

K) 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 such as heart attacks, strokes or angina.

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

HMG-CoA reductase inhibitors, commonly known as statins, are a class of drugs prescribed for lowering blood cholesterol levels. Their forerunners were discovered several years ago as substances produced by fungi (1). Statins have been modified and refined in recent years and represent a major advance in the treatment of hyperlipidaemia (elevated blood fats).

Statin therapy can achieve reductions in LDL (low density lipoprotein – the ‘bad’ kind) of approximately 30-40%. 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 bloodstream, causing the LDL cholesterol level to decrease.

Cholesterol synthesis tends to be highest at night and, with the exception of atorvastatin and rosuvastatin, which can be taken at any time, patients are generally advised to take their statin dose at night.



Promising results

The effectiveness of statins in decreasing heart attacks and prolonging life has been shown in research studies. 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 and the outcome was compared over five years. Results indicated that people receiving the statin notably lived 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 - even before - a coronary event.

Statins are now recommended for all patients with established coronary disease. And for those at high risk of developing heart disease (particularly those with diabetes, high blood pressure or a family history of premature death from heart disease) whose total cholesterol level exceeds 5 mmol/l and LDL cholesterol level is above 3mmol/l.

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 or nurse.

Blood tests should be performed every six months to a year to ensure that the drug is effectively lowering cholesterol levels.

Elevated liver enzymes and myositis (inflammation of the muscles) occur rarely and are usually reversible upon discontinuing the drug. Patients taking statins should be monitored for these conditions.

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 is better tolerated.

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 not be ruled out for all patients. Certain high-risk individuals, for instance those with familial hypercholesterolaemia, diabetes, or coronary heart disease (CHD) may need to have maximal lipid lowering therapy to treat their dyslipidaemias. There is some data on the safety of combining statin and fibrate therapy (Feher et al 1994). However, these patients need careful and regular monitoring to assess their individual response to the medication.

References

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