



Progress in Longevity Medicine Seminar Series

Sex Differences in Blood Pressure Control During Aging

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Professor of Medicine

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In Health, Aging and Disease

Georgetown University Medical Center

Date/Time: Friday, March 9, 2007; 5:30 pm (dinner included)

Location: The Arizona Club, 201 N. Central Ave., 37th Floor

Cost: Free

Abstract: Although blood pressure and the susceptibility to hypertension increases with advancing age in both sexes, women have lower blood pressures on average compared to men up to their fifth decade of life. After the age of menopause, the rate of the age-induced increase in blood pressure increases in women as does the incidence of hypertension and associated renal-cardiovascular disease such that by the time women reach their seventh decade of life, their blood pressure and susceptibility to hypertension and associated disease is comparable or even surpasses that found in men.

We contend that the mechanisms underlying these sex differences in blood pressure control during aging involve the loss of 17 β -estradiol (E_2) caused by menopause since experimental evidence has shown that E_2 replacement reverses hypertension and associated renal-vascular disease. The research suggests that these adverse effects of E_2 deficiency are mediated in part by the loss of E_2 modulation of the renin angiotensin aldosterone system (RAAS).

Research has shown that the loss of E_2 increases the levels of the vasoconstrictor angiotensin II (Ang II) in the adrenal cortex by activating angiotensin converting enzyme resulting in up-regulation of the expression of the type 1 angiotensin receptor (AT_1R) and AT_1R -mediated aldosterone secretion. Adding insult to injury, the loss of E_2 results in lowering the activity of angiotensin converting enzyme 2, the newly discovered enzyme in the RAAS cascade that metabolizes Ang II to the vasodilator Ang-[1-7].

Objectives:

- To understand the possible causes of sex differences in blood pressure control including differences in the hormonal milieu, sex chromosome dosage, and imprinting.
- Discover how the renin angiotensin aldosterone system is differentially affected in males and females during aging.
- Learn how sex differences in the control of the renin angiotensin aldosterone system might explain the well known sex differences in age-induced hypertension and associated renal vascular disease.

Biography: Dr. Sandberg is Professor of Medicine and Director of the Center for the Study of Sex Differences in Health, Aging and Disease at Georgetown University. She is also the first President of the Organization for the Study of Sex Differences, which is a newly formed scientific society that focuses on the biology of sex differences in health and disease. Her current research interests focus primarily on the molecular mechanisms underlying sex differences in hypertension and renal vasculature disease.

Dr. Sandberg currently holds 2 NIH R01 grants as principal investigator and is the Director of Basic Science Projects on an NIH multicenter network grant that focuses on the pharmacology of drugs in pregnancy and directs the genotyping core in an NIH program project that studies oxidative stress in hypertension. She serves on the editorial boards for several journals including *Hypertension* and the *American Journal of Physiology: Renal* and is the Editor-in-Chief for the new journal of the Organization for the Study of Sex Differences entitled *The Biology of Sex Differences*. Dr. Sandberg has had over 80 peer-reviewed publications, has presented at over 100 conferences/ lectures and has received several young investigator awards including from the American Heart Association and the National Kidney Foundation as well as the Established Investigator Award from the American Heart Association.

Dr. Sandberg earned her BA from the University of Rochester and her PhD degree in Biological Chemistry from the University of Maryland in Baltimore. After completing a postdoctoral fellowship at the National Institutes of Health, she worked as an NIH Senior Staff Fellow for several years before she was recruited to the faculty at Georgetown University.

To RSVP or for additional information, please contact Diana Vuong at (602) 778-7492 or via email at Diana.Vuong@kronosinstitute.org.

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