CLINICAL FLASHCARDS

Diabetes Drugs For Stiff Heart Failure

The Life Science Feed

QUESTION

What is the Left Ventricular Ejection Fraction (LVEF) threshold for a diagnosis of Heart Failure with preserved Ejection Fraction (HFpEF)?

ANSWER

50% or above.

QUESTION

What term describes the impaired relaxation and stiffening of the left ventricle that characterizes HFpEF?

ANSWER

Diastolic dysfunction.

QUESTION

Unlike HFrEF, which is driven by neurohormonal activation, HFpEF is primarily driven by systemic comorbidities and _____.

ANSWER

Microvascular inflammation.

QUESTION

In HFpEF, what structural changes to the left ventricle typically prevent it from filling properly?

ANSWER

Hypertrophy and fibrosis.

QUESTION

Which two patient demographics are statistically more likely to be affected by HFpEF than HFrEF?

ANSWER

Older individuals and females.

QUESTION

What three metabolic comorbidities are frequently associated with the development of HFpEF?

ANSWER

Obesity, hypertension, and diabetes.

QUESTION

Why did ACE inhibitors and ARBs fail to show benefit in treating HFpEF?

ANSWER

They target the neurohormonal axis, which is not the primary pathophysiology of HFpEF.

QUESTION

Which ARB was tested in the 2003 CHARM-Preserved trial for HFpEF?

ANSWER

Candesartan.

QUESTION

The 2008 I-PRESERVE trial tested which medication in HFpEF patients?

ANSWER

Irbesartan.

QUESTION

What was the outcome of the ALDO-DHF trial regarding its composite endpoint?

ANSWER

The result was neutral.

QUESTION

Which medication was evaluated in the controversial TOPCAT trial?

ANSWER

Spironolactone.

QUESTION

What evidence from the Eastern European cohort of the TOPCAT trial suggested low treatment adherence?

ANSWER

Canrenone levels were near-zero in those patients.

QUESTION

In the TOPCAT trial, a signal for benefit was observed specifically in the cohort from which region?

ANSWER

The Americas.

QUESTION

Which landmark 2021 trial demonstrated the efficacy of empagliflozin in HFpEF?

ANSWER

EMPEROR-Preserved.

QUESTION

What was the relative risk reduction for the primary endpoint in the EMPEROR-Preserved trial?

ANSWER

21%.

QUESTION

The primary benefit observed in the EMPEROR-Preserved trial was a reduction in _____.

ANSWER

Hospitalisation for heart failure.

QUESTION

Which SGLT2 inhibitor was tested in the DELIVER trial?

ANSWER

Dapagliflozin.

QUESTION

What relative risk reduction was achieved in the DELIVER trial for patients with HFmrEF and HFpEF?

ANSWER

18%.

QUESTION

What did the EMPEROR-DELIVER pooled analysis conclude about the effect of SGLT2 inhibitors across the EF spectrum?

ANSWER

There was a clear, consistent benefit across all ejection fraction subgroups.

QUESTION

Beyond diuresis and natriuresis, what metabolic mass reduction by SGLT2 inhibitors may benefit obese HFpEF patients?

ANSWER

Epicardial and visceral fat mass.

QUESTION

Reducing epicardial fat mass in HFpEF patients is thought to lower _____ signalling to the myocardium.

ANSWER

Inflammatory.

QUESTION

Which non-steroidal mineralocorticoid receptor antagonist (MRA) was studied in the FINEARTS-HF trial?

ANSWER

Finerenone.

QUESTION

What was the primary outcome of the FINEARTS-HF trial (2024)?

ANSWER

A significant reduction in worsening heart failure events and cardiovascular death.

QUESTION

According to the 2024 ESC guidelines, which two medication classes are now recommended for HFpEF treatment?

ANSWER

SGLT2 inhibitors and non-steroidal MRAs.

QUESTION

Name one of the two major clinical algorithms used to formalise a HFpEF diagnosis.

ANSWER

H2FPEF score (or HFA-PEFF algorithm).

QUESTION

How does obesity affect NTproBNP levels, potentially complicating a HFpEF diagnosis?

ANSWER

NTproBNP levels are systematically lower in obese patients due to fat mass.

QUESTION

What physiological change occurs when filling pressures rise and back up from the stiff left ventricle?

ANSWER

Fluid retention and pulmonary congestion (causing breathlessness).

QUESTION

The _____ metabolite of spironolactone is used to confirm patient adherence to the drug.

ANSWER

Canrenone.

QUESTION

Why is correct phenotyping and diagnosis of HFpEF more clinically important now than it was twenty years ago?

ANSWER

Effective treatments like SGLT2 inhibitors and finerenone are now available.

QUESTION

In HFpEF, the ejection fraction is preserved, meaning the heart's _____ function remains normal.

ANSWER

Systolic.

QUESTION

Which cardiac arrhythmia is frequently a comorbidity in patients with HFpEF?

ANSWER

Atrial fibrillation.

QUESTION

Concept: The 'Graveyard of Clinical Trials'

ANSWER

Definition: A term used by cardiologists to describe HFpEF due to two decades of neutral results in drug trials.

QUESTION

What is the primary driver of HFpEF in patients with metabolic syndrome?

ANSWER

Systemic inflammation leading to microvascular dysfunction.

QUESTION

The DELIVER trial included patients with HFpEF and which other heart failure category?

ANSWER

HFmrEF (Heart Failure with mildly reduced Ejection Fraction).

QUESTION

How should the NTproBNP diagnostic threshold be handled in an elderly obese patient suspected of having HFpEF?

ANSWER

The threshold should be adjusted downward.

QUESTION

Which trial showed that spironolactone improved diastolic function but failed to reduce the primary composite endpoint?

ANSWER

ALDO-DHF.

QUESTION

What percentage of heart failure diagnoses does HFpEF approximately account for?

ANSWER

More than half of all cases.

QUESTION

What are the three hallmark symptoms of HFpEF?

ANSWER

Breathlessness, reduced exercise tolerance, and fluid retention.

QUESTION

SGLT2 inhibitors assist in HFpEF management through _____ and natriuresis, helping to decongest volume-overloaded patients.

ANSWER

Diuresis.

QUESTION

Which class of medication is finerenone, which distinguishes it from older MRAs like spironolactone?

ANSWER

Non-steroidal mineralocorticoid receptor antagonist.

QUESTION

True or False: The benefit of empagliflozin in HFpEF is only seen in patients with an EF below 60%.

ANSWER

False, the benefit is consistent even in patients with an EF above 60%.

QUESTION

In the differential diagnosis of HFpEF for an elderly obese patient, what non-cardiac condition must be considered?

ANSWER

Obesity hypoventilation (or deconditioning/pulmonary hypertension).

QUESTION

The 2023 ESC HF Guidelines were updated in 2024 to include recommendations for which MRA in HFpEF?

ANSWER

Finerenone.

QUESTION

What physiological effect do SGLT2 inhibitors have on cardiac fibrosis?

ANSWER

They have anti-fibrotic effects.

QUESTION

Which 2008 trial resulted in a neutral outcome for the ARB irbesartan in HFpEF?

ANSWER

I-PRESERVE.

QUESTION

Why is 'managing comorbidities' no longer the only standard of care for HFpEF?

ANSWER

Specific therapies now exist that directly reduce hospitalisation and mortality risk.

QUESTION

Which marker is raised in HFpEF and serves as a primary prompt for further cardiac workup?

ANSWER

NTproBNP.

QUESTION

The stiffness of the left ventricle in HFpEF leads to an increase in _____ pressures, which back up into the lungs.

ANSWER

Filling.

QUESTION

In HFpEF, the heart _____ normally but does not _____ normally.

ANSWER

Contracts; relax.

QUESTION

What is the primary reason the prevalence of HFpEF is currently rising?

ANSWER

Ageing populations and climbing obesity rates.