1). PREMENOPAUSAL WOMEN WHO EXPERIENCE EARLY-ONSET MI FARE BETTER THAN MEN

September 1, 2020—Sophia Antipolis, France—Premenopausal women who suffer an early-onset myocardial infarction have been found to experience a favorable long-term outcome compared with men, despite being prescribed fewer preventive medications.

This outcome of a retrospective registry review was reported at the virtual European Society of Cardiology (ESC) Congress 2020.

Diego Ardissino, MD, of the Parma University Hospital, Italy, noted that premenopausal women who present with early-onset myocardial infarction experience better long-term outcomes compared with men, which is in contrast to current literature. Women also are prescribed fewer preventive medications.

As part of the Italian Genetic Study on Early-Onset Myocardial Infarction, Dr. Ardissino and colleagues reviewed data on 1778 men and 222 women age <45 years who presented with myocardial infarction at one of 125 Italian coronary care units from 1998 to 2002.

During a median follow-up of 20 years, the primary endpoint of recurrent nonfatal myocardial infarction, stroke, or cardiovascular death occurred in 25.7% of women vs 37.0% of men (hazard ratio, 0.69; 95% CI, 0.52-0.91; P = .01).

When components of the primary endpoint were analyzed separately, recurrent myocardial infarction was less frequent in women than men (14.2% vs 25.4%; hazard ratio, 0.53; 95% CI, 0.37-0.77; P < .001).

Women were more likely to suffer a stroke, however, than men (7.7% vs 3.7%; hazard ratio, 2.02; 95% CI, 1.17-3.49; P = .012).

Women were more than twice as likely to exhibit normal or nonsignificant coronary artery stenoses at angiography than men (36.5% vs 15.4%; P < .001. Coronary artery dissection, however, was more frequent in women (5.4% vs 0.7%; P < .01).

More men than women carried cardiovascular risk factors, including smoking (46.5% vs 42.8%), alcohol consumption (65.3% vs 27.4%), dyslipidemia (62.3% vs 50.7%), and diabetes (7.8% vs 5.4%) (all P < .001).

Though statin prescription at discharge was similar in men and women, men were more likely to be prescribed beta-blockers, aspirin, and angiotensin-converting enzyme inhibitors or angiotensin receptor blockers.

The disparity in prescribing may have been due to the lower burden of coronary artery disease found in women in the study. The disparity may have related to the general underprescribing of medication for women vs men as seen in other studies of acute cardiac events.

Dr. Ardissino explained that, in general, women with myocardial infarction tend to present older and with a greater burden of risk factors and varied symptoms vs men. They therefore experience and thus have worse outcomes. Few studies have investigated differences in outcomes between premenopausal females and men with early-onset myocardial infarction.
Dr. Ardissino concluded that premenopausal women who experience early-onset myocardial infarction receive fewer preventive medications and have favorable long-term outcomes compared with men, which is in contrast to the current evidence base related to myocardial infarction. These differences may be due to distinct mechanisms of cardiovascular disease and the protective effect of estrogen.

2). SEX DIFFERENCES IN CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY-DERIVED FRACTIONAL FLOW RESERVE

Abstract

**Objectives** This study is to determine the management and clinical outcomes of patients investigated with coronary computed tomography angiography (CCTA)– derived fractional flow reserve (FFR\textsubscript{CT}) according to sex.

**Background** Women are underdiagnosed with conventional ischemia testing, have lower rates of obstructive coronary artery disease (CAD) at invasive coronary angiography (ICA), yet higher mortality compared to men. Whether FFR\textsubscript{CT} improves sex-based patient management decisions compared to CCTA alone is unknown.

**Methods** Subjects with symptoms and CAD on CCTA were enrolled (2015 to 2017). Demographics, symptom status, CCTA anatomy, coronary volume to myocardial mass ratio (V/M), lowest FFR\textsubscript{CT} values, and management plans were captured. Endpoints included reclassification rate between CCTA and FFR\textsubscript{CT} management plans, incidence of ICA demonstrating obstructive CAD (≥50% stenosis) and revascularization rates.

**Results** A total of 4,737 patients (n = 1,603 females, 33.8%) underwent CCTA and FFR\textsubscript{CT}. Women were older (age 68 ± 10 years vs. 65 ± 10 years; p < 0.0001) with more atypical symptoms (41.5% vs. 33.9%; p < 0.0001). Women had less obstructive CAD (65.4% vs. 74.7%; p < 0.0001) at CCTA, higher FFR\textsubscript{CT} (0.76 ± 0.10 vs. 0.73 ± 0.10; p < 0.0001), and lower likelihood of positive FFR\textsubscript{CT} ≤ 0.80 for the same degree stenosis (p < 0.0001). A positive FFR\textsubscript{CT} less than or equal to 0.80 resulted in equal referral to ICA (n = 510 [54.5%] vs. n = 1,249 [56.5%; p = 0.31), but more nonobstructive CAD (n = 208 [32.1%] vs. n = 354 [24.5%; p = 0.0003) and less revascularization (n = 294 [31.4%] vs. n = 800 [36.2%; p < 0.0001) in women, unless the FFR\textsubscript{CT} was ≤0.75 where revascularization rates were similar (n = 253 [41.9%] vs. n = 715 [46.4%]; p = 0.06). Women have a higher V/M ratio (26.17 ± 7.58 mm\textsuperscript{3}/g vs. 24.76 ± 7.22 mm\textsuperscript{3}/g; p < 0.0001) that is associated with higher FFR\textsubscript{CT} independent of degree stenosis (p < 0.001). Predictors of revascularization included stenosis severity, FFR\textsubscript{CT}, symptoms, and V/M ratio (p < 0.001) but not female sex (p = 0.284).

**Conclusions** FFR\textsubscript{CT} differs between the sexes, as women have a higher FFR\textsubscript{CT} for the same degree of stenosis. In FFR\textsubscript{CT}-positive CAD, women have less obstructive CAD at ICA and less revascularization, which is associated with higher V/M ratio. The findings suggest that CAD and FFR\textsubscript{CT} variations by sex need specific interpretation as these differences may affect therapeutic decision making and
3). HIGH CORONARY ARTERY CALCIUM + DIABETES EVEN RISKIER FOR WOMEN

Abstract

OBJECTIVE While diabetes has been previously noted to be a stronger risk factor for cardiovascular disease (CVD) in women compared with men, whether this is still the case is not clear. Coronary artery calcium (CAC) predicts coronary heart disease (CHD) and CVD in people with diabetes; however, its sex-specific impact is less defined. We compared the relation of CAC in women versus men with diabetes for total, CVD, and CHD mortality.

RESEARCH DESIGN AND METHODS We studied adults with diabetes from a large registry of patients with CAC scanning with mortality follow-up over 11.5 years. Cox regression examined the relation of CAC with mortality end points.

RESULTS Among 4,503 adults with diabetes (32.5% women) aged 21–93 years, 61.2% of women and 80.4% of men had CAC >0. Total, CVD, and CHD mortality rates were directly related to CAC; women had higher total and CVD death rates than men when CAC >100. Age- and risk factor-adjusted hazard ratios (HRs) per log unit CAC were higher among women versus men for total (1.28 vs. 1.18) (interaction P = 0.01) and CVD mortality (1.47 vs. 1.27) (interaction P = 0.04) but were similar for CHD mortality (1.53 and 1.48). For CVD mortality, HRs with CAC scores of 101–400 and >400 were 3.67 and 6.27, respectively, for women and 1.63 and 3.48, respectively, for men (interaction P = 0.04). For total mortality, HRs were 2.56 and 4.05 for women, respectively, and 1.88 and 2.66 for men, respectively (interaction P = 0.01).

CONCLUSIONS CAC predicts CHD, CVD, and all-cause mortality in patients with diabetes; however, greater CAC predicts CVD and total mortality more strongly in women.

4). CLINICAL PRESENTATION, MANAGEMENT, AND 6-MONTH OUTCOMES IN WOMEN WITH PERIPARTUM CARDIOMYOPATHY

AIMS

We sought to describe the clinical presentation, management, and 6-month outcomes in women with peripartum cardiomyopathy (PPCM) globally.

METHODS AND RESULTS

In 2011, >100 national and affiliated member cardiac societies of the European Society of Cardiology (ESC) were contacted to contribute to a global registry on PPCM, under the auspices of the ESC EURObservational Research Programme. These societies were tasked with identifying centres who could participate in this registry. In low-income countries, e.g. Mozambique or Burkina Faso, where there are no national societies due to a shortage of cardiologists, we identified potential
participants through abstracts and publications and encouraged participation into the study. Seven hundred and thirty-nine women were enrolled in 49 countries in Europe (33%), Africa (29%), Asia-Pacific (15%), and the Middle East (22%). Mean age was 31 ± 6 years, mean left ventricular ejection fraction (LVEF) was 31 ± 10%, and 10% had a previous pregnancy complicated by PPCM. Symptom-onset occurred most often within 1 month of delivery (44%). At diagnosis, 67% of patients had severe (NYHA III/IV) symptoms and 67% had a LVEF ≤35%. Fifteen percent received bromocriptine with significant regional variation (Europe 15%, Africa 26%, Asia-Pacific 8%, the Middle East 4%, P < 0.001). Follow-up was available for 598 (81%) women. Six-month mortality was 6% overall, lowest in Europe (4%), and highest in the Middle East (10%). Most deaths were due to heart failure (42%) or sudden (30%). Re-admission for any reason occurred in 10% (with just over half of these for heart failure) and thromboembolic events in 7%. Myocardial recovery (LVEF > 50%) occurred only in 46%, most commonly in Asia-Pacific (62%), and least commonly in the Middle East (25%). Neonatal death occurred in 5% with marked regional variation (Europe 2%, the Middle East 9%).

CONCLUSION

Peripartum cardiomyopathy is a global disease, but clinical presentation and outcomes vary by region. Just under half of women experience myocardial recovery. Peripartum cardiomyopathy is a disease with substantial maternal and neonatal morbidity and mortality.

5). COVID-19 IN PREGNANCY: CLINICAL MANIFESTATIONS, RISK FACTORS, AND MATERNAL AND PERINATAL OUTCOMES

Abstract

Objective To determine the clinical manifestations, risk factors, and maternal and perinatal outcomes in pregnant and recently pregnant women with suspected or confirmed coronavirus disease 2019 (covid-19).

Design Living systematic review and meta-analysis.

Data sources Medline, Embase, Cochrane database, WHO COVID-19 database, China National Knowledge Infrastructure (CNKI), and Wanfang databases from 1 December 2019 to 26 June 2020, along with preprint servers, social media, and reference lists.

Study selection Cohort studies reporting the rates, clinical manifestations (symptoms, laboratory and radiological findings), risk factors, and maternal and perinatal outcomes in pregnant and recently pregnant women with suspected or confirmed covid-19.

Data extraction At least two researchers independently extracted the data and assessed study quality. Random effects meta-analysis was performed, with estimates pooled as odds ratios and proportions with 95% confidence intervals. All analyses will be updated regularly.

Results 77 studies were included. Overall, 10% (95% confidence interval 7% to 14%; 28 studies, 11 432 women) of pregnant and recently pregnant women attending or admitted to hospital for any reason were diagnosed as having
suspected or confirmed covid-19. The most common clinical manifestations of covid-19 in pregnancy were fever (40%) and cough (39%). Compared with non-pregnant women of reproductive age, pregnant and recently pregnant women with covid-19 were less likely to report symptoms of fever (odds ratio 0.43, 95% confidence interval 0.22 to 0.85; I²=74%; 5 studies; 80 521 women) and myalgia (0.48, 0.45 to 0.51; I²=0%; 3 studies; 80 409 women) and were more likely to need admission to an intensive care unit (1.62, 1.33 to 1.96; I²=0%) and invasive ventilation (1.88, 1.36 to 2.60; I²=0%; 4 studies, 91 606 women). 73 pregnant women (0.1%, 26 studies, 11 580 women) with confirmed covid-19 died from any cause. Increased maternal age (1.78, 1.25 to 2.55; I²=9%; 4 studies; 1058 women), high body mass index (2.38, 1.67 to 3.39; I²=0%; 3 studies; 877 women), chronic hypertension (2.0, 1.14 to 3.48; I²=0%; 2 studies; 858 women), and pre-existing diabetes (2.51, 1.31 to 4.80; I²=12%; 2 studies; 858 women) were associated with severe covid-19 in pregnancy. Pre-existing maternal comorbidity was a risk factor for admission to an intensive care unit (4.21, 1.06 to 16.72; I²=0%; 2 studies; 320 women) and invasive ventilation (4.48, 1.40 to 14.37; I²=0%; 2 studies; 313 women). Spontaneous preterm birth rate was 6% (95% confidence interval 3% to 9%; I²=55%; 10 studies; 870 women) in women with covid-19. The odds of any preterm birth (3.01, 95% confidence interval 1.16 to 7.85; I²=1%; 2 studies; 339 women) was high in pregnant women with covid-19 compared with those without the disease. A quarter of all neonates born to mothers with covid-19 were admitted to the neonatal unit (25%) and were at increased risk of admission (odds ratio 3.13, 95% confidence interval 2.05 to 4.78, I²=not estimable; 1 study, 1121 neonates) than those born to mothers without covid-19.

Conclusion Pregnant and recently pregnant women are less likely to manifest covid-19 related symptoms of fever and myalgia than non-pregnant women of reproductive age and are potentially more likely to need intensive care treatment for covid-19. Pre-existing comorbidities, high maternal age, and high body mass index seem to be risk factors for severe covid-19. Preterm birth rates are high in pregnant women with covid-19 than in pregnant women without the disease.

6). RATES OF RECURRENT MI DECLINED AMONG U.S. WOMEN AND MEN

Abstract

Background: Rates for recurrent coronary heart disease (CHD) events have declined in the US. However, few studies have assessed whether this decline has been similar among women and men.

Methods: Data were used from 770,408 US women and 700,477 US men <65 years of age with commercial health insurance through MarketScan and ≥66 years of age with government health insurance through Medicare who had a myocardial infarction (MI) hospitalization between 2008 and 2017. Women and men were followed for recurrent MI, recurrent CHD events (i.e., recurrent MI or coronary revascularization), heart failure hospitalization, and all-cause mortality (Medicare only) in the 365 days post-MI.

Results: From 2008 to 2017, age-standardized recurrent MI rates per 1,000 person-years decreased from 89.2 to 72.3 in women and from 94.2 to 81.3 in men (multivariable-adjusted p-interaction by sex<0.001). Recurrent CHD event rates decreased from 166.3 to 133.3 in women and from 198.1 to 176.8 in men (p-interaction<0.001). Heart failure hospitalization rates decreased from 177.4 to
158.1 in women and from 162.9 to 156.1 in men (p-interaction=0.001). All-cause mortality rates decreased from 403.2 to 389.5 in women and from 436.1 to 417.9 in men (p-interaction=0.82). In 2017, the multivariable-adjusted rate ratios (95%CI), comparing women with men were 0.90 (0.86, 0.93) for recurrent MI, 0.80 (0.78, 0.82) for recurrent CHD events, 0.99 (0.96, 1.01) for heart failure hospitalization, and 0.82 (0.80-0.83) for all-cause mortality.

Conclusions: Rates of recurrent MI, recurrent CHD events, heart failure hospitalization, and mortality in the first year after an MI declined considerably between 2008 and 2017 in both men and women, with proportionally greater reductions for women than men. However, rates remain very high and rates of recurrent MI, recurrent CHD events and death continue to be higher among men than women.

7). ADVERSE PREGNANCY OUTCOMES TIED TO LATER ATHEROSCLEROTIC CVD

Abstract

Importance Atherosclerotic cardiovascular disease (ASCVD) may have unique risk factors in women. Most women have a history of pregnancy; common adverse pregnancy outcomes (APOs) appear to be associated with ASCVD, but prior studies have limitations.

Objective To assess whether APOs are associated with increased ASCVD risk independently of traditional risk factors.

Design, Setting, and Participants The APO history among participants in the Women's Health Initiative, a large multiethnic cohort of postmenopausal women, was assessed. The associations of 5 self-reported APOs (gestational diabetes, hypertensive disorders of pregnancy, low birth weight [ie, birth weight less than 2.49 kg], high birth weight [ie, birth weight greater than 4.08 kg], and preterm delivery by 3 weeks or more) with ASCVD were analyzed, adjusting for traditional ASCVD risk factors. Data were collected and analyzed in 2017.

Exposures APOs (gestational diabetes, hypertensive disorders of pregnancy, low birth weight, high birth weight, and preterm delivery).

Main Outcomes and Measures Adjudicated ASCVD.

Results A total of 48,113 Women's Health Initiative participants responded to the survey; the median (interquartile range) age at time of enrollment was 60.0 (55.0-64.0) years. A total of 13,482 participants (28.8%) reported 1 or more APOs. Atherosclerotic cardiovascular disease was more frequent in women who reported an APO compared with those without APOs (1028 of 13,482 [7.6%] vs 1758 of 30,522 [5.8%]). Each APO, analyzed separately, was significantly associated with ASCVD, and gestational diabetes, hypertensive disorders of pregnancy, low birth weight, and preterm delivery remained significant after adjustment for traditional ASCVD risk factors. When all APOs were analyzed together, hypertensive disorders of pregnancy (odds ratio, 1.27; 95% CI, 1.15-1.40) and low birth weight (odds ratio, 1.12; 95% CI, 1.00-1.26) remained independently associated with ASCVD. All
findings were materially unchanged by additional adjustment for parity, body mass index, and socioeconomic factors.

**Conclusions and Relevance** In this large multiethnic cohort of women, hypertensive disorders of pregnancy and low birth weight were independently associated with ASCVD after adjustment for risk factors and other APOs.

8). **EXPOSURE TO MATERNAL GESTATIONAL DIABETES TIED TO HIGHER CVD RISK**

**Abstract**

**BACKGROUND:** It is unclear whether intrauterine exposure to maternal diabetes is associated with risk factors for cardiovascular disease and related end points in adulthood. We examined this potential association in a population-based birth cohort followed up to age 35 years.

**METHODS:** We performed a cohort study of offspring born between 1979 and 2005 \(n = 293,546\) and followed until March 2015 in Manitoba, Canada, using registry-based administrative data. The primary exposures were intrauterine exposure to gestational diabetes and type 2 diabetes mellitus. The primary outcome was a composite measure of incident cardiovascular disease events, and the secondary outcome was a composite of risk factors for cardiovascular disease in offspring followed up to age 35 years.

**RESULTS:** The cohort provided 3,628,576 person-years of data (mean age at latest follow-up 20.5 [standard deviation 6.4] years, 49.3% female); 2765 (0.9%) of the offspring experienced a cardiovascular disease end point, and 12,673 (4.3%) experienced a cardiovascular disease risk factor. After propensity score matching, the hazard for cardiovascular disease end points was elevated in offspring exposed to gestational diabetes (adjusted hazard ratio [HR] 1.42, 95% confidence interval [CI] 1.12–1.79) but not type 2 diabetes (adjusted HR 1.40, 95% CI 0.98–2.01). A similar association was observed for cardiovascular disease risk factors (gestational diabetes: adjusted HR 1.92, 95% CI 1.75–2.11; type 2 diabetes: adjusted HR 3.40, 95% CI 3.00–3.85).

**INTERPRETATION:** Intrauterine exposure to maternal diabetes was associated with higher morbidity and risk related to cardiovascular disease among offspring up to 35 years of age.

Cardiovascular diseases represent the most common non-communicable cause of death worldwide. Although cardiovascular disease largely affects older individuals, the population-level burden is evident as early as 35 years of age. Most adolescents in developed countries live with 1 or more risk factors for cardiovascular disease, and rates of cardiovascular disease continue to increase in individuals younger than 40 years of age. Lifestyle factors in childhood contribute to early-onset cardiovascular disease; however, a growing body of evidence suggests that the natural history of these problems begins in utero.

Poor fetal nutrition is an established but relatively under-recognized risk factor for cardiovascular disease. Large prospective cohort studies and some natural experiments have shown that maternal undernutrition is associated with
higher rates of premature cardiovascular disease. More recently, the early-life origins of cardiovascular disease have been linked to maternal overnutrition and hyperglycemia in pregnancy. In smaller birth cohorts, exposure to maternal diabetes in utero has been associated with cardiometabolic risk factor clustering in offspring in both childhood and adolescence. To date, however, these observations have not been replicated in population-based samples with prolonged offspring follow-up and a focus on harder end points related to cardiovascular disease.

Maternal diabetes is one of the most common metabolic perturbations to which fetuses may be exposed. Fetal exposure to maternal gestational diabetes and type 2 diabetes mellitus is associated with adverse cardiometabolic health in childhood, including insulin resistance, overweight, dyslipidemia, type 2 diabetes and potentially elevated blood pressure. For example, in a recent administrative cohort study, members of our team found that in utero exposure to diabetes during pregnancy was associated with a dose-dependent increased risk for type 2 diabetes in adolescence. Cohort studies from Europe have shown similar associations between in utero exposure to maternal diabetes and features of cardiometabolic disease in adolescence. It remains unclear, however, whether fetal exposure to maternal diabetes is associated with higher cardiovascular disease–related morbidity in young adulthood.

We hypothesized that intrauterine exposure to gestational diabetes or type 2 diabetes would be associated with higher cardiovascular disease morbidity relative to no intrauterine exposure to diabetes. Additionally, we hypothesized that cardiovascular disease risk would be greater following intrauterine exposure to type 2 diabetes than intrauterine exposure to gestational diabetes.

9). STROKE, CVD RISK UP WITH TWO OR MORE MENOPAUSAL SYMPTOMS

MONDAY, Sept. 28, 2020 (HealthDay News) -- Having two or more moderate or severe menopausal symptoms (MS) is associated with an increased risk for stroke and cardiovascular disease (CVD), according to a study presented at the annual meeting of the North American Menopause Society, held virtually from Sept. 28 to Oct. 3.

Matthew Nudy, M.D., from the Penn State Hershey Medical Center, and colleagues conducted a secondary analysis of the Women's Health Initiative-Calcium and Vitamin D trial, which included 20,050 women aged 50 to 79 years with a median follow-up of seven years. The associations of vasomotor symptom (VMS) severity and number of menopausal symptoms (nMS) with health outcomes were examined.

The researchers observed no association between the severity of VMS (hot flashes and night sweats) and any health outcome. However, nMS was associated significantly with the risk for stroke and total CVD (hazard ratios, 1.41 and 1.37, respectively, for two or more MS versus none). Calcium and vitamin D supplementation did not influence any association. There was an association between the severities of many individual MS (night sweats, restless and fidgety, difficulty concentrating, dizziness, heart racing or skipping beats, feeling tired, and forgetfulness) and higher total CVD.

"We found that even severe hot flashes were not associated with any adverse clinical health outcomes when occurring on their own, but if they or any other
Moderate-to-severe menopause symptoms were present in combination, there was an association with an increased risk of cardiovascular disease," Nudy said in a statement.

10). SEX-SPECIFIC ASSOCIATIONS OF CARDIOVASCULAR RISK FACTORS AND BIOMARKERS WITH INCIDENT HEART FAILURE

Abstract

Background Whether cardiovascular (CV) disease risk factors and biomarkers associate differentially with heart failure (HF) risk in men and women is unclear.

Objectives The purpose of this study was to evaluate sex-specific associations of CV risk factors and biomarkers with incident HF.

Methods The analysis was performed using data from 4 community-based cohorts with 12.5 years of follow-up. Participants (recruited between 1989 and 2002) were free of HF at baseline. Biomarker measurements included natriuretic peptides, cardiac troponins, plasminogen activator inhibitor-1, D-dimer, fibrinogen, C-reactive protein, sST2, galectin-3, cystatin-C, and urinary albumin-to-creatinine ratio.

Results Among 22,756 participants (mean age 60 ± 13 years, 53% women), HF occurred in 2,095 participants (47% women). Age, smoking, type 2 diabetes mellitus, hypertension, body mass index, atrial fibrillation, myocardial infarction, left ventricular hypertrophy, and left bundle branch block were strongly associated with HF in both sexes (p < 0.001), and the combined clinical model had good discrimination in men (C-statistic = 0.80) and in women (C-statistic = 0.83). The majority of biomarkers were strongly and similarly associated with HF in both sexes. The clinical model improved modestly after adding natriuretic peptides in men (ΔC-statistic = 0.006; likelihood ratio chi-square = 146; p < 0.001), and after adding cardiac troponins in women (ΔC-statistic = 0.003; likelihood ratio chi-square = 73; p < 0.001).

Conclusions CV risk factors are strongly and similarly associated with incident HF in both sexes, highlighting the similar importance of risk factor control in reducing HF risk in the community. There are subtle sex-related differences in the predictive value of individual biomarkers, but the overall improvement in HF risk estimation when included in a clinical HF risk prediction model is limited in both sexes.

11). ADVERSE PREGNANCY OUTCOMES ASSOCIATED WITH RISK OF ATHEROSCLEROTIC CARDIOVASCULAR DISEASE IN POSTMENOPAUSAL WOMEN

Abstract

Importance Atherosclerotic cardiovascular disease (ASCVD) may have unique risk factors in women. Most women have a history of pregnancy; common adverse
pregnancy outcomes (APOs) appear to be associated with ASCVD, but prior studies have limitations.

**Objective**  To assess whether APOs are associated with increased ASCVD risk independently of traditional risk factors.

**Design, Setting, and Participants**  The APO history among participants in the Women’s Health Initiative, a large multiethnic cohort of postmenopausal women, was assessed. The associations of 5 self-reported APOs (gestational diabetes, hypertensive disorders of pregnancy, low birth weight [ie, birth weight less than 2.49 kg], high birth weight [ie, birth weight greater than 4.08 kg], and preterm delivery by 3 weeks or more) with ASCVD were analyzed, adjusting for traditional ASCVD risk factors. Data were collected and analyzed in 2017.

**Exposures**  APOs (gestational diabetes, hypertensive disorders of pregnancy, low birth weight, high birth weight, and preterm delivery).

**Main Outcomes and Measures**  Adjudicated ASCVD.

**Results**  A total of 48,113 Women’s Health Initiative participants responded to the survey; the median (interquartile range) age at time of enrollment was 60.0 (55.0-64.0) years. A total of 13,482 participants (28.8%) reported 1 or more APOs. Atherosclerotic cardiovascular disease was more frequent in women who reported an APO compared with those without APOs (1028 of 13,482 [7.6%] vs 1758 of 30,522 [5.8%]). Each APO, analyzed separately, was significantly associated with ASCVD, and gestational diabetes, hypertensive disorders of pregnancy, low birth weight, and preterm delivery remained significant after adjustment for traditional ASCVD risk factors. When all APOs were analyzed together, hypertensive disorders of pregnancy (odds ratio, 1.27; 95% CI, 1.15-1.40) and low birth weight (odds ratio, 1.12; 95% CI, 1.00-1.26) remained independently associated with ASCVD. All findings were materially unchanged by additional adjustment for parity, body mass index, and socioeconomic factors.

**Conclusions and Relevance**  In this large multiethnic cohort of women, hypertensive disorders of pregnancy and low birth weight were independently associated with ASCVD after adjustment for risk factors and other APOs.

**12). FEWER WOMEN AWARE OF HEART DISEASE AS LEADING CAUSE OF DEATH**

**Abstract**

**BACKGROUND:**

High awareness that cardiovascular disease is the leading cause of death (LCOD) among women is critical to prevention. This study evaluated longitudinal trends in this awareness among women.
METHODS AND RESULTS:

Online surveys of US women (≥25 years of age) were conducted in January 2009 and January 2019. Data were weighted to the US population distribution of sociodemographic characteristics. Multivariable logistic regression was used to evaluate knowledge of the LCOD. In 2009, awareness of heart disease as the LCOD was 65%, decreasing to 44% in 2019. In 2019, awareness was greater with older age and increasing education and lower among non-White women and women with hypertension. The 10-year awareness decline was observed in all races/ethnicities and ages except women ≥65 years of age. The greatest declines were among Hispanic women (odds ratio of awareness comparing 2019 to 2009, 0.14 [95% CI, 0.07–0.28]), non-Hispanic Black women (odds ratio, 0.31 [95% CI, 0.19–0.49]), and 25- to 34-year-olds (odds ratio, 0.19 [95% CI, 0.10–0.34]). In 2019, women were more likely than in 2009 to incorrectly identify breast cancer as the LCOD (odds ratio, 2.59 [95% CI, 1.86–3.67]), an association that was greater in younger women. Awareness of heart attack symptoms also declined.

CONCLUSIONS:

Awareness that heart disease is the LCOD among women declined from 2009 to 2019, particularly among Hispanic and non-Hispanic Black women and in younger women (in whom primordial/primary prevention may be most effective). An urgent redoubling of efforts by organizations interested in women’s health is required to reverse these trends.

13). INCREASED LONG-TERM MORTALITY IN WOMEN WITH HIGH LEFT VENTRICULAR EJECTION FRACTION: DATA FROM THE CONFIRM (CORONARY CT ANGIOGRAPHY EVALUATION FOR CLINICAL OUTCOMES: AN INTERNATIONAL MULTICENTER) LONG-TERM REGISTRY

Abstract

Aims: There are significant sex-specific differences in left ventricular ejection fraction (LVEF), with a higher LVEF being observed in women. We sought to assess the clinical relevance of an increased LVEF in women and men.

Methods and results: A total of 4632 patients from the CONFIRM (COronary CT Angiography EvaluatioN For Clinical Outcomes: An InteRnational Multicenter) registry (44.8% women; mean age 58.7 ± 13.2 years in men and 59.5 ± 13.3 years in women, P = 0.05), in whom LVEF was measured by cardiac computed tomography, were categorized according to LVEF (low <55%, normal 55-65%, and high >65%). The prevalence of high LVEF was similar in both sexes (33.5% in women and 32.5% in men, P = 0.46). After 6 years of follow-up, no difference in mortality was observed in patients with high LVEF in the overall cohort (P = 0.41). When data were stratified by sex, women with high LVEF died more often from any cause as compared to women with normal LVEF (8.6% vs. 7.1%, log rank P = 0.032), while an opposite trend was observed in men (5.8% vs. 6.8% in normal LVEF, log rank P = 0.89). Accordingly, a first order interaction term of male sex and high LVEF was significant (hazard ratios 0.63, 95% confidence intervals 0.41-0.98, P = 0.043) in a Cox regression model of all-cause mortality adjusted for age, cardiovascular risk factors, and severity of coronary artery disease (CAD).
**Conclusion:** Increased LVEF is highly prevalent in patients referred for evaluation of CAD and is associated with an increased risk of death in women, but not in men. Differentiating between normal and hyperdynamic left ventricles might improve risk stratification in women with CAD.

**14). SEX DIFFERENCES IN ATRIAL FIBRILLATION ABLATION OUTCOMES: INSIGHTS FROM A LARGE-SCALE MULTICENTRE REGISTRY**

**Abstract**

**Aim**

The impact of sex differences on the clinical outcomes of radiofrequency catheter ablation (RFCA) of atrial fibrillation (AF) is controversial. We investigated the sex differences regarding the efficacy and clinical outcomes of RFCA of AF.

**Methods and results**

We conducted a large-scale, prospective, multicentre, observational study (Kansai plus atrial Fibrillation Registry). We enrolled 5010 consecutive patients who underwent an initial RFCA of AF at 26 centres (64±10 years; non-paroxysmal AF, 35.7%). The median follow-up duration was 2.9 years. Female patients (n=1369, 27.3%) were older (female vs. male, 68±9 vs. 63±11 years, P<0.0001) with a lower prevalence of non-paroxysmal AF (27.1% vs. 38.9%, P<0.0001). Fewer females experienced time-dependent pulmonary vein (PV) reconnections and more females received a non-PV foci ablation than males in the index RFCA. The 3-year cumulative incidence of AF recurrences in the multivariate analysis after single procedures was significantly higher in females than males (43.3% vs. 39.0%, log rank P=0.0046). Females remained an independent predictor of AF recurrence (hazard ratio 1.24; 95% confidence interval 1.12–1.38, P<0.0001). The AF recurrence rates after multiple procedures were also higher in females, but fewer females experienced PV reconnections during second sessions. More females experienced *de novo* pacemaker implantations during the long-term follow-up. Females were associated with a higher risk of heart failure hospitalizations and major bleeding after RFCA in the multivariate analysis.

**Conclusions**

Females experienced more frequent AF recurrences probably due to non-PV arrhythmogenicity and *de novo* pacemaker implantations than males during the long-term follow-up after RFCA of AF.