CLINICAL FLASHCARDS

Semaglutide For Obese Heart Failure Patients

The Life Science Feed

QUESTION

According to current analyses, what percentage of HFpEF patients in developed countries are overweight or obese?

ANSWER

80% or more.

QUESTION

In the context of HFpEF, obesity is increasingly viewed as a _____ factor rather than merely a comorbidity.

ANSWER

Causal

QUESTION

Identify three direct effects visceral and epicardial fat exert on the myocardium in obese HFpEF patients.

ANSWER

Inflammation, fibrosis, and pericardial compression.

QUESTION

How do HFpEF patients with obesity typically differ in age and sex compared to 'lean' HFpEF patients?

ANSWER

They tend to be younger and more predominantly female.

QUESTION

Which Mayo Clinic researcher is specifically credited with work on the 'obese HFpEF' phenotype?

ANSWER

Barry Borlaug.

QUESTION

Compared to lean HFpEF, what distinct haemodynamic characteristic is seen in obese HFpEF patients during exercise?

ANSWER

More severe haemodynamic impairment.

QUESTION

Concept: Epicardial fat

ANSWER

Definition: The fat depot located between the visceral pericardium and the myocardium.

QUESTION

Name three substances secreted by metabolically active epicardial fat into the myocardium.

ANSWER

Pro-inflammatory adipokines, free fatty acids, and reactive oxygen species.

QUESTION

Epicardial fat volume in HFpEF patients correlates with the severity of which cardiac dysfunction?

ANSWER

Diastolic dysfunction.

QUESTION

What was the required Ejection Fraction (EF) for inclusion in the STEP-HFpEF trial?

ANSWER

45% or above.

QUESTION

What was the minimum BMI requirement for participants in the STEP-HFpEF trial?

ANSWER

30 or above.

QUESTION

In the STEP-HFpEF trial, what dose of semaglutide was administered to the treatment group?

ANSWER

2.4 mg weekly (subcutaneous).

QUESTION

Identify the two primary endpoints measured in the STEP-HFpEF trial.

ANSWER

KCCQ symptom score and body weight change.

QUESTION

What was the mean KCCQ-CSS improvement for the semaglutide group in the STEP-HFpEF trial?

ANSWER

Approximately 16 points.

QUESTION

What is the 'minimum clinically important change' threshold for the KCCQ symptom score?

ANSWER

5 points.

QUESTION

In STEP-HFpEF, what was the percentage weight loss in the semaglutide group versus the placebo group?

ANSWER

13.3% versus 2.6%.

QUESTION

By how many additional metres did the six-minute walk distance (6MWD) improve with semaglutide in STEP-HFpEF?

ANSWER

21 metres.

QUESTION

Which specific inflammatory marker fell substantially in the semaglutide group of the STEP-HFpEF trial?

ANSWER

C-reactive protein (CRP).

QUESTION

What did the STEP-HFpEF-DM trial specifically investigate compared to the original STEP-HFpEF trial?

ANSWER

The effects of semaglutide in HFpEF patients who also have Type 2 Diabetes.

QUESTION

On which cardiac-related cells are GLP-1 receptors present, suggesting potential direct cardiac effects?

ANSWER

Cardiac macrophages and endothelial cells.

QUESTION

Beyond weight loss, semaglutide may improve cardiomyocyte health by enhancing which cellular function?

ANSWER

Mitochondrial function.

QUESTION

How did semaglutide affect epicardial fat mass in the STEP trials, as demonstrated by cardiac MRI?

ANSWER

It significantly reduced epicardial fat mass.

QUESTION

What is the primary physiological mechanism by which SGLT2 inhibitors work in HFpEF?

ANSWER

Decongestion, anti-fibrotic effects, and mitochondrial energy efficiency.

QUESTION

What are the primary physiological mechanisms by which GLP-1 agonists benefit HFpEF patients?

ANSWER

Weight reduction, anti-inflammation, and direct cardiomyocyte effects.

QUESTION

In the 2024 ESC guidelines, what is the recommendation class for semaglutide in obese HFpEF patients?

ANSWER

Class IIa.

QUESTION

What is the specific clinical objective for semaglutide use according to the 2024 ESC Class IIa recommendation?

ANSWER

To improve symptoms and exercise function.

QUESTION

Which 2023 trial provided broader evidence for the cardiovascular benefits of semaglutide beyond HFpEF symptoms?

ANSWER

The SELECT trial.

QUESTION

The paradigm of 'Metabolic Cardiomyopathy' suggests HFpEF should be treated by targeting the _____ rather than just cardiac haemodynamics.

ANSWER

Systemic metabolic environment.

QUESTION

In obese HFpEF, systemic inflammation is driven by which three key metabolic factors?

ANSWER

Adiposity, insulin resistance, and metabolic dysfunction.

QUESTION

According to Sarah Mitchell, obesity drives neurohumoral changes and _____ dysfunction in heart failure.

ANSWER

Endothelial

QUESTION

Why is the combination of GLP-1 agonists and SGLT2 inhibitors considered 'mechanistically complementary'?

ANSWER

They target heart failure via different pathways (metabolic/weight vs. decongestion/energy efficiency).

QUESTION

In the STEP-HFpEF trial, how did the KCCQ improvement in the placebo group compare to the treatment group?

ANSWER

Placebo improved by 8 points, while semaglutide improved by 16 points.

QUESTION

The 'obese HFpEF' phenotype is associated with higher _____ pressures in the heart compared to lean patients.

ANSWER

Filling

QUESTION

What type of fat is specifically located between the pericardium and myocardium?

ANSWER

Epicardial fat.

QUESTION

True or False: The STEP-HFpEF trial was powered to show a definitive reduction in all-cause death.

ANSWER

False.

QUESTION

Semaglutide's impact on exercise capacity in STEP-HFpEF was measured using which specific test?

ANSWER

The six-minute walk distance (6MWD) test.

QUESTION

In patients with Type 2 Diabetes and HFpEF, which drug class is traditionally recommended for decongestion and anti-fibrotic effects?

ANSWER

SGLT2 inhibitors.

QUESTION

Which metabolic depot's volume directly correlates with the severity of diastolic dysfunction?

ANSWER

Epicardial fat.

QUESTION

The KCCQ-CSS measures what specific aspect of a heart failure patient's health?

ANSWER

Symptoms and quality of life.

QUESTION

In the STEP-HFpEF trial, semaglutide 2.4 mg was compared against which control?

ANSWER

Placebo.

QUESTION

What percentage of weight loss did the placebo group achieve in the STEP-HFpEF trial?

ANSWER

2.6%.

QUESTION

What is the anatomical relationship between epicardial fat and the myocardium?

ANSWER

It is in direct contact (no fibrous layer separating them).

QUESTION

Reactive _____ species are one of the harmful secretions of epicardial fat.

ANSWER

Oxygen

QUESTION

The shift toward treating HFpEF as a systemic metabolic disease focus on which therapeutic target?

ANSWER

The metabolic environment.

QUESTION

Which 2023 NEJM publication focused specifically on semaglutide in obese patients with HFpEF and Type 2 Diabetes?

ANSWER

STEP-HFpEF-DM.

QUESTION

Is the benefit of semaglutide in HFpEF limited to non-diabetic patients?

ANSWER

No (STEP-HFpEF-DM showed consistent results in diabetics).

QUESTION

What method was used in the STEP trials to demonstrate the reduction of visceral fat mass?

ANSWER

Cardiac MRI.

QUESTION

How does weight loss alone contribute to improved HFpEF outcomes?

ANSWER

By reducing filling pressures and systemic inflammatory burden.

QUESTION

In the STEP-HFpEF trial, the composite of worsening HF events and death _____ favoured semaglutide but was not the powered outcome.

ANSWER

Numerically

QUESTION

Which heart failure guideline year first included the Class IIa recommendation for semaglutide in obese HFpEF?

ANSWER

2024 (ESC).

QUESTION

Concept: 'Obese HFpEF' patient profile

ANSWER

Characteristics: Older, obese, controlled blood pressure, no significant coronary disease, but severe breathlessness and fatigue.

QUESTION

Which physiological process in the heart is directly promoted by the pro-inflammatory adipokines from epicardial fat?

ANSWER

Fibrosis.

QUESTION

Why is the pericardium mentioned in the context of obesity-related HFpEF?

ANSWER

Adipose tissue can compress the pericardium, impairing cardiac filling.

QUESTION

GLP-1 receptor agonists are primarily used in endocrinology for which two conditions?

ANSWER

Type 2 Diabetes and Obesity.

QUESTION

According to the transcript, treating the _____ environment is the emerging paradigm for HFpEF therapy.

ANSWER

Metabolic