

조증 및 정신분열병 환자에서 덱사메사손/ 인슐린-유도성 저혈당 병합검사*

성시용**† · 박철수** · 손진욱**

Combined Dexamethasone/Insulin-induced Hypoglycemic Test in Manic and Schizophrenic Patients*

Si Yong Sung, M.D.,**† Chul Soo Park, M.D.,** Jin Wook Sohn, M.D.**

ABSTRACT

Many investigators are trying to elucidate the pathogenesis of psychiatric disorders on the basis of neuroendocrine responses to stimulation or perturbation. Dexamethasone(DEX) suppression has been the most widely utilized as the prototypical challenge test. Dexamethasone suppression test(DST) has proven to be valuable in diagnosing the depressive spectrum disorder. Reported specificity of diagnosis of depression is relatively high, but sensitivity is limited. Some researchers used the combination of dexamethasone and corticotropin releasing hormone(CRH) in order to improve the sensitivity. They reported that combined DEX/CRH test is more sensitive than DST alone.

In this study the authors modified the DEX/CRH test, i.e., we administered the insulin instead of CRH. Total subjects were 28(7 normal controls, 10 manic patients, 11 schizophrenic patients). Subjects were taken DEX(1.5mg p.o.) at 11 p.m., insulin 16 hours later(0.1 unit/kg i.v.). Five blood samples for the determination of cortisol and ACTH were serially drawn at 15 minute interval.

The results are as followings :

- 1) The cortisol and ACTH levels of manic subjects increased following insulin administration. Manic subjects showed higher levels of cortisol and ACTH than schizophrenic and normal control subjects. The cortisol and ACTH levels of schizophrenic and normal control subjects did not show gross changes.
- 2) The sensitivity of the test was lower than that of reported DEX/CRH test.

KEY WORDS : Combined DEX/IH test · Cortisol · ACTH.

서 론

가 cortisol
(hypothalamo - pituitary - thyroid axis, HPT axis)
(thyrotrophin - re -
(hy - leasing hormone, TRH)
pothalamo - pituitary - adrenocortical axis, HPA axis) (thyroid - stimulating hormone, TSH)
(growth hormone) 가

1997

Department of Psychiatry, College of Medicine, Gyeongsang National University, Chinju, Korea (Rubin 1989).
† : , 600 - 702, 92 (Dexamethasone suppression test,
) (0591) 50 - 8086,) (0591) 759 - 0003 DST)

. Carroll (1976a) DST ACTH 가 15 30 16 15
 - - , (15 , 15 30 ,
 DST 15 45 , 16 , 16 15)
 cortisol (state - de - . 1995 Schmider
 pendent) (Carroll 1976 ; Ca - DEX/CRH
 rroll 1980 ; Carroll 1981 ; The APA Task Force on La -
 boratory Tests in Psychiatry 1987). cortisol
 DST ACTH ,
 , 가 45%, 82%, 91% .
 70% (se - DEX/CRH ,
 nsitivity) . (sp - , CRH 가
 ecificity) 90%, . DEX/
 77% CRH ,
 가 (Kaplan Sadock 1994). in -
 DST cortisol 가 sulin - -
 . , 가 ACTH cortisol 가 가
 (Wyngaarden 1992) , , ,
 67 78%(Arana 1985), in -
 11 33%(Dewan 1982 ; Herz 1985) sulin CRH 가
 cortisol ACTH 가
 가 .

Kasper Beckmann(1983) DST cortisol
 가 가 .
 가 ,
 DST (Moller 10
 1986 ; Wik 1986). 11 7 .
 가 DST , 4 (Di -
 (Herz 1985). agnostic and Statistical Manual of Mental Disorders, Fou -
 DST 1994 Isabella H. DST rth Edition, DSM - IV) (American Psychiatric Associ -
 (corticotropin - releasing ho - ation 1994) . DST
 rmone, CRH) (challenge test) , , , , ,
 dexamethasone , , , , ,
 , CRH cortisol , , , , ,
 (adrenocorticotropin, ACTH) 1
 - - . (The APA Task Force
 , DST 44% on Laboratory Tests in Psychiatry 1987). 10
 DEX/CRH 2 . 3
 가 80% 가 . , 4 (35 , 35 , 3 가
 70 , 50 70 , 70) . ha -
 가 90% 가 . 80% loferidol, chlorpromazine, sulphiride, risperidone, perphen -

연구대상 및 방법

1. 연구대상

10
 11 7 .
 , 4 (Di -
 agnostic and Statistical Manual of Mental Disorders, Fou -
 rth Edition, DSM - IV) (American Psychiatric Associ -
 ation 1994) . DST
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 , , , , ,
 1
 (The APA Task Force
 on Laboratory Tests in Psychiatry 1987). 10
 2 . 3
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 ha -
 loferidol, chlorpromazine, sulphiride, risperidone, perphen -

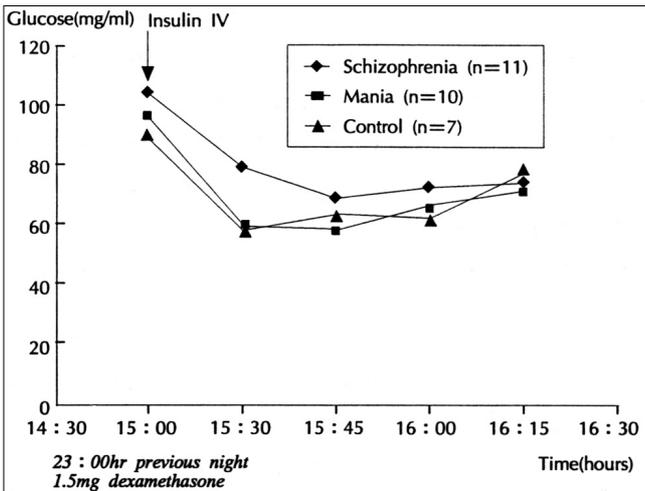


Fig. 1. Blood glucose level during dexamethasone/insulin-induced hypoglycemic test.

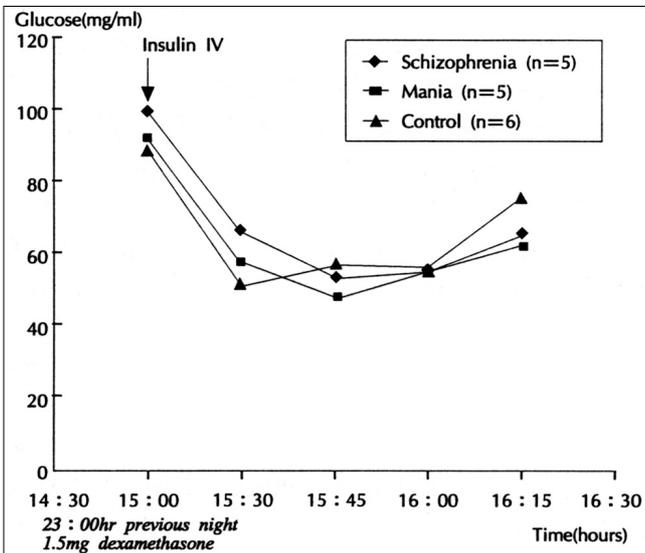


Fig. 2. Blood glucose level during dexamethasone/insulin-induced hypoglycemic test in subjects meeting insulin-induced hypoglycemic test criteria.

Table 2. Blood cortisol level (nmol/L) of subjects meeting insulin-induced hypoglycemic test criteria

	BASAL ^b	PEAK ^c
Schizophrenia (N=5)	13.04 ± 62.76	28.58 ± 91.14
Mania (N=5)	39.96 ± 248.61	102.00 ± 228.65*
Controls (N=6)	10.52 ± 4.62	22.74 ± 143.33

^aData are expressed as geometric mean ± standard deviations
^bBASAL, indicates value before insulin intravenous administration ;
^cPEAK, maximum hormone response after insulin intravenous administration (time between 15 : 30 hours and 16 : 15 hours)
 *significant vs. schizophrenia and normal controls (p < 0.05)

Table 3. Blood ACTH level (nmol/L) of subjects meeting insulin-induced hypoglycemic test criteria

	BASAL ^b	PEAK ^c
Schizophrenia (N=5)	0.66 ± 0.57	2.70 ± 6.70
Mania (N=5)	3.03 ± 4.73*	9.68 ± 16.71*
Control (N=6)	0.69 ± 0.57	2.14 ± 3.19

^aData are presented as a geometric mean ± standard deviations
^bBASAL, indicates value before insulin intravenous administration ;
^cPEAK, maximum hormone response after insulin intravenous administration (time between 15 : 30 hours and 16 : 15 hours)
 *significant vs. schizophrenia and normal controls (p < 0.05)

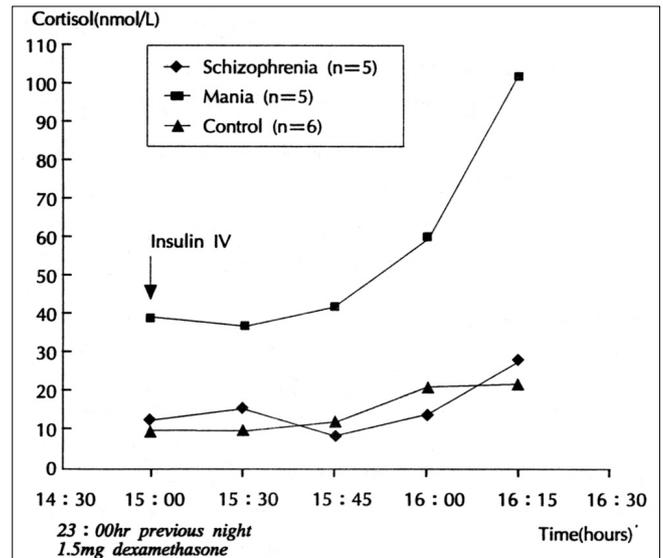


Fig. 3. Blood cortisol level during dexamethasone/insulin-induced hypoglycemic test in subjects meeting insulin-induced hypoglycemic test criteria.

3. Insulin 투여 후 cortisol의 변화 dexamethasone suppression

cortisol ACTH co -
 rtisol ACTH insulin
 가 .
 cortisol Table 2, 3
 (Basal)
 Insulin
 cortisol level 가 (PE -
 AK) insulin 1 15
 cortisol 가
 cortisol 가

cortisol level
 10nmol/L 가
 1, 2 ,

4. Insulin 투여 후 ACTH의 변화

Insulin ACTH

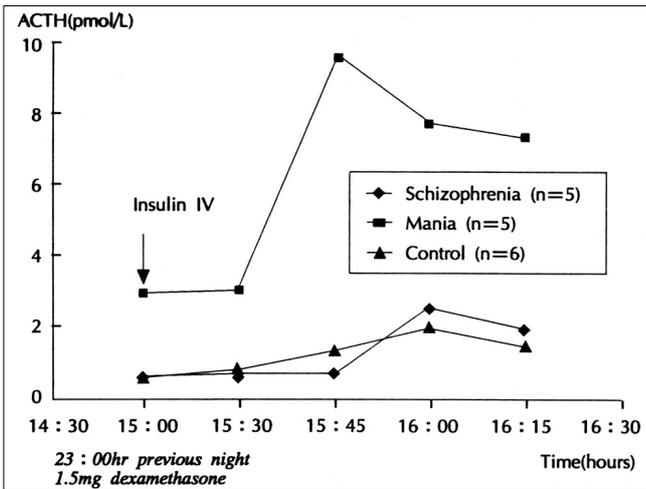


Fig. 4. Blood ACTH level during dexamethasone/insulin-induced hypoglycemic test in subjects meeting insulin-induced hypoglycemic test criteria.

Table 3, Fig. 4 . Insulin ACTH가 가 (PEAK) insulin 1 , 45 . ACTH (BA - SAL) 가가 , 가 , 고 찰 DST 가 melancholic 가 가 (identification), (serial monitoring), (Targum 1983). Dexamethasone corticosteroids - binding globulin , corticotrophs . dexamethasone endogenous corticosteroids CRH vasopressin . ex -

ogenous CRH , corticotrophs vasopressin CRH (synergistic interaction) ACTH 가 (von Bardeleben 1985 ; Wyngaarden 1992). DEX/CRH 가 . DEX/CRH 가 가 DST . CRH insulin , insulin CRH . DEX/CRH 38% (Lammers 1995), 82% (Schmider 1995)가 cortisol ACTH 가 1/4 , 2/5 , 0/6 , cortisol ACTH , insulin - induced hypoglycemic test 50% 40mg/ml 36%(4/11), 50%(5/10), 85%(6/7) . cortisol ACTH 가 . insulin CRH cortisol . CRH 45 cortisol 가 가 insulin in - sulin glucagon, catecholamines, growth hormone glucagon (Wyngaarden 1992), 1 , 1 3 , 3 , co - rtisol ACTH .

cortisol ACTH 3) DEX/CRH
 DEX/CRH
 , DST cortisol
 , cortisol
 가 , dexamethasone
 , 가
 DEX/IH 가
 , 가
 CRH
 가
 cortisol ACTH
 , insulin - induced hypoglycemic test
 가
 drug - washout 가
 cortisol ACTH 가
 DEX/CRH , DST
 DST
 ,
 요약 및 결론
 DST CRH
 가 , CRH insulin
 , DEX/IH
 cortisol ACTH 가
 ,
 10 , 7 11
 23 dexamethasone 1.5mg
 , 15 0.1unit/kg insulin
 , 4 가
 cortisol ACTH
 insulin
 (non - parametric method) Kruskal - Wallis
 One - Way ANOVA
 1) cortisol ACTH insulin
 가
 2) cortisol ACTH
 가

중심 단어 : DEX/IH · Cortisol · ACTH.
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