Does Aging Cause Women to be More Sympathetic Than Men?

Jens Tank

According to life expectancy tables, women outlive men. One possible explanation might be that women have less sympathetic drive than men and therefore are more energy efficient. What are the main gender differences in this regard? The major contributors protecting the cardiovascular system in women are sex hormones. In fact, estrogen enhances vascular dilatory mechanisms and baroreflex regulation in humans and in animals. Moreover, reduced sympathetic nervous system activity, augmented sympathetic inhibition, and higher cardiac vagal tone in women, compared with men, have all been described. Finally, the responsiveness to stressor stimuli may be diminished in women compared with men as well. In summary, despite the overall increase in sympathetic activity with aging, for any given age women seem to have less sympathetic drive than men.

The increase in cardiovascular risk with aging is more pronounced in women and women seem to be more susceptible to risk factors than men, even at younger age. Data from microneurography studies in a Japanese population support this hypothesis. Furthermore, Narkiewicz et al were able to show convincingly that the increases in sympathetic activity for every decade of life was higher in Caucasian women, compared with men based on resting MSNA measurements in a large number of subjects from two different populations (USA and Poland). Interestingly, the results were independent of body mass index and waist-to-hip ratio. This finding, comparing with men, have all been described. Finally, the responsiveness to stressor stimuli may be diminished in women compared with men as well. In summary, despite the overall increase in sympathetic activity with aging, for any given age women seem to have less sympathetic drive than men.

The opinions expressed in this editorial commentary are not necessarily those of the editors or of the American Heart Association.

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References

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