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The American Heart Association's Science News from ESC 2021 coverage brings you results and insights into selected important scientific trials presented at ESC 2021, a virtual conference held August 27-30, 2021. Find at-a-glance data summaries, exclusive interviews, simultaneous publications, and more – all in one place. Jump to one day's coverage: Friday | Saturday | Sunday | Monday Quick Reference: AHA Journals Simultaneous Publications Effect of empagliflozin on serious adverse renal outcomes in chronic heart failure – a prospective alpha-protected, individual patient-level pooled analysis Milton Packer | Baylor University Medical Center, Dallas, TX RESULTS: The effects of empagliflozin to reduce HF outcomes in EMPEROR-Preserved and EMPEROR-Reduced were highly concordant. Empagliflozin reduced HF hospitalizations by ≈ 30% across a broad range of EF from < 25% to < 65%, with attenuation of effect at higher ejection fractions. Empagliflozin reduced the risk of major renal outcomes in EMPEROR-Reduced, but not in EMPEROR-Preserved. Simultaneous Publication NEJM: Empagliflozin and Major Renal Outcomes in Heart Failure Stenting vs. surgery for tight carotid stenosis Alison Halliday | University of Oxford, Oxford, United Kingdom RESULTS: Among asymptomatic patients receiving CAS or CEA, serious complications are uncommon, and both are associated with an approximately 1% risk of disabling stroke or death. ACST-2 Data Summary Slide (PDF) Screening for AF with an implantable loop recorder to prevent stroke Jesper Hastrup Svendsen | Rigshospitalet, Copenhagen University Hospital, Heart Centre, Department of Cardiology, Copenhagen, Denmark RESULTS: Continuous monitoring to detect atrial fibrillation via an implantable loop recorder and subsequent timely use of anticoagulants did not prevent stroke or systemic arterial embolism in high-risk individuals over 70 years old. LOOP Data Summary Slide (PDF) ClinicalTrials: NCT02036450 LOOP Study Site Compared Outcomes of ST-Elevation Myocardial Infarction Patients with Multivessel Disease Treated with Primary Percutaneous Coronary Intervention and Preserved Fractional Flow Reserve of Non-Culprit Lesions Treated Conservatively and of Those with Low Fractional Flow Reserve Managed Invasively: Insights from the FLOWER MI Trial Pierre Denormandie, et al. | Circulation: Cardiovascular Interventions | Aug. 23, 2021 Effect of Colchicine on Myocardial Injury in Acute Myocardial Infarction Kristina Lambriakis, et al. | Circulation | Aug. 23, 2021 Hemoglobin and Clinical Outcomes in the VeriCiguat Global Study in Patients With Heart Failure and Reduced Ejection Fraction (VICTORIA) Justin A. Ezekowitz, et al. | Circulation | Aug. 25, 2021 Cardiovascular Benefit of Lowering LDL Cholesterol Below 40 mg/dl Nicholas A. Marston, et al | Circulation | Aug. 27, 2021 Native Aortic Valve Disease Progression and Bioprosthetic Valve Degeneration in Patients with Transcatheter Aortic Valve Implantation Jacek Kwiecinski, et al | Circulation | Aug. 29, 2021 Pulsed-Field Ablation in Ventricular Myocardium Using a Focal Catheter: The Impact of Application Repetition on Lesion Dimensions Hagai D. Yavin, et al. | Circulation: Arrhythmia and Electrophysiology | Aug. 30, 2021 Influenza Vaccination After Myocardial Infarction: A Randomized, Double-Blind, Placebo-Controlled, Multicenter Trial Ole Frøbert, et al. | Circulation | Aug. 30, 2021 Cardiovascular Safety of Degarelix versus Leuprolide in Patients with Prostate Cancer: The Primary Results of the PRONOUNCE Randomized Trial Renato D. Lopes, et al. | Circulation | Aug. 30, 2021 Heart failure is characterized by the heart's inability to pump an adequate supply of blood to the body. Without sufficient blood flow, all major body functions are disrupted. Heart failure is a condition or a collection of symptoms that weaken or stiffen your heart. In some people with heart failure, the heart has difficulty pumping enough blood to support other organs in the body. Other people may have a hardening and stiffening of the heart muscle itself, which blocks or reduces blood flow to the heart. Heart failure can affect the right or left side of your heart or both at the same time. It can be either an acute (short-term) or chronic (ongoing) condition. With acute heart failure, the symptoms appear suddenly but go away fairly quickly. This condition can occur after a heart attack. It may also be a result of a problem with the heart valves that control the flow of blood in the heart. With chronic heart failure, symptoms are continuous and don't improve over time. Most heart failure cases are chronic. About 6.2 million Americans have heart failure, according to the Centers for Disease Control and Prevention (CDC). Most cases are diagnosed in men. However, women are more likely to die from heart failure when the condition goes untreated. Heart failure is a serious medical condition that requires treatment. Early treatment increases your chances of long-term recovery with fewer complications. Call your doctor right away if you're having any symptoms of heart failure. Heart failure is most often related to another condition. The most common cause of heart failure is coronary artery disease (CAD), a disorder that causes narrowing of the arteries that supply blood and oxygen to the heart. Other conditions that may increase your risk of developing heart failure include: cardiomyopathy, a disorder of the heart muscle that causes the heart to become weak; congenital heart disease; heart attack; heart valve disease; certain types of arrhythmias, or irregular heart rhythm; high blood pressure; emphysema, a disease of the lung; untreated sleep apnea; diabetes; an overactive or underactive thyroid; HIV; severe forms of anemia; certain cancer treatments, such as chemotherapy; substance misuse disorder. The symptoms of heart failure may include: fatigue; sudden weight gain; loss of appetite; persistent coughing; irregular heart rate; heart palpitations; abdominal swellings; shortness of breath; exercise intolerance; leg and ankle swelling or abdominal swelling on extra pillows; getting short of breath while lying down; protruding neck veins. Heart failure can occur in either the left or right side of your heart. It's also possible for both sides of your heart to fail at the same time. Heart failure is also classified as either diastolic or systolic. Left-sided heart failure Left-sided heart failure is the most common type of heart failure. The left ventricle is located in the bottom left side of your heart. This area pumps oxygen-rich blood to the rest of your body. Left-sided heart failure occurs when the left ventricle doesn't pump efficiently. This prevents your body from getting enough oxygen-rich blood. The blood backs up into your lungs instead, which causes shortness of breath and a buildup of fluid. Right-sided heart failure The right heart ventricle is responsible for pumping blood to your lungs to collect oxygen. Right-sided heart failure occurs when the right side of your heart can't perform its job effectively. It's usually triggered by left-sided heart failure. The accumulation of blood in the lungs caused by left-sided heart failure makes the right ventricle work harder. This can stress the right side of the heart and cause it to fail. Right-sided heart failure can also occur because of other conditions, such as lung disease or valve disease. Right-sided heart failure is marked by swelling of the lower extremities or abdomen. This swelling is caused by fluid backup in the legs, feet, and abdomen. Diastolic heart failure Diastolic heart failure occurs when the heart muscle becomes stiffer than normal. The stiffness, which is usually due to heart disease, means that your heart doesn't fill with blood easily. This is known as diastolic dysfunction. It leads to a lack of blood flow to the rest of the organs in your body. Diastolic heart failure is more common in people who are female than in those who are male. Systolic heart failure Systolic heart failure occurs when the heart muscle loses its ability to contract. The contractions of the heart are necessary to pump oxygen-rich blood out to the body. This problem is known as systolic dysfunction, and it usually develops when your heart is weak and may be enlarged. Systolic heart failure is more common in males than in females. Both diastolic and systolic heart failure can occur on the left or right sides of the heart. You may have either condition on both sides of the heart. Heart failure can happen to anyone. However, certain factors may increase your risk of developing this condition. There is a higher incidence of heart failure in men compared with women, though the prevalence is about the same for all sexes. People with diseases that damage the heart are also at an increased risk. These conditions include: hypertension; sleep apnea; diabetes; coronary artery disease; valve disease; anemia; hyperthyroidism; hypothyroidism; emphysema. Certain behaviors can also increase your risk of developing heart failure, including: smoking; eating foods that are high in fat or cholesterol; not getting enough exercise; having overweight or obesity. Your doctor may perform a physical exam to check for signs of heart failure. For instance, leg swelling, irregular heart rate, and bulging neck veins may lead your doctor to diagnose heart failure. Echocardiogram An echocardiogram is the most effective way to diagnose heart failure. It uses sound waves to create detailed pictures of your heart, which help your doctor evaluate the damage to your heart, the squeezing and relaxing function and determine the underlying causes of your condition. Your doctor may use an echocardiogram along with other tests. Treating heart failure depends on the severity of your condition and the type of heart failure you have. Early treatment can improve symptoms fairly quickly, but you should still get regular testing and follow up with your doctor every 3 to 6 months. The main goal of treatment is to increase your lifespan. Treatment of heart failure may include one or more of the following: medication; bypass surgery; percutaneous coronary intervention; a pacemaker; an implantable cardioverter defibrillator (ICD); transplant surgery. Let's take a closer look at each of these treatments and what they entail. Medication Early stages of heart failure may be treated with medications to help relieve your symptoms and prevent your condition from getting worse. Certain medications are prescribed to: improve your heart's ability to pump blood; reduce blood clots; reduce your heart rate, when necessary; remove excess sodium and replenish potassium levels; reduce cholesterol levels; reduce adverse hormones and reactions that occur in your body that can make the heart weaker. These medications can include: blood thinners; angiotensin converting enzyme (ACE) inhibitors; angiotensin II receptor blockers (ARBs); beta-blockers; calcium channel blockers; cholesterol-lowering medications; nitrates; angiotensin receptor-neprilysin inhibitors (ARNI); sodium-glucose cotransporter-2 (SGLT2) inhibitors; hydralazine; ivabradine in some cases; vericiguat in some cases. Always speak with your doctor before taking new medications. Some medications are completely off-limits to people with heart failure, including naproxen (Aleve, Naprosyn) and ibuprofen (Advil, Midol). Surgery Bypass surgery Some people with heart failure will need surgery, such as coronary bypass surgery. During this surgery, your surgeon will take a healthy piece of an artery or vein and attach it to the blocked coronary artery. This allows the blood to bypass the blocked, damaged artery and flow through the new one. Percutaneous coronary intervention (PCI) Your doctor may also suggest a procedure known as a percutaneous coronary intervention (PCI). In this procedure, a catheter with a small balloon attached is inserted into the blocked or narrowed artery. Once the catheter reaches the damaged artery, your surgeon inflates a balloon to open the artery. Your surgeon may need to place a permanent stent, or wire mesh tube, into the blocked or narrowed artery. A stent permanently holds your artery open and can help prevent further narrowing of the artery. Pacemakers Other people with heart failure will need pacemakers to help control heart rhythms. These small devices are placed into the chest. They can slow your heart rate when the heart is beating too quickly or increase your heart rate if the heart is beating too slowly. Pacemakers are often used along with bypass surgery as well as medications. Implantable cardioverter defibrillator (ICD) An ICD is a battery-powered device that keeps track of your heart rate and will shock your heart if it detects an abnormal heart rhythm. This shock restores the heart rate back to a normal rhythm. An ICD is suggested for people with an ejection fraction (how much blood your heart pumps out with each contraction) less than 35 percent (if not due to blockages) and Heart transplants are used in the final stages of heart failure when all other treatments have failed. During a transplant, your surgeon removes all or part of your heart and replaces it with a heart from a donor. Some lifestyle measures can help treat heart failure and prevent the condition from developing. Maintaining a moderate weight and exercising regularly can significantly decrease your risk of heart failure. Reducing the amount of salt in your diet can also lower your risk. Other habits that may prevent heart failure include: limiting alcohol intake; not smoking; avoiding high fat foods; getting the right amount of sleep; staying active. Untreated heart failure can eventually lead to congestive heart failure (CHF), a condition in which blood builds up in other areas of your body. In this potential life-threatening condition, you may experience fluid retention in your limbs as well as in your organs, such as the liver and lungs. Additional complications of heart failure can include: stroke; thromboembolism; arrhythmias, like atrial fibrillation; kidney dysfunction. Heart attack A heart attack may also occur because of a complication related to heart failure. Call 911 or your local emergency services right away if you have these symptoms: crushing chest pain; discomfort in the chest, such as squeezing or tightness; discomfort in the upper body, including numbness or a coldness; fatigue; dizziness; rapid heart rate; vomiting; nausea; cold sweats. Heart failure is usually a long-term condition that requires ongoing treatment to prevent complications. When heart failure is left untreated, the heart can weaken so severely that it causes a life-threatening complication. It's important to recognize that heart failure can happen to anyone. It's important to take lifelong preventive measures for your heart health. Always contact your doctor if you suddenly have any new or unexplained symptoms that may indicate a problem with your heart. Because heart failure is most often a chronic condition, your symptoms will likely get worse over time. Medications and surgeries can help relieve your symptoms, but such treatments may not help if you have a severe case of heart failure. In some cases, heart failure can be life threatening. The outlook and treatment of heart failure varies depending on the type of heart failure you have. Early treatment is key in preventing the most serious cases of heart failure.

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