

Chap. 8 Testosterone and the Brain in-Utero to Old age

Abbott, R.D., L.J. Launer, B.L Rodrigues., G.W. Ross, P.W.F. Wilson, K.H. Masaki, D. Strozyk, J.D. Curb, K. Yano, J.S. Popper and, H. Petrovitch. "Serum Estradiol and Risk of Stroke in Elderly Men." *Neurology* **68**(February 20, 2007): 563-568.

Almeida OP, BB Yeap, GJ Hankey, et al. "Low Free Testosterone Concentration as a Potentially Treatable Cause of Depressive Symptoms in Older Men." *Arch Gen Psychiatry* **65**(3)(2008): 283-289.

Atwood, Craig S., Sivan Vadakkadath Meethal, Tianbing Liu, Andrea C. Wilson, Miguel Gallego, Mark A. Smith, and Richard L. Bowen. "Dysregulation of the Hypothalamic-Pituitary-Gonadal Axis with Menopause and Andropause Promotes Neurodegenerative Senescence." *J Neuropathol Exp Neurol* **64**(2)(February 2005): 93-103.

Barrett, Gordon M., Massimo Bardi, Ana Karina Zavala Guillén, Akio Mori and Keiko Shimizu. "Regulation of Sexual Behavior in Male Macaques by Sex Steroid Modulation of the Serotonergic System." *Experimental Physiology* **91**(2): 445-456.

Barrett-Connor, Elizabeth, Denise G. Von Mühlen and Donna Kritz-Silverstein. "Bioavailable Testosterone and Depressed Mood in Older Men: the Rancho Bernardo Study." *Journal of Clinical Endocrinology and Metabolism* **84**, No.2(1999): 573-577.

Barrett-Connor, Deborah Goodman-Gruen and Brad Patay. "Endogenous Sex Hormones and Cognitive Function in Older Men*" *The Journal of Clinical Endocrinology & Metabolism* **84**, No. 10(1999): 3681-3685.

Bhasin, Shalender, Olga M. Calof, Thomas W. Storer, Martin L. Lee, Norman A. Mazer, Ravi Jasuja, Victor M. Montori, Wenqing Gao and James T. Dalton. "Drug Insight: Testosterone and Selective Androgen Receptor Modulators as Anabolic Therapies for Chronic Illness and Aging." *Nat Clin Pract Endocrinol Metab* **2**(3)(March 2006): 146-159.

Bowen, Richard L., Giuseppe Verdile, Tianbing Liu, Albert F. Parlow,

George Perry, Mark A. Smith, Ralph N. Martins and Craig S. Atwood. "Luteinizing Hormone, a Reproductive Regulator That Modulates the Processing of Amyloid- β Deposition.*" *Journal of Biological Chemistry* **279**, No. 19(May 7, 2004): 20539-20545.

Bradley, T. Douglas and John S. Floras "Obstructive Sleep Apnoea and Its Cardiovascular Consequences." www.thelancet.com **373**(January 3, 2009): 80-93.

Burkhardt, Melanie S., Jonathan K. Foster, Roger M. Clarmette. S. A. Paul Chubb, David G. Bruce, Peter D. Drummond, Ralph N. Martins and Bu B. Yeap. "Interaction Between Testosterone and Apolipoprotein E ϵ 4 Status on Cognition in Healthy Older Men." *The Journal of Clinical Endocrinology & Metabolism* **91**(3)(March 2006): 1168-1172. DOI: 10.1210/jc.2005-1072

Burris, Allen S., Steven M. Banks, C. Sue Carter, Julian M. Davidson and Richard J. Sherins. "A Long-term, Prospective Study of the Physiologic and Behavioral Effects of Hormone Replacement in Untreated Hypogonadal Men." *Journal of Andrology* **13**, No. 4(July/August 1992): 297-304.

Chang KJ, Lee TY, Linares-Cruz G, Fournier S, de Lignieres B. Influences of percutaneous administration of estradiol and progesterone on human breast epithelial cell cycle in vivo. *Fertil Steril*. 1995

Chariton, Roger. "Ageing Male Syndrome, Andropause, Androgen Decline or Mid-Life Crisis?" *The Journal of Men's Health & Gender* **1**(1)(May 2004): 55-59.

Cherrier, M. M., B. D. Anawalt, K. L. Herbst, J. K. Amory, S. Craft, A. M. Matsumoto and W. J. Bremner. "Cognitive Effects of Short-Term Manipulation of Serum Sex Steroids in Healthy Young Men." *The Journal of Clinical Endocrinology & Metabolism* **87**(7)(July 2002): 3090-3096.

Cherrier, M. M., S. Asthana, S. Slymate, L. Baker, A. M. Matsumoto, E. Peskind, M. A. Raskind, K. Brodtkin, W. Bremner, A. Petrova, S. LaTendresse, S. Craft. "Testosterone Supplementation Improves Spatial and Verbal Memory in Healthy Older Men." *Neurology* **57**(1)(July 2001): 80-88.

Doering, Charles H., H. Keith H. Brodie, Helena C. Kraemer, Rudolf H. Moos, Heather B. Becker and David A. Hamburg. "Negative Affect and Plasma Testosterone: a Longitudinal Human Study." *Psychosomatic Medicine* **37**, No. 6(November-December 1975): 484-491.

Drinka, Paul J., Albert L. Jochen, Mary Cuisinier, Rosemary Bloom, Inge Rudman, Daniel Rudman. "Polycythemia as a Complication of Testosterone Replacement Therapy in Nursing Home Men with Low Testosterone Levels." *Journal of the American Geriatrics Society* **43**(8)(August 1995): 899-901.

Ehrenkranz, Joel, Eugene Bliss and Michael H. Sheard. "Plasma Testosterone: Correlation with Aggressive Behavior and Social Dominance in Man." *Psychosomatic Medicine* **36**, No. 6(November-December 1974): 469-475.

Esposito, Katherine, Francesco Giugliano, Carmen Di Palo, Giovanni Giugliano, Raffaele Marfella, Francesco D'Andrea, Massimo D'Armiento, Dario Giugliano. *JAMA* **291**(2004): 2978-2984.

Ferguson, Kathleen A., Rosalind Cartwright, Robert Rogers and Wolfgang Schmidt-Nowara. "Oral Appliances for Snoring and Obstructive Sleep Apnea: a Review." *SLEEP* **29**, No. 2(2006): 244-262.

Gandy, Sam, Osvaldo P. Almeida, Justin Fonte, David Lim, Anna Waterrus, Nigel Spry, Leon Flicker, Ralph N. Martins. "Chemical Andropause and Amyloid- β Peptide." *JAMA* **285**, no. 17(May 2, 2001): 2195-2196.

Gerlach, M., D. Ben-Shachar, P. Riederer and M. B. H. Youdim. "Altered Brain Metabolism of Iron as a Cause of Neurodegenerative Diseases?" *Journal of Neurochemistry* **63**(1994): 793-807.

Gooren, Louis. "Testosterone and the Brain." *Journal of Men's Health & Gender* **4**(3)(September 2007):

Gouras, Gunnar K., Huaxi Xu, Rachael S. Gross, Jeffrey P. Greenfield, Bing Hai, Rong Wang and Paul Greengard. "Testosterone Reduces Neuronal Secretion of Alzheimer's β -amyloid Peptides." *PNAS* **97**, no. 3(February 1, 2000):1202-1205.

Gray, Peter B., Atam B. Singh, Linda J. Woodhouse, Thomas W. Storer, Richard Casaburi, Jeanne Dzekov, Connie Dzekov, Indrani Sinha-Hikim and Shalender Bhasin. "Dose-Dependent Effects of Testosterone on Sexual Function, Mood, and Visuospatial Cognition in Older Men." *The Journal of Clinical Endocrinology & Metabolism* **90**(7): 3838-3846. DOI: 10.1210/jc.2005-0247

Greenstein, Alexander, Stephen R. Plymate and P. Gary Katz. "Visually Stimulated Erection in Castrated Men." *Clinical Urology* **153**(3)(March 1995): 650-652.

Gruenewald, David A. and Alvin M. Matsumoto. "Testosterone Supplementation Therapy for Older Men: Potential Benefits and Risks." *JAGS* **51**(2003): 101-115.

Grunstein, Ronald R. "Metabolic Aspects of Sleep Apnea." *Sleep* **19**(10): S218-S220.

Grunstein, Ronald R., David J. Handelsman, Suanne J. Lawrence, Christopher Blackwell, Ian D. Caterson and Colin E. Sullivan. "Neuroendocrine Dysfunction in Sleep Apnea: Reversal by Continuous Positive Airways Pressure Therapy*." *Journal of Clinical Endocrinology and Metabolism* **68**, No. 2(1989): 352-358.

Hajjar, Ramzi R., Fran E. Kaiser and John E. Morley. "Outcomes of Long-Term Testosterone Replacement in Older Hypogonadal Males: A Retrospective Analysis." *Journal of Clinical Endocrinology and Metabolism* **82**, No. 11(1997):3793-3796.

Hausmann, Markus, Ditte Slabbekoorn, Stephanie H. M. Van Goozen,

Peggy T. Cohen-Kettenis and Onur Güntürkün. "Sex Hormones Affect Spatial Abilities During the Menstrual Cycle." *Behavioral Neuroscience* **114**, No. 6(2000): 1245-1250.

Jeppesen, Lise Leth, Henrik Stig Jorgensen, Hirofumi Nakayama, Hans Otto Raaschou, Tom Skyhoj and Kaj Winther. "Decreased Serum Testosterone in Men With Acute Ischemic Stroke." *Arteriosclerosis, Thrombosis, and Vascular Biology* **16**(6)(June 1996): 749-754.

Kimmel, Paul L., Gary Miller, Wallace B. Mendelson. "Sleep Apnea Syndrome in Chronic Renal Disease." *The American Journal of Medicine* **86**(March 1989): 308-314.

Kushida, Clete A., , Timothy I. Morgenthaler, Michael R. Littner, Cathy A. Alessi, Dennis Bailey, Jack Coleman, Jr., Leah Friedman, Max Hirshkowitz, Sheldon Kapen, Milton Kramer, Teofilo Lee-Chiong, Judith Owens and Jeffrey P. Pancer "Practice Parameters for the Treatment of Snoring and Obstructive Sleep Apnea with Oral Appliances: An Update for 2005." *SLEEP* **29**(2)(2006): 240-243.

Liu, Peter Y., Brendon Yee, Susan M. Wishart, Mark Jimenez, Dae Gun Jung, Ronald R. Grunstein and David J. Handelsman. "The Short-Term Effects of High-Dose Testosterone on Sleep, Breathing, and Function in Older Men." *The Journal of Clinical Endocrinology & Metabolism* **88**(8): 3605-3613. DOI: 10.1210/jc.2003-030236

Low, Wah-Yun, Ee-Ming Khoo, Hui-Meng Tan, Fen-Lee Hew and, Seng-Hin Teoh. "Depression, Hormonal Status and Erectile Dysfunction in the Aging Male: Results from a Community Study in Malaysia." *Jmhg* **3**, No. 3(September 2006): 263-270.

Luboshitzsky, Rafael, Lena Lavie, Zila Shen-Orr and Paula Herer. "Altered Luteinizing Hormone and Testosterone Secretion in Middle-Aged Obese

Men with Obstructive Sleep Apnea.” *Obesity Research* **13**, No. 4(April 2005): 780-786.

Luboshitzky, Rafael, Ariel Aviv, Aya Hefetz, Paula Herer Zila Shen-Orr, Lena Lavie, Peretz Lavie. “Decreased Pituitary-Gonadal Secretion in Men With Obstructive Sleep Apnea.” *Journal of Clinical Endocrinology and Metabolism* **87**(7)(July 2002): 3394-3398.

Luboshitzky, Rafael, Lina Lavie, Zila Shen-Orr and Peretz Lavie. “Pituitary-gonadal Function in Men with Obstructive Sleep Apnea. The effect of continuous positive airways pressure treatment.” *Neuroendocrinology Letters* **24**, No. 6(December 2003): 463-467.

Manly, J.J., C.A. Merchant, D.M. Jacobs, S.A. Small, K. Bell, M. Ferin and R. Mayeux. “Endogenous Estrogen Levels and Alzheimer’s Disease Among Postmenopausal Women.” *Neurology* **54** February (2 of 2) 2000): 833-837.

Margel, D, R Tal, PM Livne and G Pillar. “Predictors of Erectile Function Improvement in Obstructive Sleep Apnea Patients with Long-Term CPAP Treatment.” *International Journal of Impotence Research* **17**(2005): 186-190.

Margel, David, Maxim Cohen, Pinhas M. Livne and Giora Pillar. “Severe, But Not Mild, Obstructive Sleep Apnea Syndrome Is Associated with Erectile Dysfunction.” *Urology* **63**(3)(2004): 545-549.

McCowen, Karen C. and Atul Malhotra. “The Correlation Between Obstructive Sleep Apnea and Low Gonadotropin Secretion in Men.” *Sleep Medicine* **4**(2003): 83-84.

Meyer-Bahlburg, Heino F. L., Rer Nat, Donald A. Boon, Minott Sharma, and, John A. Edwards. “Aggressiveness and Testosterone Measures in Man.” *Psychosomatic Medicine* **36**(3)(May-June 1974): 269-274.

Moffat. S. D., A. B. Zonderman, E. J. Metter, C. Kawas, M. R. Blackman, S. M. Harman, S. M. Resnick. “Free Testosterone and Risk for Alzheimer

Disease in Older Men.” *Neurology* **62**, Number 2(January 27, 2004): 188-193.

Moffat, Scott D., Alan B. Zonderman, E. Jeffrey Metter, Marc R. Blackman, S. Mitchell Harman and Susan M. Resnick. “Longitudinal Assessment of Serum Free Testosterone Concentration Predicts Memory Performance and Cognitive Status in Elderly Men.” *The Journal of Clinical Endocrinology & Metabolism* **87**(11)(2002): 5001-5007.

Morris, Kelly. “New Day Dawns for Research on Circadian Rhythms.” *Lancet* **353**(March 20, 1999): 990. DOI: 10.1016/S0140-6736(05)70754-6

Okun, Michael S., Benjamin L. Walter, William M. McDonald, Joyce L. Tenover, Joanne Green, Jorge L. Juncos, Mahlon R. DeLong. “Beneficial Effects of Testosterone Replacement for the Nonmotor Symptoms of Parkinson Disease.” *Arch Neurol* **59**(Nov 2002): 1750-1753.

Olweus, Dan, Ake Mattsson, Daisy Schalling and Hans Low. “Circulating Testosterone Levels and Aggression in Adolescent Males: a Casual Study.” *Psychosomatic Medicine* **50**(1988): 261-272.

Olweus, Dan, Ake Mattsson, Daisy Schalling and Hans Low. “Testosterone, Aggression, Physical, and Personality Dimensions in Normal Adolescent Males.” *Psychosomatic Medicine* **42**, No.2 (March 1980): 253-269.

Rajaratnam, Shantha MW and Josephine Arendt. “Health in a 24-h Society **358**, No. 9286(September 22, 2001): 999-1005.

Rose, Robert M., “Consequences of Social Conflict on Plasma Testosterone Levels in Rhesus Monkeys.” *Psychosomatic Medicine* **37**, no. 1(January-February 1975): 50-61.

Sapienza, Paola, Luigi Zingales and Dario Maestripieri. “Gender Differences in Financial Risk Aversion and Career Choices are Affected by

Testosterone.” *PNAS* **106**, no. 36(September 8, 2009): 15268-15273.
www.pnas.org/cgi/doi/10.1073/pnas.0907352106

Scaramella, Thomas J., and Walter Armin Brown. “Serum Testosterone and Aggressiveness in Hockey Players.” *Psychosomatic Medicine* **40**(3)(May 1978): 262-265.

Schmidt, Peter J., Robert C. Daly, Miki Block, Mark J. Smith, Merry A. Danaceau, Linda Simpson St. Clair, Jean H. Murphy, Nazli Haq, David R. Rubinow. “Dehydroepiandrosterone Monotherapy in Midlife-Onset Major and Minor Depression.” *Arch Gen Psychiatry* **62**(Feb. 2005): 154-162.

Sedgwick, John. “Sudden Divorce Syndrome.” *Best Life* December 2007/January 2008: 119+

Shek, Daniel T. L. “Midlife Crisis in Chinese Men and Women.” *The Journal of Psychology* **130**(1)(1996):109-119.

Short, Rodney A., Richard L. Bowen, Peter C. O’Brien and Neill R. Graff-Radford. “Elevated Gonadotropin Levels in Patients With Alzheimer Disease.” *Mayo Clin Proc.* **76**(2001): 906-909.

Sicotte, Nancy L., Barbara S. Giesser, Vinita Tandon, Ricki Klutch, Barbara Steiner, Ann E. Drain, David W. Shattuck, Laura Hull, He-Jing Wang, Robert M. Elashoff, Ronald S. Swerdloff, Rhonda R. Voskuhl. “Testosterone Treatment in Multiple Sclerosis.” *Arch Neurol* **64**(May 2007): 683-688.

“Sleep Your Way to a Better Love Life.” *Israel21c* Februsty 22, 2004.

Spiegel, Karine, Rachel Leproult, Mireille L’Hermite-Balériaux, Georges Copinschi, Plamen D. Penev and Eve Van Cauter. “Leptin Levels Are Dependent on Sleep Duration: Relationships with Sympathovagal Balance, Carbohydrate Regulation, Cortisol, and Thyrotropin.” *Journal of Clinical*

Endocrinology & Metabolism **89**(11): 5762-5771. DOI: 10.1210/jc.2004-1003

Sternbach, Harvey. "Age-Associated Testosterone Decline in Men: Clinical Issues for Psychiatry." *Am J Psychiatry* **155**(10)(October 1998): 1310-1318.

Tan, Robert S. and Shou-Jin Pu. "The Andropause and Memory Loss: Is There a Link Between Androgen Decline and Dementia in the Aging Male." *Asian J Androl* **3** (2001 Sep): 169-174. <http://www.asiaandro.com/1008-682X/3/169.htm>

Tan, R. S. "A Pilot Study On the Effects of Testosterone in Hypogonadal Aging Male Patients With Alzheimer's Disease." *The Aging Male* **6**(2003): 13-17.

"Testosterone and Alzheimer's." News in Brief. *Lancet* **363** (January 31, 2004): 379.

"UCLA: Alzheimer Patients Treated With Testosterone Show Improved Quality of Life." UC Newsroom 2005-12-12. <http://www.universityofcalifornia.edu/news/article/7718>

Wood CE, Register TC, Lees CJ, Chen H, Cline, JM. Effects of estradiol with micronized progesterone or medroxyprogesterone acetate on risk markers for breast cancer in postmenopausal monkeys. *Breast Cancer Res Treat.* 2007;101(2): 125-134.