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Assessing cardiovascular risk in women: Looking beyond traditional risk factors

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Although cardiovascular disease (CVD) remains the most prevalent cause of morbidity and mortality among women, CV risk and disease in this population is often not recognized in a timely manner. As a result, many women at high risk for CVD never receive appropriate preventive strategies that have proven to reduce risk for CVD and related adverse outcomes. In this regard, the review article by Mehta et al. [1] is a “must read” for the clinician who is serious about advancing health care for women.

Significant progress has come from the tireless work of pioneers in the field such as Dr. Nanette Wenger and landmark studies such as Women's Health Initiative (WHI), Heart and Estrogen/Progestin Replacement study (HERS), Women's Ischemic Syndrome Evaluation (WISE), and others that were crucial in highlighting the importance of specific CVD assessment in women. This body of work, as Wenger [2] notes, has advanced the field from CVD being thought of as a “man's disease” to a more enlightened position where CVD is now also recognized as a woman's disease in which a wide variety of CVD conditions remain under-appreciated and under-treated. Although advances have been made in identification and treatment of CVD among women, perhaps the area of least focus has been risk assessment. In the current article by Mehta et al. [1], experts in the field review a wide variety of topics addressing risk factor assessment in women. It provides an important focus on women-specific risk factors, both traditional and non-traditional, and highlights areas of progress within the field as well as areas in need of further study.

Traditional risk assessment tools, such as the Framingham Risk Score, significantly underestimate risk in women by classifying most women as having low risk for CVD [3,4]. Such under-appreciation of risk has led to the development of alternative tools such as the Reynold's risk score incorporating a marker of inflammation (e.g., CRP). Even with traditional risk factors such as hypertension, hyperlipidemia, and diabetes, there are subtle, yet important, differences in risk between men and women. For example, diabetes is an established risk factor for CVD, to the extent that diabetes is considered a coronary disease equivalent. However, it has been shown that CV risk in a diabetic woman is considerably higher than in a man with diabetes, even when adjusted for concurrent risk factors such as age and hypertension. Accurate assessment of risk is important, particularly in women, as

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the preventative therapy for a particular condition may be different based on gender. For example, aspirin is more beneficial for stroke prevention than for prevention of myocardial infarction in women [5]. Thus, current guidelines support specific assessment of stroke risk in women to determine the appropriateness of aspirin therapy.

Perhaps the most important component of risk assessment in women is recognition of non-traditional risk factors that are either disproportionately represented in or exclusively limited to women. Autoimmune conditions such as systemic lupus erythematosus and even rheumatoid arthritis primarily affect women and are known to be associated with increased risk of ischemic heart disease. Depression and other psycho-social traits have been linked to CV risk in women as well. Although these associations are recognized and thought to be related to excessive chronic inflammation, the exact mechanisms are still not well understood.

Importantly, the authors address two issues *unique* to *women*: menopausal status and pregnancy. Much discussion regarding hormonal therapy stemmed from suggestions of increased risk with hormonal therapy from the WHI. It is known that the post-menopausal state is associated with increased CV risk, although there is some debate about the exact causality or whether the risk increase is due to the advanced age post-menopause with age-associated increase in traditional risk factors. With regard to pregnancy, this represents the most intriguing area for future study. In recent years, associations between gestational conditions such as pre-eclampsia and diabetes and future risk for long-term hypertension and diabetes have become more widely recognized. Current guidelines recommend screening for these conditions in the post-partum period [6]. This represents a fascinating area for future study, as it is apparent that the pregnant state brings out an underlying substrate for these conditions, and highlights an important area for risk modification. Additionally, there is growing evidence that the CV status of women before and during pregnancy contributes to the future development of cardiovascular disease in their offspring (e.g., the “CV circle of life”). For example, the offspring of women who develop pre-eclampsia appear to be at higher risk for future development of stroke and hypertension [7,8]. This further underscores the need for appreciation of CV risk as this not only affects the health of the mother but potentially the health of her offspring.

The need for more research focusing on women has recently been emphasized by a variety of medical societies, including the American College of Cardiology, American Heart Association, and European Society of Cardiology, integrating input from other specialties, including obstetrics/gynecology and pediatrics. Such a multi-disciplinary approach to spearhead efforts in both research and clinical awareness will be of continued importance in advancing CVD risk assessment in women going forward. However, a question that remains is who will care for these patients? Those women who are young and likely to have very few other chronic medical conditions may be susceptible to “falling through the cracks.” Even for women who are regularly seen by a medical provider, gender-specific risk assessment may be lacking. As we understand more regarding risk assessment in women, this new knowledge further highlights the need for more practitioners versed in specifically assessing these risk factors. In addition, there is a need to not only recognize specific risk assessment in women but also look for opportunities to actively screen women. There has been a trend

in recent years to utilize obstetrics/gynecology clinics as a basis for screening. Such initiatives may provide the ideal outlet to promote the advancements made in identifying risk in women and implementing such assessment into daily practice.

This article by Mehta et al. [1] is an important review on issues of women-specific risk factors for CVD and should be an essential reading for clinicians concerned with advancing the health care of women.

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