD 404 338  
 (83.7%), 66 (16.3%), ADHD -  
 158 (38.6%) 125 (30.9%), 31

**Table 1.** The frequency, percentile and mean score of sex, age in ADHD subtype among the 404 subjects

Variable	Group				
	ADHD-I(%)	ADHD-HI(%)	ADHD-C(%)	Total(%)	
Sex <sup>†</sup>	Male	125(30.9)	11(2.7)	202(50.00)	338( 83.7)
	Female	31( 7.7)	3(0.7)	32( 7.9)	66( 16.3)
Age <sup>‡</sup>	6	10( 2.5)	2(0.5)	16( 4.0)	28( 6.9)
	7	16( 4.0)	5(1.2)	46(11.4)	67( 16.6)
	8	22( 5.4)	1(0.2)	43(10.6)	66( 16.3)
	9	21( 5.2)	1(0.2)	41(10.1)	63( 15.6)
	10	15( 3.7)	2(0.5)	28( 6.9)	40( 11.1)
	11	17( 4.2)	1(0.2)	18( 4.5)	36( 8.9)
	12	13( 3.2)		16( 4.0)	29( 7.2)
	13	18( 4.5)	1(0.2)	13( 3.2)	32( 7.9)
	14	15( 3.7)	1(0.2)	7( 1.7)	23( 5.7)
	15	9( 2.23)		6( 1.5)	15( 3.7)
	Mean ± SD <sup>¶</sup>	10.31 ± 2.66	8.71 ± 2.55	9.22 ± 2.27	9.63 ± 2.49
	Total	156(38.6)	14(3.5)	234(57.9)	404(100.0)

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

ADHD-HI(HI) : Attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type

ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

† : Pearson chi-square likelihood ratio for sex by subtype :  $\chi^2=2.905(df=2)$ ,  $p>.05$

‡ : Pearson chi-Square likelihood ratio for age by subtype :  $\chi^2=30.488(df=18)$ ,  $p<.05$

¶ : Oneway ANOVA for Age by ADHD subtype :  $F=10.413(df=2)$ ,  $p<.001$

SD : Standard deviation

**Table 2.** The score of Korean personality inventory for children in ADHD subtype among 353 subjects

Subscale	Group ADHD- (N=137) (mean ± SD)	ADHD-HI(N=14) (mean ± SD)	ADHD-C(N=202) (mean ± SD)	F	Pairwise comparison <sup>†</sup>
Test - retest	48.47 ± 10.61	51.36 ± 11.48	47.12 ± 10.04	2.089	N.S.
Lie	42.22 ± 8.31	38.71 ± 10.40	36.78 ± 7.17	21.307***	>C
F	49.96 ± 15.36	60.50 ± 18.41	56.47 ± 14.74	10.905***	≠H=C
Egoresilience	41.12 ± 10.09	38.43 ± 10.60	39.04 ± 10.61	3.907*	I>C
Verbal development	56.26 ± 13.93	48.14 ± 15.88	59.67 ± 14.81	4.543**	H<C
Performance development	55.00 ± 12.68	51.50 ± 9.20	56.64 ± 13.03	1.853	N.S.
Anxiety	51.79 ± 12.15	58.00 ± 12.84	53.13 ± 11.98	2.813	N.S.
Depression	57.81 ± 11.19	57.85 ± 11.18	57.26 ± 11.15	0.593	N.S.
Somatization	48.61 ± 10.62	51.43 ± 14.57	50.00 ± 11.12	1.531	N.S.
Delinquency	53.82 ± 9.80	65.29 ± 9.41	62.02 ± 9.76	35.731***	≠H=C
Hyperactivity	58.32 ± 11.47	68.64 ± 12.39	68.62 ± 10.63	39.082***	≠H=C
Family relation	50.37 ± 12.80	50.57 ± 12.38	53.41 ± 12.88	3.422*	<C
Socialization	56.41 ± 9.15	54.21 ± 10.36	53.95 ± 9.54	1.010	N.S.
Psychosis	46.44 ± 12.79	60.07 ± 12.44	55.39 ± 14.35	20.266***	≠H=C
Autism	54.95 ± 13.45	62.79 ± 15.07	63.31 ± 14.87	15.108***	<C

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

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ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

N : Number of subjects

SD : Standard deviation

† : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni

N.S. : Not significant

\* : p&lt;05, \*\* : p&lt;01, \*\*\* : p&lt;001

**Table 3.** The score of ADHD behavior symptom checklist in ADHD subtype among 359 subjects

Variable	Group ADHD-I(N=140) (mean ± SD)	ADHD-HI(N=11) (mean ± SD)	ADHD-C(N=218) (mean ± SD)	F	Pairwise comparison <sup>¶</sup>
Attention(ADDES-HV) <sup>†</sup>	35.83 ± 14.59	21.64 ± 8.70	45.43 ± 14.30	30.460***	C> >H
Attention(ACTeRS) <sup>††</sup>	18.87 ± 5.24	22.18 ± 4.77	14.09 ± 4.64	17.737***	H> >C
Inattention(CAP) <sup>†††</sup>	7.02 ± 2.63	7.27 ± 1.35	9.80 ± 2.71	47.980***	=H<C
Inattention(SNAP) <sup>††††</sup>	6.86 ± 2.70	5.73 ± 2.00	8.28 ± 2.30	20.932***	=H<C
Impulsivity(ADDES-HV) <sup>†</sup>	13.53 ± 9.52	20.91 ± 6.24	26.09 ± 11.98	50.996***	<C
Impulsivity(SNAP) <sup>††††</sup>	9.11 ± 4.06	9.36 ± 3.35	13.45 ± 3.81	55.424***	=H<C
Hyperactivity(ADDES-HV) <sup>†</sup>	10.85 ± 7.09	18.36 ± 6.41	24.10 ± 9.73	85.384***	<C
Hyperactivity(ACTeRS) <sup>††</sup>	11.91 ± 3.74	17.18 ± 3.68	17.06 ± 4.70	57.866***	≠H=C
Hyperactivity(SNAP) <sup>††††</sup>	4.45 ± 2.84	7.63 ± 2.62	9.08 ± 3.24	85.799***	≠H=C
Overactivity(CAP) <sup>†††</sup>	4.61 ± 1.76	4.72 ± 1.10	6.54 ± 1.77	52.248***	=H<C

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

ADHD-HI(HI) : Attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type

ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

N : Number of subjects

SD : Standard deviation

¶ : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni

† : Attention deficit disorder evaluation scale-Home version(ADDES)

†† : ADD-H comprehensive teachers's rating scale(ACTeRS)

††† : Childhood attention problem scale

†††† : SNAP

\* : p&lt;05, \*\* : p&lt;01, \*\*\* : p&lt;001

가 ADHD - C ADHD - ACTeRS  
(p<.05). ADHD - HI  
ADHD - C ADHD - HI (p<.05), 가  
(p<.05), , ADHD - HI ADHD - C  
ADHD - C ADHD - (p<.05) (Table 3).  
(p<.05).  
(Table 2).  
3. 행동증상 평가 결과  
359 4 가  
가  
(p<.05), ADHD - C  
3 가 가 가 (word order) (gestalt closure)

**Table 4.** The score of Kaufman Assessment Battery in ADHD subtype among 258 subjects

Variable	Group	ADHD- (N=91) (mean ± SD)	ADHD-HI(N=7) (mean ± SD)	ADHD-C(N=160) (mean ± SD)	F	Pairwise comparison <sup>†</sup>
Sequential processing		93.69 ± 16.62	103.92 ± 8.80	97.69 ± 15.06	3.687*	N.S.
Simultaneous processing		99.05 ± 20.10	106.77 ± 14.32	100.34 ± 19.43	0.875	N.S.
Cognitive processing		96.86 ± 19.77	106.37 ± 12.37	99.71 ± 18.42	1.763	N.S.
Achievement		102.84 ± 18.42	112.31 ± 10.23	102.94 ± 18.54	1.770	N.S.
Sequential processing scale						
Hand movement		9.60 ± 3.02	12.71 ± 2.29	9.70 ± 3.36	2.958*	H>C
Number recall		9.59 ± 2.96	10.57 ± 1.40	9.97 ± 2.98	0.666	N.S.
Word orders		9.54 ± 2.70	12.29 ± 1.70	9.81 ± 2.43	3.740*	H> =C
Simultaneous processing scale						
Gestalt closure		11.21 ± 2.82	13.71 ± 2.21	11.26 ± 2.42	3.157*	H> =C
Triangles		10.20 ± 3.77	11.14 ± 2.61	10.03 ± 3.37	0.628	N.S.
Matrix analogies		9.73 ± 3.31	10.86 ± 2.12	9.74 ± 3.14	0.498	N.S.
Spatial memory		11.23 ± 3.69	14.00 ± 3.79	11.23 ± 3.61	1.727	N.S.
Photo series		9.55 ± 4.03	10.57 ± 3.05	10.22 ± 5.68	0.107	N.S.
Achievement scale						
Faces & places		102.90 ± 15.31	113.00 ± 5.72	104.70 ± 15.56	1.339	N.S.
Arithmetics		103.59 ± 15.88	116.71 ± 8.77	101.31 ± 17.67	3.176*	N.S.
Riddle		102.93 ± 16.69	113.86 ± 8.51	101.31 ± 17.67	2.257	N.S.
Reading/decoding		102.42 ± 14.70	102.00 ± 15.31	104.52 ± 27.23	0.404	N.S.
Reading/understanding		107.42 ± 16.83	118.14 ± 13.96	107.84 ± 16.86	1.106	N.S.

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

ADHD-HI(HI) : Attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type

ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

N : Number of subjects

SD : Standard deviation

† : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni

N.S. : Not significant

\* : p<05, \*\* : p<01, \*\*\* : p<001

**Table 5.** The score of Korean Educational Development Institute-Wechsler Intelligence Scale for Children in ADHD subtype among 47 subjects

Variable	Group	ADHD- (N=29) (mean ± SD)	ADHD-C (=18) (mean ± SD)	F
Verbal intelligence quotient		94.38 ± 16.31	100.83 ± 19.94	0.527
Performance intelligence quotient		100.84 ± 17.61	103.96 ± 18.36	0.028
Full intelligence quotient		97.70 ± 17.34	102.42 ± 19.01	0.120
Verbal scale				
Information		8.52 ± 2.76	10.17 ± 2.77	1.052
Similarity		10.52 ± 2.43	9.89 ± 2.83	2.396
Arithmetic		9.97 ± 3.94	10.17 ± 2.07	0.505
Vocabulary		9.31 ± 3.75	9.72 ± 3.66	0.431
Comprehension		8.59 ± 3.56	9.00 ± 4.74	0.451
Digit span		10.31 ± 2.70	11.06 ± 3.81	0.009
Performance scale				
Picture completion		9.97 ± 3.03	9.33 ± 3.71	2.270
Picture arrangement		9.59 ± 3.16	9.27 ± 3.85	0.576
Block design		10.62 ± 3.34	11.44 ± 3.93	0.020
Object assembly		10.55 ± 3.47	10.50 ± 2.43	0.823
Digit symbol		10.21 ± 4.20	10.22 ± 4.26	0.269
Maze		11.66 ± 2.38	11.33 ± 3.43	0.000

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

N : Number of subjects

SD : Standard deviation

\* : p<05, \*\* : p<01, \*\*\* : p<001

**Table 6.** The score of Conner's Continuous Performance Test in ADHD subtype among 379 subjects

Variable	Group	ADHD- (N=147) (mean ± SD)	ADHD-HI(N=14) (mean ± SD)	ADHD-C(N=218) (mean ± SD)	F	Pairwise comparisons †
Hits		281.70 ± 55.16	294.57 ± 25.73	275.55 ± 46.73	1.354	N.S.
Omissions		40.97 ± 51.55	29.43 ± 25.73	48.27 ± 46.62	1.442	N.S.
Commissions		20.71 ± 7.77	21.07 ± 6.76	48.27 ± 46.61	0.298	N.S.
Hit RT		417.10 ± 139.72	435.06 ± 96.23	431.09 ± 124.59	0.651	N.S.
Hit RT Std error		14.63 ± 12.18	15.49 ± 7.27	16.80 ± 11.89	0.445	N.S.
Variability of SEs		29.61 ± 26.84	40.21 ± 29.20	35.10 ± 27.55	0.129	N.S.
Attentiveness(d')		1.18 ± 0.83	1.22 ± 0.86	1.07 ± 0.96	0.630	N.S.
Risk taking		0.51 ± 0.38	0.52 ± 0.34	0.68 ± 0.68	2.151	N.S.

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type

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ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type

N : Number of subjects

SD : Standard deviation

† : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni

N.S. : Not significant

Omissions : Omissions error

Commissions : Commission error

Hit RT : Hit reaction time

Hit RT : Hit reaction time

Hit RT Std error : Hit reaction time standard error

Variability of SEs : Variability of standard errors

ADHD - HI      ADHD -      ADHD - C  
 (p<.05).      가      (Table 5).  
 (simultaneous processing scale),  
 (cognitive processing scale),      (achie-  
 vement scale)      ADHD - HI, ADHD - C, ADHD -  
 (Table 4).      (omissions)      (commissions)      가  
 12.6~15.9      47      (hit reaction time),      (hit reaction  
 KEDI - WISC

5. Conner의 연속수행검사 결과(CPT)  
 379

**Table 7.** The score of Wisconsin Card Sorting Test in ADHD subtype among 270 subjects

Variable	Group ADHD- (N=107) (mean ± SD)	ADHD-HI(N=8) (mean ± SD)	ADHD-C(N=155) (mean ± SD)	F	Pairwise comparisons <sup>†</sup>
Trial administrated	124.15 ± 10.38	123.75 ± 12.02	123.50 ± 15.91	0.568	N.S.
Total correct	70.50 ± 19.25	63.00 ± 20.95	64.11 ± 19.88	1.121	N.S.
Total error	53.65 ± 22.97	58.50 ± 26.46	59.12 ± 23.11	0.112	N.S.
Perseverative response	29.70 ± 21.08	25.38 ± 11.86	32.85 ± 23.37	0.464	N.S.
Perseverative errors	25.90 ± 15.92	23.00 ± 10.49	28.81 ± 18.08	0.513	N.S.
Nonperseverative errors	27.78 ± 17.03	36.63 ± 20.52	31.32 ± 17.62	0.789	N.S.
Conceptual level response	55.79 ± 24.88	47.25 ± 28.04	47.19 ± 24.81	1.083	N.S.
Categories completed	3.22 ± 1.91	2.75 ± 1.91	2.62 ± 1.82	0.406	N.S.
Trials to completed 1st category	35.06 ± 35.56	31.25 ± 39.77	39.60 ± 41.27	0.169	N.S.
Failure to maintain set	1.97 ± 1.76	1.50 ± 1.31	1.70 ± 1.69	0.740	N.S.
Learning to learn	-7.68 ± 11.97	-15.99 ± 14.50	-10.93 ± 12.91	1.205	N.S.

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type  
 ADHD-HI(HI) : Attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type  
 ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type  
 N : Number of subjects  
 SD : Standard deviation  
<sup>†</sup> : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni  
 N.S. : Not significant  
 \* : p<0.05, \*\* : p<0.01, \*\*\* : p<0.001

**Table 8.** The score of Stop-Signal Task in ADHD subtype among 210 subjects

Variable	Group ADHD-I(N=87) (mean ± SD)	ADHD-HI(N=9) (mean ± SD)	ADHD-C(N=114) (mean ± SD)	F	Pairwise Comparisons <sup>†</sup>
Inhibition					
SSRT	431.22 ± 203.38	543.33 ± 165.97	483.96 ± 200.69	0.334	N.S.
Mean delay X block	348.39 ± 200.16	228.94 ± 144.30	299.76 ± 206.83	0.725	N.S.
Primary task					
Primary RT	779.61 ± 197.32	772.28 ± 61.85	783.76 ± 143.81	0.202	N.S.
Primary SD	245.86 ± 95.22	253.80 ± 63.20	257.76 ± 87.68	0.674	N.S.

ADHD- ( ) : Attention-deficit hyperactivity disorder, predominantly inattentive type  
 ADHD-HI(HI) : Attention-deficit hyperactivity disorder, predominantly hyperactive-impulsive type  
 ADHD-C(C) : Attention-deficit hyperactivity disorder, combined Type  
 N : Number of subjects  
 SD : Standard deviation  
<sup>†</sup> : Pairwise comparison based on estimated marginal means and adjusted for multiple comparisons by Bonferroni  
 N.S. : Not significant  
 SSRT : Stop signal reaction time  
 RT : Reaction time



time standard error), (variability of standard errors), (attentiveness), 301 ADHD ADHD - C 61%, ADHD - 30%, ADHD - HI 9% . (risk taking) 가 ADHD - HI (Table 6). 가 .

6. 위스콘신카드분류검사 결과(WCST)

270

(Table 7).

ADHD - 가 , ADHD - C, ADHD - HI 9)25)26), 26)

7. 정지신호과제결과(SST)

210

(Table 8).

ADHD - C , ADHD - HI ADHD - , ADHD - C ADHD - 가 ,

고 찰

가 가 7-9)25) 5) ADHD - C

ADHD , ADHD - 가 Paternite 27) 가 K - PIC 가 HI , 가 . ADHD - 가 , ADHD - C 가 , ADHD - C 가 DSM - ADHD 가 5) ADHD - C , , , 가, HD - HI 가 K - ABC AD- 가 , ADHD - 38.6%, ADHD - HI 가 , ADHD - HI 가 ADHD - HI 가 , ADHD - C 10.31 ± 2.66 가 가 , ADHD - HI 8.71 ± 2.55 가 가 K - ABC 5~12.5 , KEDI - WISC 12.5 ADHD - HI 가 가 5)6)8), Eiraldi 8) 60 가 5) , ADHD - C 45%, ADHD - 43%, ADHD - HI 가 ADHD - HI 12% , Faraone 5) ADHD - C

가<sup>8)</sup>, of standard error) 가  
 가 가<sup>5)27)</sup>, , ,  
 K - ABC ADHD - HI 가 . (attentiveness)  
 , , ADHD -<sup>30)</sup>  
 HI 가 ADHD - (vigilance)  
 , 가<sup>12)</sup>  
 4 가 (digit symbol) CPT  
 , ADHD - C  
 CPT , SST , WCST  
 , 가 가 ACTeRS  
 ADHD - C CPT ADHD - C  
 , 가 Paternite<sup>31)</sup>  
 가 가 Sergeant<sup>32)</sup> ADHD -  
 가 ACTeRS  
 ADHD - HI  
 ADHD - C 가 (variability)  
 ADHD 가  
 , , 가  
 , 가 (perseveration),  
 가 가  
<sup>33)34)</sup>  
 CPT, WCST, SST<sup>35)</sup>  
 3 가 SST ADHD<sup>30)</sup>  
 , SST  
 ADHD  
 CPT  
 ( , 'O' or 'X') 가  
 (vigilance task)  
 5<sup>28)29)</sup> 가 가 ,  
 (commission error) (prefrontal)  
 (inhibition) (orbito - frontal region)가<sup>36)</sup>  
 (hit reaction (anterior cingulate), (basal ganglia)  
 time standard error) (variability)<sup>37)</sup> (CPT)

(WCST) CPT 379 , WCST 270 , SST 210  
 (set failure), (SST) 가 , 가  
 가 . ,  
 (right parietal lobe)  
 (inferior parietal lobe) <sup>38)39)</sup>  
 (CPT), (digit forward) 가  
 .  
 (right frontal cortex), (right parietal lobe), (locus ceruleus) <sup>37)</sup> (reticular formation) <sup>36)</sup>  
 가 (arousal) .  
 가 (vigilance task) , ADHD - HI 가  
 , (digit span) . 가 가 가  
 (capacity) , 가 12.5  
 , (working memory) K - ABC  
 , CPT , digit symbol, .  
 가 ,  
 , (limbic system) <sup>36)40)</sup> .  
 ADHD 가  
 , / 가  
 Malon <sup>41)</sup> (dopamine systems)  
 , (left lateralized) .

Heilman  
<sup>42)</sup> (norepinephrine) ADHD  
 - (right lateralized) (right posterior noradrenergic process)  
 .  
 가 . 가 , ,  
 가 가 가  
 , <sup>12)</sup> , 12  
 , 16 가  
<sup>35)</sup> , 6~15  
 가  
 (404 )

가  
 가 7 WCST SST  
 ,  
 가 ,  
 가 .  
 ADHD ADHD - C  
 , , , 가  
 , ADHD -  
 , ,  
 ADHD - HI 가  
 가 가 가  
 , 가 12.5  
 K - ABC  
 ,  
 .  
 가  
 가 .

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## CLINICAL AND NEUROPSYCHOLOGICAL CHARACTERISTICS OF DSM-IV SUBTYPES OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Hae Sook Suh, M.D., Ph.D., Seung Deuk Cheung, M.D., Ph.D.,  
Jong Bum Lee, M.D., Ph.D., Jin Sung Kim, M.D., Wan Seok Seo, M.D.,  
Dai Seg Bai, M.A., Eun Jin Chun, M.D.

*Department of Psychiatry, Inha General Hospital, College of Medicine, Inha University, Seongnam*

**Objectives** : This study was conducted to compare the clinical and neuropsychological characteristics by DSM-IV subtypes of attention deficit hyperactivity disorder (ADHD) patients who did not have comorbid psychiatric disorders.

**Methods** : 5-15 year old children with ADHD were recruited at psychiatric outpatient clinic of Yeungnam University hospital and the patients with comorbidity or neurological abnormalities were excluded. Finally, total 404 children with ADHD were selected for this study. There were 234 subjects of ADHD-C (57.9%), 156 subjects of ADHD-I (38.6%) and 14 subjects of ADHD-HI (3.5%), who fulfilled the DSM-IV diagnostic criteria. The mean age of the total subjects was  $9.63 \pm 2.49$  years old. The psychopathology, IQ, behavioral problems, neuropsychological executive function were evaluated before pharmacological treatment. The measures were Korean Personality Inventory of Child (K-PIC) for psychopathology, 4 behavioral check lists (ADDES-HV, ACTeRS, CAP, SNAP) for behavioral symptoms of ADHD, K-ABC and KEDI-WISC for IQ and Conner's CPT, WCST, SST for neuropsychological executive functions.

**Results** : 1) The prevalence of subtypes was ADHD-C, ADHD-I, ADHD-HI in decreasing order. There was no sex difference of prevalence among three subtypes. The mean age of ADHD-I was older than other subtypes. 2) There was significant differences of psychopathology among subtypes, the ADHD-C and ADHD-HI had higher than the ADHD-I in the scores of delinquent, hyperactivity and psychosis ; the ADHD-C had higher than the ADHD-I in the scores of family relation and autism, the scores of ego resilience were lower than the ADHD-I. However, there was no difference in anxiety, depression and somatization scores among them. 3) The results of behavioral symptom check lists, the ADHD-C had higher the score of inattention, hyperactivity and impulsivity than the ADHD-I. Meanwhile the results of ACTeRS, which rated by the teachers, were different. 4) There were significant differences of sequential processing scale and arithmetics among subtypes in IQ using K-ABC, but there was no significant difference between the ADHD-C and the ADHD-I after excluding the ADHD-HI due to small numbers. 5) There was numerical difference among subtypes but did not reach statistical significance in three neuropsychological executive function tests.

**Conclusion** : In conclusion, our results revealed that there was significant difference in clinical features among three subtypes but, no significant difference in executive functions.

**KEY WORDS** : ADHD · Subtype · Clinical characteristics.