SEX HORMONE EFFECTS ON CARDIOVASCULAR FUNCTION IN WOMEN

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Abstract

Although estradiol, progesterone and testosterone have their primary effects on reproductive function, these hormones also have profound effects on many physiological systems. This presentation will address the effects of androgens on endothelial function in women. We have been studying women with Polycystic Ovary Syndrome (PCOS). Polycystic Ovary Syndrome is the most common female endocrinopathy, affecting greater than 10 % of women worldwide, and is the most common cause of infertility in young women. Although details of the exact etiopathogenesis of PCOS are not clear, this syndrome appears to be a combination of environmental and genetic factors, which together favor the development of insulin resistance (IR). Approximately 75% of women with PCOS have the more severe reproductive and metabolic PCOS phenotype that is dominated by features of hyperandrogenism. This androgen excess (AE)-PCOS phenotype is typically associated with IR, compensatory hyperinsulinemia, obesity, metabolic syndrome, subcutaneous and visceral adiposity, dyslipidemia, enlarged adipocytes, hypoadiponectinemia, and oligo- or anovulation. AE-PCOS is also associated with clinical and biochemical manifestations of hyperandrogenism, as well as endothelial dysfunction and increased systolic and diastolic blood pressure. This talk will address how the androgen dominant hormonal milieu in women with AE-PCOS causes endothelial dysfunction, and will also address the physiological and molecular mechanisms by which this process occurs. We have used skin microdialysis to study the impact of androgens on endothelin-1 (ET-1) and its' subtype receptor actions in the peripheral microvascular of obese women with and without PCOS. Further, we have used both freshly isolated endothelial cells harvested from antecubital veins of women with and without PCOS as well as hormone-treated established human endothelial cell cultures to address these same questions on a molecular level. Our studies support compromised endothelial function in the peripheral microcirculation in AE-PCOS. We have begun to show that ET-1 subtype receptor function is altered in women with AE-PCOS, and that the androgen dominant hormonal milieu contributes to this endothelial dysfunction.

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Education:

B. A.	Antioch College	1981	
M.A.	New York University	1987	Exercise Physiology
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Career:

1993-1997	Post-doctoral Associate, The John B. Pierce Laboratory, New Haven, CT.
1993-1997	Post-doctoral Associate of Epidemiology and Public Health, Yale School of Medicine, New Haven, CT.
1997-1999	Research Scientist, The John B. Pierce Laboratory.
1997-2000	Associate Research Scientist of Epidemiology and Public Health, Yale School of Medicine *(Primary Appointment)*
1999 - 2005	Assistant Fellow, The John B. Pierce Laboratory
2000 - 2005	Assistant Professor of Epidemiology and Public Health, Yale School of Medicine *(Primary Appointment)*
2004 - 2005	Assistant Professor of Obstetrics, Gynecology and Reproductive Sciences, Yale School of Medicine *(Secondary Appointment)*
2005 - 2009	Associate Fellow, The John B. Pierce Laboratory
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In 2009 I shifted my primary and secondary appointments at the Yale School of Medicine, making Obstetrics, Gynecology and Reproductive Sciences my primary and Yale School of Epidemiology and Public Health her secondary appointment. This change was made as my interests became more focused specifically on reproductive hormone effects on physiological systems. However, I remain active in the School of Public Health.

2009 - 2014	Associate Professor of Obstetrics, Gynecology and Reproductive Sciences, Yale School of Medicine *(Primary Appointment).*
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