1) ASSOCIATION OF LIPID, INFLAMMATORY, AND METABOLIC BIOMARKERS WITH AGE AT ONSET FOR INCIDENT CORONARY HEART DISEASE IN WOMEN

Abstract

Importance Risk profiles for premature coronary heart disease (CHD) are unclear.

Objective To examine baseline risk profiles for incident CHD in women by age at onset.

Design, Setting, and Participants A prospective cohort of US female health professionals participating in the Women's Health Study was conducted; median follow-up was 21.4 years. Participants included 28,024 women aged 45 years or older without known cardiovascular disease. Baseline profiles were obtained from April 30, 1993, to January 24, 1996, and analyses were conducted from October 1, 2017, to October 1, 2020.

Exposures More than 50 clinical, lipid, inflammatory, and metabolic risk factors and biomarkers.

Main Outcomes and Measures Four age groups were examined (<55, 55 to <65, 65 to <75, and ≥75 years) for CHD onset, and adjusted hazard ratios (aHRs) were calculated using stratified Cox proportional hazard regression models with age as the time scale and adjusting for clinical factors. Women contributed to different age groups over time.

Results Of the clinical factors in the women, diabetes had the highest aHR for CHD onset at any age, ranging from 10.71 (95% CI, 5.57-20.60) at CHD onset in those younger than 55 years to 3.47 (95% CI, 2.47-4.87) at CHD onset in those 75 years or older. Risks that were also noted for CHD onset in participants younger than 55 years included metabolic syndrome (aHR, 6.09; 95% CI, 3.60-10.29), hypertension (aHR, 4.58; 95% CI, 2.76-7.60), obesity (aHR, 4.33; 95% CI, 2.31-8.11), and smoking (aHR, 3.92; 95% CI, 2.32-6.63). Myocardial infarction in a parent before age 60 years was associated with 1.5- to 2-fold risk of CHD in participants up to age 75 years. From approximately 50 biomarkers, lipoprotein insulin resistance had the highest standardized aHR: 6.40 (95% CI, 3.14-13.06) for CHD onset in women younger than 55 years, attenuating with age. In comparison, weaker but significant associations with CHD in women younger than 55 years were noted (per SD increment) for low-density lipoprotein cholesterol (aHR, 1.38; 95% CI, 1.10-1.74), non-high-density lipoprotein cholesterol (aHR, 1.67; 95% CI, 1.36-2.04), apolipoprotein B (aHR, 1.89; 95% CI, 1.52-2.35), triglycerides (aHR, 2.14; 95% CI, 1.72-2.67), and inflammatory biomarkers (1.2- to 1.8-fold)—all attenuating with age. Some biomarkers had similar CHD age associations (eg, physical inactivity, lipoprotein[a], total high-density lipoprotein particles), while a few had no association with CHD onset at any age. Most risk factors and biomarkers had associations that attenuated with increasing age at onset.

Conclusions and Relevance In this cohort study, diabetes and insulin resistance, in addition to hypertension, obesity, and smoking, appeared to be the strongest risk factors for premature onset of CHD. Most risk factors had attenuated relative rates at older ages.

2) MENOPAUSE TRANSITION AND CVD RISK

Abstract

Cardiovascular disease (CVD) is the leading cause of death in women, who have a notable increase in the risk for this disease after menopause and typically develop coronary heart disease several years later than men. This observation led to the hypothesis that the menopause transition (MT) contributes to the increase in coronary heart disease risk. Over the past 20 years, longitudinal studies of women traversing menopause have contributed significantly to our understanding of the relationship between the MT and CVD risk. By
following women over this period, researchers have been able to disentangle chronological and ovarian aging with respect to CVD risk. These studies have documented distinct patterns of sex hormone changes, as well as adverse alterations in body composition, lipids and lipoproteins, and measures of vascular health over the MT, which can increase a woman’s risk of developing CVD postmenopausally. The reported findings underline the significance of the MT as a time of accelerating CVD risk, thereby emphasizing the importance of monitoring women’s health during midlife, a critical window for implementing early intervention strategies to reduce CVD risk. Notably, the 2011 American Heart Association guidelines for CVD prevention in women (the latest sex-specific guidelines to date) did not include information now available about the contribution of the MT to increased CVD in women. Therefore, there is a crucial need to discuss the contemporary literature on menopause and CVD risk with the intent of increasing awareness of the significant adverse cardiometabolic health–related changes accompanying midlife and the MT. This scientific statement provides an up-to-date synthesis of the existing data on the MT and how it relates to CVD.

3) POSTPARTUM BP TRAJECTORY MAY PREDICT PERSISTENT HYPERTENSION

Blood pressure (BP) trajectories in the first six weeks postpartum may help identify women who are likely to have persistent hypertension at six to 18 months, according to a study presented at The Pregnancy Meeting, the annual meeting of the Society for Maternal-Fetal Medicine, held virtually from Jan 25 to 30.

Eesha Dave, M.D., from the UPMC Magee-Womens Hospital in Pittsburgh, and colleagues evaluated BP trajectories in the first six weeks postpartum among 368 women with hypertensive disorders of pregnancy (HDP; February 2018 through June 2019) participating in a remote postpartum hypertension monitoring program (5,958 BP measurements; mean follow-up, 12.9 months postpartum).

The researchers found that 49.5 percent of women were hypertensive at follow-up and 50.5 percent were normotensive. Prepregnancy body mass index (pBMI) was higher among women who were hypertensive at follow-up. Women with persistent hypertension had a slower decline in BP in the first six weeks postpartum and had higher BPs at the postpartum visit, despite no differences in BP at the first prenatal visit. When adjusting for pBMI and type of HDP, these differences persisted.

"By leveraging data from our widely scaled postpartum hypertension remote monitoring program, we were able to discover that a woman’s blood pressure in the first six weeks after childbirth appears to be an important indicator of whether she is likely to develop chronic hypertension six to 18 months later," Dave said in a statement.

4) ASSOCIATION BETWEEN SEX AND TREATMENT OUTCOMES OF ATRIAL FIBRILLATION ABLATION VS DRUG THERAPY

Abstract

Background:

Among patients with atrial fibrillation (AF), women are less likely to receive catheter ablation and may have more complications and less durable results. Most information about sex-specific differences after ablation comes from observational data. We prespecified an examination of outcomes by sex in the 2204-patient CABANA trial (Catheter Ablation Versus Antiarrhythmic Drug Therapy for Atrial Fibrillation).

Methods:

CABANA randomized patients with AF age ≥65 years or <65 years with ≥1 risk factor for stroke to a strategy of catheter ablation with pulmonary vein isolation versus drug therapy
with rate/rhythm control agents. The primary composite outcome was death, disabling stroke, serious bleeding, or cardiac arrest, and key secondary outcomes included AF recurrence.

Results:
CABANA randomized 819 (37%) women (ablation 413, drug 406) and 1385 men (ablation 695, drug 690). Compared with men, women were older (median age, 69 years versus 67 years for men), were more symptomatic (48% Canadian Cardiovascular Society AF Severity Class 3 or 4 versus 39% for men), had more symptomatic heart failure (42% with New York Heart Association Class ≥II versus 32% for men), and more often had a paroxysmal AF pattern at enrollment (50% versus 39% for men) (P<0.0001 for all). Women were less likely to have ancillary (nonpulmonary vein) ablation procedures performed during the index procedure (55.7% versus 62.2% in men, P=0.043), and complications from treatment were infrequent in both sexes. For the primary outcome, the hazard ratio for those who underwent ablation versus drug therapy was 1.01 (95% CI, 0.62–1.65) in women and 0.73 (95% CI, 0.51–1.05) in men (interaction P value=0.299). The risk of recurrent AF was significantly reduced in patients undergoing ablation compared with those receiving drug therapy regardless of sex, but the effect was greater in men (hazard ratio, 0.64 [95% CI, 0.51–0.82] for women versus hazard ratio, 0.48 [95% CI, 0.40–0.58] for men; interaction P value=0.060).

Conclusions:
Clinically relevant treatment-related strategy differences in the primary and secondary clinical outcomes of CABANA were not seen between men and women, and there were no sex differences in adverse events. The CABANA trial results support catheter ablation as an effective treatment strategy for both women and men.

5) ASSESSMENT OF MATERNAL AND NEONATAL CORD BLOOD SARS-COV-2 ANTIBODIES AND PLACENTAL TRANSFER RATIOS

Abstract
Importance Maternally derived antibodies are a key element of neonatal immunity. Understanding the dynamics of maternal antibody responses to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection during pregnancy and subsequent transplacental antibody transfer can inform neonatal management as well as maternal vaccination strategies.

Objective To assess the association between maternal and neonatal SARS-CoV-2–specific antibody concentrations.

Design, Setting, and Participants This cohort study took place at Pennsylvania Hospital in Philadelphia, Pennsylvania. A total of 1714 women delivered at the study site between April 9 and August 8, 2020. Maternal and cord blood sera were available for antibody measurement for 1471 mother/newborn dyads.

Exposures SARS-CoV-2.

Main Outcomes and Measures IgG and IgM antibodies to the receptor-binding domain of the SARS-CoV-2 spike protein were measured by enzyme-linked immunosorbent assay. Antibody concentrations and transplacental transfer ratios were analyzed in combination with demographic and clinical data.

Results The study cohort consisted of 1714 parturient women, with median (interquartile range) age of 32 (28–35) years, of whom 450 (26.3%) identified as Black/non-Hispanic, 879 (51.3%) as White/non-Hispanic, 203 (11.8%) as Hispanic, 126 (7.3%) as Asian, and 56 (3.3%) as other race/ethnicity. Among 1471 mother/newborn dyads for which matched sera were available, SARS-CoV-2 IgG and/or IgM antibodies were detected in 83 of 1471 women (6%; 95% CI, 5%-7%) at the time of delivery, and IgG was detected in cord blood from 72 of
83 newborns (87%; 95% CI, 78%-93%). IgM was not detected in any cord blood specimen, and antibodies were not detected in any infant born to a seronegative mother. Eleven infants born to seropositive mothers were seronegative: 5 of 11 (45%) were born to mothers with IgM antibody only, and 6 of 11 (55%) were born to mothers with significantly lower IgG concentrations compared with those found among mothers of seropositive infants. Cord blood IgG concentrations were positively correlated with maternal IgG concentrations ($r = 0.886$; $P < .001$). Placental transfer ratios more than 1.0 were observed among women with asymptomatic SARS-CoV-2 infections as well as those with mild, moderate, and severe coronavirus disease 2019. Transfer ratios increased with increasing time between onset of maternal infection and delivery.

Conclusions and Relevance In this cohort study, maternal IgG antibodies to SARS-CoV-2 were transferred across the placenta after asymptomatic as well as symptomatic infection during pregnancy. Cord blood antibody concentrations correlated with maternal antibody concentrations and with duration between onset of infection and delivery. Our findings demonstrate the potential for maternally derived SARS-CoV-2 specific antibodies to provide neonatal protection from coronavirus disease 2019.

6) SEX DIFFERENCES IN MORTALITY AND 90-DAY READMISSION RATES AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT (TAVR): A NATIONWIDE ANALYSIS FROM THE UNITED STATES

Abstract

Aims

To assess gender differences in in-hospital mortality and 90-day readmission rates among patients undergoing transcatheter aortic valve replacement (TAVR) in the USA.

Methods and results

Hospitalizations for TAVR were retrospectively identified in the National readmissions database (NRD) from 2012 to 2017. Gender based differences in in-hospital mortality and 90-day readmissions were explored using multivariable logistic regression models. During the study period, an estimated 171361 hospitalizations for TAVR were identified, including 79722 (46.5%) procedures in women and 91639 (53.5%) in men. Unadjusted in-hospital mortality and 90-day all-cause readmissions were significantly higher for women compared with men (2.7% vs. 2.3%, $P = 0.002$; 25.1% vs. 24.1%, $P = 0.012$, respectively). After adjusting for baseline characteristics, women had 13% greater adjusted odds of in-hospital mortality [adjusted odds ratio (aOR): 1.13, 95% confidence interval (CI): 1.02–1.26, $P = 0.017$], and 9% greater adjusted odds of 90-day readmission compared with men (aOR: 1.09, 95% CI: 1.05–1.14, $P < 0.001$). During the study period, there was a steady decrease in-hospital mortality (5.3% in 2012 to 1.6% in 2017; $P_{\text{trend}} < 0.001$) and 90-day (29.9% in 2012 to 21.7% in 2017; $P_{\text{trend}} < 0.001$) readmission rate in both genders.

Conclusion

In-hospital mortality and readmission rates for TAVR hospitalizations have decreased over time across both genders. Despite these improvements, women undergoing TAVR continue to have a modestly higher in-hospital mortality, and 90-day readmission rates compared with men. Given the expanding indications and use of TAVR, further research is necessary to identify the reasons for this persistent gap and design appropriate interventions.