

รายการอ้างอิง

1. D. Lynn Loriaux. Adrenal insufficiency. Principle and practice of Endocrinology and Metabolism 2th edition Kenneth L. Becker. J. B. Lippincott 1995 :682-6.
2. Constantine Tsigo, Themistocles C. Kamilaris, George P. Chrousos. Adrenal disease. Diagnostic endocrinology 2th edition W. Tabb Moore. Mosby 1996:125-56.
3. Modhi G, Bauman W, Nicolis G. Adrenal failure associated with hypothalamic and adrenal metastases. *Cancer* 1981; 47:2098-101.
4. Pernasetti F, Toledo SP, Vasilyev VV. Impaired adrenocorticotropin-adrenal axis in combined pituitary hormone deficiency caused by a two-base pair deletion (301-302delAG) in the prophet of Pit-1 gene. *J Clin Endocrinol Metab* 2000; 85:390-7.
5. Stacpoole PW, Interlandi JW, Nicholson WE, Rabin D. Isolated ACTH deficiency: A heterogeneous disorder. Critical review and report of four new cases. *Medicine* 1982; 61:13-21.
6. Yoshida T, Arai T, Sugano J. Isolated ACTH deficiency accompanied by 'primary hypothyroidism' and hyperprolactinaemia. *Acta Endocrinol (Copenh)* 1983; 104:397-401.
7. Koide Y, Kimura S, Inoue S. Responsiveness of hypophyseal-adrenocortical axis to repetitive administration of synthetic ovine corticotropin-releasing hormone in patients with isolated adrenocorticotropin deficiency. *J Clin Endocrinol Metab* 1986; 63:329-35.
8. Cantalamessa L, Catania A, Baldini M. CRH and lysine-vasopressin stimulation tests in the diagnosis of hypoadrenalinism secondary to hypothalamic or pituitary disorders. *Horm Metab Res* 1990; 22:389-93.
9. Kanemaru Y, Noguchi T, Onaya T. Isolated ACTH deficiency associated with transient thyrotoxicosis and hyperprolactinemia. *Endocrinol Jpn* 1989; 36:459- 64.
10. Shigemasa C, Kouchi T, Ueta Y. Evaluation of thyroid function in patients with isolated adrenocorticotropin deficiency. *Am J Med Sci* 1992; 304:279-84.
11. Sugiura M, Hashimoto A, Shizawa M. Heterogeneity of anterior pituitary cell

- antibodies detected in insulin-dependent diabetes mellitus and adrenocorticotrophic hormone deficiency. *Diabetes Res* 1986; 3:111-4.
12. Sauter NP, Toni R, McLaughlin CD. Isolated adrenocorticotropin deficiency associated with an autoantibody to a corticotroph antigen that is not adrenocorticotropin or other proopiomelanocortin-derived peptides. *J Clin Endocrinol Metab* 1990; 70:1391-7.
 13. Mann M, Koller E, Murgo A. Glucocorticoid-like activity of megestrol. A summary of Food and Drug Administration experience and a review of the literature *Arch Intern Med* 1997; 157:1651-5.
 14. Leinung MC, Liporace R, Miller CH. Induction of adrenal suppression by megestrol acetate in patients with AIDS. *Ann Intern Med* 1995; 122:843-8.
 15. Burke CW. Adrenocortical insufficiency. *Clin Endocrinol Metab* 1985; 14:947-76
 16. Oelkers W. Adrenal insufficiency [see comments]. *N Engl J Med* 1996; 335:1206.
 17. HŠgg E, Asplund K, Lithner F. Value of basal plasma cortisol assays in the assessment of pituitary-adrenal insufficiency. *Clin Endocrinol* 1987; 26:221-8.
 18. Jenkins D, Forsham PH, Laidlaw JC. Use of ACTH in the diagnosis of adrenal cortical insufficiency. *Am J Med* 1955; 18:3-8.
 19. Erturk E, Jaffe CA, Barkan AL. Evaluation of the integrity of the hypothalamic-pituitary-adrenal axis by insulin hypoglycemia test. *J Clin Endocrinol Metab* 1998; 83:2350-4.
 20. Watts NB, Tindall GT. Rapid assessment of corticotropin reserve after pituitary surgery. *JAMA* 1988; 259:708-13.
 21. Streeten DHP, Anderson GH Jr, Bonaventura MM. The potential for serious consequences from misinterpreting normal responses to the rapid adrenocorticotropin test. *J Clin Endocrinol Metab* 1996; 81:285-90.
 22. Veldhuis JD, Iranmanesh A, Johnson ML, Lizarralde G. Amplitude, but not frequency, modulation of adrenocorticotropin secretory bursts gives rise to the nyctohemeral rhythm of the corticotropin axis in man. *J Clin Endocrinol Metab* 1990; 71:452-63.
 23. Dickstein G, Spigel D, Arad E. One microgram is the lowest ACTH dose to cause a maximal cortisol response. There is no diurnal variation of cortisol response to submaximal ACTH stimulation. *Eur J Endocrinol* 1997;

- 137:172-7.
24. Dickstein G, Shechner C, Nicholson WE. Adrenocorticotropin stimulation test: Effects of basal cortisol level, time of day, and suggested new sensitive low dose test. *J Clin Endocrinol Metab* 1991; 72:773-8.
 25. Crowley S, Hindmarsh PC, Honour JW, Brook CG. Reproducibility of the cortisol response to stimulation with a low dose of ACTH(1-24): The effect of basal cortisol levels and comparison of low-dose with high-dose secretory dynamics. *J Endocrinol* 1993; 136:167-72.
 26. May ME, Carey RM. Rapid adrenocorticotrophic hormone test in practice. *Am J Med* 1985; 79:679-84.
 27. Thaler LM, Blevins LS Jr. The low dose (1- μ g) adrenocorticotropin stimulation test in the evaluation of patients with suspected central adrenal insufficiency. *J Clin Endocrinol Metab* 1998; 83:2726-9.
 28. Oelkers W, Diederich S, Bahr V. Diagnosis and therapy surveillance in Addison's disease: Rapid adrenocorticotropin (ACTH) test and measurement of plasma ACTH, renin activity, and aldosterone. *J Clin Endocrinol Metab* 1992; 75:259-64.
 29. Rasmussen S, Olsson T, Hagg E. A low dose ACTH test to assess the function of the hypothalamic-pituitary-adrenal axis. *Clin Endocrinol* 1996; 44:151-6.
 30. Cunningham SK, Moore A, McKenna TJ. Normal cortisol response to corticotropin in patients with secondary adrenal failure. *Arch Intern Med* 1983; 143:2276-9.
 31. Lindholm J, Kehlet H. Re-evaluation of the clinical value of the 30 min ACTH test in assessing the hypothalamic-pituitary-adrenocortical function. *Clin Endocrinol*. 1987; 26:53-69.
 32. Hurel SJ, Thompson CJ, Watson MJ. The short Synacthen and insulin stress tests in the assessment of the hypothalamic-pituitary-adrenal axis. *Clin Endocrinol* 1996; 44:141-6.
 33. Broide J, Soferman R, Kivity S. Low-dose adrenocorticotropin test reveals impaired adrenal function in patients taking inhaled corticosteroids. *J Clin Endocrinol Metab* 1995; 80:1243-6.
 34. Rose LI, William GH, Jagger PI, Laufer DP. The 48-hour adrenocorticotropin infusion test for adrenocortical insufficiency. *Ann Intern Med* 1970; 73:49-59.
 35. Spiger M, Jubiz W, Meikle AW. Single-dose metyrapone test: Review of a four-year

- experience. *Arch Intern Med* 1975; 135:698-700.
36. Tordjman K, Jaffe A, Grazas N. The role of the low dose (1 µg) adrenocorticotropin test in the evaluation of patients with pituitary diseases. *J Clin Endocrinol Metab* 1995; 80:1301-5.
37. Taylor AL, Fishman LM. Corticotropin-releasing hormone. *N Engl J Med* 1988;319:213-8.
38. Schulte HM, Chrousos GP, Avgerinos P. The corticotropin-releasing hormone stimulation test: A possible aid in the evaluation of patients with adrenal insufficiency. *J Clin Endocrinol Metab* 1984; 58:1064-70.
39. Streeten DH. What test for hypothalamic-pituitary-adrenal insufficiency. *Lancet* 1999; 354:179-80.
40. Steven K. Grinspoon, Bevery M. K. Biller. Laburatory assessment of adrenal insufficiency. *J Clin Endocrinol Metab* 1994;79:923-31.
41. Kehlet H., Binder C, Blichert-Toft M. Glucocorticoid maintenance therapy following adrenalectomy : assessment of dosage and preperation. *Clin Endocrinol (Oxf.)* 1976;5:37-40.
42. Thorn GW, Laufer DP. Clinical therapeutics of adrenal disorders. *Am J Med* 1977;53:673-8.
43. Plumpton FS, Besser GM. The adrenocortical response to surgery and insulin induced hypoglycemia in corticosteroid treated subjects. *Br J Surg* 1969;56:216-9.
44. Greenwood FC, Landon J, Stamp TCB. The plasma sugar, free fatty acid, cortisol and growth hormone response to insulin in control subjects. *J Clin Invest* 1966 ;45: 429-36.
45. Landon J, Wynn V, James VHT. The adrenocortical response to insulin-induced hypoglycemia. *J Endocrinol* 1963;27:183-4.
46. Belchetz PE. Idiopathic hypopituitarism in the elderly. *Br Med J* 1985;291:247-8.
47. The Lancet. Testing anterior pituitary function (Editorial) *Lancet* 1986;i:839-41.
48. Clayton RN. Diagnosis of adrenal insufficiency. *Br Med J* 1989; 298:271-2.
49. Liddle GW, Esteo HL, Kendall JW, Williams WC, Townes AW. Clinical application of a new test of pituitary reserve. *J Clin Endocrinol Metab* 1959;19:875-94.
50. Ney RL, Shimizu N, Nicholson WE, Island DP& Liddle GW. Correlation of plasma ACTH concentration with adrenocortical response in normal human

- subjects, surgical patients and patients with Cushing's disease. *J of clin Invest.* 1969;42:1669-77.
51. Wood JB, James VHT, Frankland AW, Landon J. A rapid test of adrenocorticoid function. *Lancet* 1965;1:243-5.
 52. Kehlet H, Blichert-Toft M, Lindholm J& Rasmussen P. Short ACTH test in assessing hypothalamic-pituitary adrenocortical function. *Br Med J* 1976;1:249-51.
 53. Lindholm J, Kehlet H, Blichert-Toft M, Dinesen B, Riishede J. Reliability of the 30 minute. ACTH test in assessing hypothalamic-pituitary-adrenal axis function. *J Clin Endocrinol Metab* 1978;47:272-4.
 54. Stewart PM, Corrie J, Seckl JR, Edwards CRW, Padfield PL. A rational approach for assessing the hypothalamic-pituitary-adrenal axis. *Lancet* 1988;1:1208-10.
 55. Borst GC, Michenfelder HJ, O'Brian JT. Discordance cortisol response to exogenous. ACTH and insulin induced hypoglycemia in patients with pituitary disease. *N Engl J Med* 1982;306:1462-4.
 56. Cunningham SK, Moore A, Mckenna TJ. Normal cortisol response to corticotropin in patients with secondary adrenal failure. *Arch Intern Med* 1983;143:2276-9.
 57. Tsatsoulis A, Shalet SM, Harrison J, Ratcliffe WA, Beardwell CG, Robinson L. Adrenocorticotrophin (ACTH) deficiency undetected by standard dynamic tests of hypothalamic-pituitary-adrenal axis. *Clin Endocrinol (Oxf)* 1988;28:225-32.
 58. Graybeal ML& Fang VS. Physiological dosing of exogenous ACTH. *Acta Endocrinologic* 1985;108:401-6.
 59. Crowley S, Hindmarsh PC, Holownia P, Honour JW, Brook CGD. The use of low dose of ACTH in the investigation of adrenal function in man. *J Endocrinol* 1991;130:475-9.
 60. Dickstein G, Shenchner C, Nicholson WE, Rosner I, Shen-Orr Z, Adawai F, Lahav M. Adrenocorticotrophin stimulation test:effects of basal cortisol level, time of day, and suggested new sensitive dose test. *J Clin Endocrinol Metab* 1991;72:773-8.
 61. Dailoh H, Morita H, Mune T. Response of plasma adrenocortical steroids to low dose ACTH in normal subjects. *Clin Endocrinol(Oxf.)* 1995;43:311-5.

62. Oelkers W, Boelke T&Bahr V. Dose-response relationships between plasma adrenocorticotropin, cortisol, aldosterone, and 18-OH hydroxycorticosterone after injection of ACTH (1-39) or human CRH in man. *J of clin Endocrinol Metab* 1988;66:181-6.
63. Mayenkmecht J, Diederich S, Bahr V, Plochinger, Oelkers W. Comparison of low and high dose corticotrophin stimulation test in patients with pituitary disease. *J Clin Endocrinol Metab* 1998;80:1558-62.
64. Weintrob N, Sprecher E, Josefsberg Z. Standard and low dose short adrenocorticotrophin test compared with hypoglycemia for assessment of the hypothalamic-pituitary-adrenal axis in children with idiopathic multiple pituitary hormone deficiencies. *J Clin Endocrinol Metab* 1998;83:88-92.
65. Tordjman K, Jaffe A, Grazas N, Apter C, Stern N. The role of the low dose (1 microgram) adrenocorticotrophin test in the evaluation of patients with pituitary disease. *J Clin Endocrinol Metab* 1995;80:1301-5.
66. Rasmuson S, Olsson T, Hagg E. A low dose ACTH test to assess the function of the hypothalamic-pituitary-adrenal axis. *Clin Endocrinol (Oxf)* 1996;44:151-6.
67. TM Abdu, TA Elhadd R N, RN Clayton. Comparison of the low dose short Synavthen test (1 μ g) the conventional dose short synacthen test (250 μ g), and the insulin tolerance test for assessment of the hypothalamic-pituitary- adrenal axis in patients with pituitary disease. *J Clin Endocrinol Metab* 199;84:838-43.
68. Tordjman K, Anat J, Yana T, Yona G, Rona L, Naftali S. Low -dose (1 μ g.) adrenocorticotrophin (ACTH) stimulation as a screening test for impaired hypothalamo-pituitary-adrenal axis function : sensitivity, specificity and accuracy in comparison with the high-dose (250 μ g.) test. *Clin Endocrinol* 2000;52:633-40.

ภาคผนวก

แบบบันทึกข้อมูลผู้ป่วย

ชื่อ..... H.N..... อายุ..... ปี อาชีพ.....
 ที่อยู่.....

Diagnosis.....

Present illness.....

History of surgery.....

Pathologic finding.....

Past history.....

Physical exam

GA.....

T=..... C. P.=..... /min. R=..... /min. BP.=..... mm.Hg.

EENT:.....

NECK:.....

CHEST:.....

ABDOMEN:.....

EXTREMITES:.....

SKIN:.....

Signs of Cushings.....

ยาที่ได้รับ.....

ครั้งที่ ทำ test วันที่.....

1 μ gm. ACTH TEST 0 MIN. CORTISOL =

20 MIN. CORTISOL =

30 MIN. CORTISOL =

60 MIN. CORTISOL =

250 μ gm. ACTH TEST 0 MIN. CORTISOL =

30 MIN. CORTISOL =

60 MIN. CORTISOL =

ครั้งที่ ทำ test วันที่.....

INSULIN TOLERANCE TEST

0 MIN. CORTISOL = PLASMA GLUCOSE =

HYPOGLYCEMIA POINT CORTISOL =

AFTER HYPOGLYCEMIA POINT 60 MIN. CORTISOL =

Cosyntropin: Drug information

Drug Information Handbook

Charles Lacy, RPh, PharmD

U.S. BRAND NAMES – Cortrosyn Injection

GENERIC AVAILABLE – No

SYNONYMS – Synacthen; Tetracosactide

THERAPEUTIC CATEGORY

Diagnostic Agent, Adrenocortical Insufficiency

USE – Diagnostic test to differentiate primary adrenal from secondary (pituitary) adrenocortical insufficiency

PREGNANCY RISK FACTOR – class C

CONTRAINDICATIONS – Known hypersensitivity to cosyntropin

WARNINGS / PRECAUTIONS – Use with caution in patients with pre-existing allergic disease or a history of allergic reactions to corticotropin

ADVERSE REACTIONS

1% to 10%:

Cardiovascular: Flushing

Central nervous system: Mild fever

Dermatologic: Pruritus

Gastrointestinal: Chronic pancreatitis

<1%: Hypersensitivity reactions

DRUG INTERACTIONS – Decreased effect: May decrease effect of anticholinesterases in patients with myasthenia gravis, nondepolarizing neuromuscular blockers, phenytoin and barbiturates may decrease effect of cosyntropin No data reported

STABILITY – Reconstitute with NS

Stability of parenteral admixture at room temperature (25°C): 24 hours

Stability of parenteral admixture at refrigeration temperature (4°C): 21 days

I.V. infusion in NS or D5W is stable 12 hours at room temperature

MECHANISM OF ACTION – Stimulates the adrenal cortex to secrete adrenal steroids (including hydrocortisone, cortisone), androgenic substances, and a small amount of aldosterone

PHARMACODYNAMICS / KINETICS

Distribution: Crosses the placenta

Metabolism: Unknown

Time to peak serum concentration: Within 1 hour (plasma cortisol levels rise in healthy individuals within 5 minutes of administration I.M. or I.V. push)

USUAL DOSAGE

Adrenocortical insufficiency: I.M., I.V. (over 2 minutes): Peak plasma cortisol concentrations usually occur 45-60 minutes after cosyntropin administration

Neonates: 0.015 mg/kg/dose

Children <2 years: 0.125 mg

Children >2 years and Adults: 0.25-0.75 mg

When greater cortisol stimulation is needed, an I.V. infusion may be used:

Children >2 years and Adults: 0.25 mg administered at 0.04 mg/hour over 6 hours

Congenital adrenal hyperplasia evaluation: 1 mg/m²/dose up to a maximum of 1 mg

ADMINISTRATION – Give I.V. doses over 2 minutes

REFERENCE RANGE – Normal baseline cortisol; increase in serum cortisol after cosyntropin injection of >7 µg/dL or peak response >18 µg/dL; plasma cortisol concentrations should be measured immediately before and exactly 30 minutes after a dose

TEST INTERACTIONS – Decreased effect: Spironolactone, hydrocortisone, cortisone

MENTAL HEALTH: EFFECTS ON MENTAL STATUS – None reported

MENTAL HEALTH: EFFECTS ON PSYCHIATRIC TREATMENT – Barbiturates may decrease the levels of cosyntropin

DENTAL HEALTH: LOCAL ANESTHETIC/VASOCONSTRICTOR PRECAUTIONS – No information available to require special precautions

DENTAL HEALTH: EFFECTS ON DENTAL TREATMENT – No effects or complications reported

PATIENT INFORMATION – Take oral medication with 8 oz of water on empty

stomach (1 hour before or 2 hours after meals) for best absorption; report any skin rashes immediately

NURSING IMPLICATIONS – Patient should not receive corticosteroids or spironolactone the day prior and the day of the test

DOSAGE FORMS – Powder for injection: 0.25 mg

ประวัติผู้เขียนวิทยานิพนธ์

นายณรงค์ วนิชยนิรนล เกิดเมื่อวันที่ 20 พฤศจิกายน พ.ศ.2507 ที่จังหวัดนครสวรรค์ จบการศึกษาชั้นมัธยมศึกษาปีที่ 5 จากโรงเรียนนครสวรรค์ เข้ารับการศึกษาต่อระดับปริญญาตรีจากคณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ จนจบในปี พ.ศ.2531 หลังจากนั้นได้เข้ารับราชการในกระทรวงสาธารณสุข เป็นแพทย์ประจำโรงพยาบาลปป集成 จังหวัดสุพรรณบุรีเป็นเวลา 1 ปี ต่อมามาได้ย้ายไปเป็นแพทย์ประจำโรงพยาบาลอู่ทอง จังหวัดสุพรรณบุรีเป็นเวลา 2 ปี จากนั้นได้เข้ารับการศึกษาต่อเป็นแพทย์ประจำบ้าน ภาควิชาอายุรศาสตร์ โรงพยาบาลจุฬาลงกรณ์ เป็นเวลา 3 ปีได้รับอนุปริญญาสาขาอายุรศาสตร์ ในปี พ.ศ.2537 ได้ไปปฏิบัติงานเป็นแพทย์ประจำโรงพยาบาลอู่ทอง จังหวัดสุพรรณบุรีเป็นเวลา 2 ปี ได้ย้ายไปปฏิบัติงานที่กลุ่มงานอายุรกรรม โรงพยาบาลสระบุรี ตั้งแต่ปี พ.ศ.2539 ปัจจุบันกำลังศึกษาต่อเป็นแพทย์ประจำบ้านต่อยอดปีที่ 2 สาขาวิชาต่อมีเวลารอและเมตตาบูลิสม ภาควิชาอายุรศาสตร์ คณะแพทยศาสตร์จุฬาลงกรณ์มหาวิทยาลัย

