

Statins

Cholesterol is a waxy substance that is found in food and is also made by our bodies. Cholesterol is transported around the body in the blood stream and plays an important role in many functions to keep us healthy.

However, too much cholesterol can result in fatty deposits building up in our arteries, causing them to harden and narrow, and increasing the risk of blood clots. This process can ultimately lead to cardiovascular diseases (heart attacks, strokes or angina).

There is very good evidence which suggests that if you reduce cholesterol levels, you can also reduce the risk of cardiovascular disease. There are different ways to reducing cholesterol, including maintaining a healthy diet that is low in saturated fat and increasing the amount of exercise that you do. For many people, lifestyle changes alone are not enough, and treatment with a drug called a statin may be required to ensure that cholesterol levels are lowered sufficiently.

Statins are HMG-CoA reductase inhibitors; a class of drugs prescribed to lower blood cholesterol levels.

Statins have been modified and refined in recent years and represent a major advance in the treatment of hyperlipidaemia, a condition where levels of blood fats are elevated.

Treatment using statins can achieve reductions in LDL (low density lipoprotein – the ‘bad’ kind) of approximately 30-40%, although reductions in excess of 50% are achievable with high doses of some statins. Triglycerides are lowered modestly and a small increase in HDL (high density lipoprotein - the ‘good’ kind) cholesterol can occur.

How do statins work?

Cholesterol is made mainly in the liver by a multi-step process. Statins work by blocking a key liver enzyme involved in this process, thereby slowing down the production of cholesterol in the liver. This encourages the liver to take extra cholesterol, LDL cholesterol in particular, out of the blood, lowering the levels of LDL cholesterol present in the blood.

As cholesterol synthesis tends to be highest at night, patients are generally advised to take their statin dose at night. There is an exception for atorvastatin and rosuvastatin, which can be taken at any time.

Promising results

Research studies have shown that statins are effective in decreasing heart attacks and prolonging life. A study was conducted in Scandinavia (known as the 4S study) that involved over 4000 men and women aged 50-70 years who had coronary heart disease (2).

People were given either a statin drug or a placebo (a drug that physically has no effect) and the outcome of each group was compared over five years. Results indicated that people receiving the statin lived notably longer and also showed a 37% reduction in their risk of undergoing angioplasty or coronary artery bypass surgery.

The 4S study has been closely followed by the WOSCOPS, CARE, LIPID and HPS studies that have all demonstrated reduced mortality and morbidity in people taking these drugs after – and even before – a coronary event.

Statins are now recommended for all patients with established coronary heart disease and for those at high risk of developing it. People at high risk include people with raised cholesterol levels who also have diabetes, high blood pressure or a family history of premature death from heart disease.

Statins now and in the future

There are currently five statin drugs available on prescription in the UK. They are simvastatin (Zocor), pravastatin (Lipostat), fluvastatin (Lescol), atorvastatin (Lipitor) and rosuvastatin (Crestor).

Considerations when taking statins

Statins are generally safe and well tolerated. Clinical trials have indicated that they are relatively free of adverse effects. Most people will have no side effects, whereas others may experience symptoms such as skin rash, gastrointestinal upsets, sleep disturbances and headaches.

Whilst on statin medication it is very important to report any 'flu-like' general muscle aches and pains to your doctor.

Your doctor should perform a blood test every six to twelve months to ensure that the drug is effectively lowering cholesterol levels. Elevated liver enzymes and myositis (inflammation of the muscles) can occur rarely and are usually reversible upon discontinuing the drug.

Patients on certain combinations of treatment, for example statins and fibrates or statins and immunosuppressant drugs require more frequent monitoring. With several statins available on the market, if side effects are encountered, it is worth trying to find one that suits you better.

Other safety concerns

Statins should not be used to treat children or women who are pregnant, nursing, or likely to become pregnant.

Combination therapy of statins and other cholesterol lowering drugs should be considered for some high-risk individuals, for instance those with familial hypercholesterolaemia, diabetes, or existing coronary heart disease.

Individuals who are prescribed combination therapy usually need more careful monitoring by their doctor.

Technical terms

Angioplasty - the way in which a narrowed or obstructed blood vessel is widened.

Triglycerides – the form of fat found in foods, it is also present in the blood especially after a meal but is usually cleared from the blood over a few hours.

Coronary Artery Bypass Surgery (also called coronary artery bypass graft (CABG pronounced cabbage, heart bypass, bypass surgery) is a surgical procedure which helps relieve angina and reduce the risk of death from heart disease.

Lipoprotein – Spherical particles that transport fats (such as cholesterol and triglyceride) in the blood.

References

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