

Congestive Heart failure

Congestive Heart failure (CHF) occurs when the heart cannot meet the body's need for blood because it fails to pump properly. It has a 30% mortality rate one year from diagnosis and a 60 to 70% five year mortality rate.

How common is CHF

CHF affects 2% of the Irish population but is more common amongst the elderly. It affects 6 to 10% of the population over 65. The average age of diagnosis is 76. It is the leading cause of hospital admissions in the over 65 age group, accounting for 20% of hospital admissions in this age group.

Types of CHF

There are two main types of CHF and each has different symptoms.

- CHF due to left ventricular systolic dysfunction (LVSD): when the part of the heart that pumps the blood around the body (left ventricle) is not functioning properly
- CHF with preserved ejection fraction (HFPEF): when the heart has difficulty filling with blood

Symptoms of CHF

- Fatigue
- Shortness of breath, especially with activity
- Shortness of breath when lying flat
- Swollen feet and ankles
- Weight gain, over a short period of time i.e. days
- Loss of appetite and abdominal swelling
- dizziness or near fainting episodes
- Irritable cough, sometimes producing frothy sputum
- sudden severe breathlessness waking one from sleep
- confusion or difficulties in concentrating

Causes of CHF

It is generally a result of a number of factors including:

- Coronary heart disease
- High Blood Pressure
- Damage to the heart muscle (cardiomyopathy) caused by myocardial infarction (MI), infections, alcohol misuse, drug abuse or a side effect of medication
- Heart rhythm problems (eg) atrial fibrillation
- Heart valve disease, caused by infection, atherosclerosis (fat blocking coronary arteries) or ageing
- Anaemia (Low iron levels)

- Overactive thyroid

Diagnosing CHF

The patient's symptoms are usually the first indication of CHF. Blood tests and an echocardiogram (ECG) can help confirm diagnosis. Blood tests will not actually directly confirm CHF. However they can detect other factors that may be causing CHF such as cholesterol, anaemia, diabetes, thyroid problems or kidney disease. Blood can be tested for a substance called natriuretic peptide (also called BNP or NTproBNP) because if the heart is damaged or overworked, it will secrete BNP.

Contraindications

CHF patients should avoid non-steroidal anti-inflammatory drugs (negative effect on kidney function leading to fluid retention), tricyclic anti-depressants (cardio-toxic), lithium (risk of toxicity with sodium depletion) and corticosteroids (fluid retention, high blood pressure).

Non-steroidal anti-inflammatory drugs include over the counter anti-inflammatory medication like ibuprofen (Nurofen®). Tricyclic anti-depressants are the older type of anti-depressants (eg) Amitriptyline. Lithium is used as a mood stabiliser for conditions like depression and bi-polar disorder. Corticosteroids are used to reduce inflammation in conditions like arthritis, psoriasis, asthma and bronchitis.

Treatment

There is no cure for CHF so the aim of medication is to improve symptoms and prevent further damage to the heart.

Medication

Diuretics

Diuretics result in a rapid improvement in symptoms and increased exercise tolerance in more than two thirds of patients. They are not recommended as a single treatment for the treatment of heart failure, it is recommended they be prescribed with an ACE inhibitor or a Beta Blocker. Loop diuretics are the first choice in heart failure and all types of loop diuretic are equally effective. As diuretics are normally taken with ACE inhibitors for CHF, low potassium is rarely a problem.

ACE inhibitors

ACE (angiotensin-converting enzyme) inhibitors work by dilating blood vessels thus allowing blood flow easier. They can be used for mild to severe CHF. They decrease the rate of hospitalisations, improve symptoms and increase survival in heart failure patients. They should be started at a low dose and increased every one or two weeks until response.

Beta-blockers

Research has shown that beta-blockers can reduce symptoms and increase survival in patients with CHF. They generally are used on patients with little or no fluid retention. They work by slowing heart rate and perhaps by protecting the heart from the effects of adrenaline and a related chemical, noradrenaline. Dosage should be increased slowly. Beta blockers benefit CHF by blocking sympathetic activity. Beta blockers used to treat all grades of CHF are bisoprolol and carvedilol. Nebivolol is licenced for mild to moderate CHF in patients over 70.

Aldosterone antagonists

These drugs are suitable for some people with heart failure. They work in a similar way to diuretics, but can also help heal any scarring of the heart muscle. The most widely used aldosterone antagonist is spironolactone (Aldactone®), which is potassium sparing, meaning it retains potassium in the body. Raised potassium levels are exacerbated when taken with ACE inhibitors or Angiotension receptor inhibitors. In a two year review, it reduced mortality in patients with severe heart failure from 46% to 35% when used as “add-on” therapy to existing diuretic, ACE inhibitor and Beta-blocker therapy.

Angiotensin receptor blockers (ARBs)

ARBs have been shown to extend life and reduce symptoms in CHF. They tend to be used as an alternative to ACE inhibitors when ACE inhibitors cause dry cough.

Digoxin

Digoxin increases the strength of heart muscle contractions and can also slow down heart rate. It is recommended for people who have symptoms despite treatment with ACE inhibitors, ARBs, beta-blockers and diuretics. It is used earlier in people who have both heart failure and atrial fibrillation. Potassium levels must be monitored regularly to avoid toxicity due to hypokalaemia (low potassium levels), especially when used in combination with diuretics.

Anticoagulants and Antiplatelet medication

Warfarin and aspirin are regularly used to prevent clots in CHF patients.

Other treatment options

Medication is the mainstay of treatment. However other treatment options include pace-makers for bradycardia (slow heart beat). Cardiac re-synchronisation therapy may be required when the ventricles don't contract correctly and involves inserting a small pacemaker. Implantable cardioverter defibrillators are used when the ventricles contract too fast and this device keeps the rhythm regular. Surgery may be required, especially in situations where the heart valves are damaged. If heart failure is related to coronary heart disease a coronary angioplasty (a small balloon device is inserted to coronary arteries to open them up when they are blocked by fatty deposits) or a coronary artery bypass graft (CABG) may be required. CABG involves arteries or veins from elsewhere in the body being grafted onto the heart to bypass blocked coronary arteries. Angioplasty and CABG may be required to help get the blood flowing to coronary arteries.

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