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Critique of "The Influence of Gender on the Association of Alcohol Drinking With Blood Pressure"

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Alcohol has "*intoxicated*" mankind for centuries and despite widespread consumption, the debate on its vices and virtues is as vibrant as ever. The prevalent view is that although light- to moderate-alcohol intake is associated with reduced coronary artery disease, higher amounts lead to hypertension, cardiomyopathy, and arrythmias.[1]

In the current issue of *American Journal of Hypertension*, Wakabayashi[2] explores the influence of gender on the relationship between alcohol consumption and blood pressure (BP) in a large cross-sectional study comprising 43,810 healthy Japanese subjects, 38% female. The study shows that although BP was higher in drinkers than nondrinkers in both genders, the slope between alcohol consumption and BP was steeper for men than women. In contrast, although levels of high-density lipoprotein (HDL) cholesterol were higher in drinkers compared with non-drinkers, this association was stronger for women than men. The author concluded that although alcohol-related hypertension was more prevalent in men than women, the converse was true for HDL cholesterol. This study adds to the current literature, is well presented, and possesses high statistical power. However, there are certain limitations; performed only in a Japanese population where polymorphisms of genes of dehydrogenase and aldehyde dehydrogenase enzymes are common, the findings cannot be extended to other racial groups.[3] There is no information on binge drinking which associated with higher BP and male gender than steady alcohol excess may have confounded the findings. The study is cross-sectional and does not explore possible mechanisms linking the high alcohol intake with high BP. Finally as alcohol intake was documented by questionnaires, it is prone to under-reporting in light to moderate drinkers despite higher prevalence of hypertension.[3]

To date, more than a hundred cross-sectional studies show a high prevalence of hypertension or increased BP with increased alcohol intake. Alcohol increases BP in a dose-dependent fashion, at intakes above two drinks daily, and is perhaps one of the most common reversible causes of hypertension.[1] However, in women sometimes a J-shaped curve is observed, BP being lowest in light drinkers and highest in heavy drinkers.[4] The Kaiser Permanente Studies were able to show that women who drank light-to-moderate amounts of alcohol had lower BP than abstainers, a phenomenon not observed in men.[3] Possible mechanisms linking high BP and alcohol intake include high sympathetic drive[1] and large artery stiffness, particularly in men[5] but more studies are needed for a keener insight into the pathophysiology of alcohol-related hypertension.

The interesting paradox observed in the present study is the strong correlation between alcohol consumption and levels of HDL cholesterol, particularly in women. Alcohol increases HDL in a dose-dependent fashion and has been advocated as one likely mechanism for alcohol-related cardioprotection. However, Russians with alcohol excess, observed in 75% of men and 47% of women, have higher age-adjusted rates of cardiovascular disease and all-cause mortality than Western Europe or the United States, despite boasting one of the highest levels of HDL cholesterol in Europe.[3] The beneficial effects with torcetrapib, a drug that increases HDL levels by 80% and systolic BP by some 5 mmHg were brought into question in the recent ILLUMINATE Study, which showed increased morbidity and mortality in patients at high cardiovascular risk.[6]

The question whether to drink or not to drink was as relevant centuries ago as it is today. The current guidelines recommending two drinks or less for men and one drink or less for women per day is an extension of age old advice; "*drink wine, but not the third glass!*" (Diogenes, 320 BC).

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