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[Intervention Review]

Statins for aortic valve stenosis

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ABSTRACT

Background

Aortic valve stenosis is the most common type of valvular heart disease in the USA and Europe. Aortic valve stenosis is considered similar to atherosclerotic disease. Some studies have evaluated statins for aortic valve stenosis.

Objectives

To evaluate the effectiveness and safety of statins in aortic valve stenosis.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, LILACS - IBECS, Web of Science and CINAHL Plus. These databases were searched from their inception to 24 November 2015. We also searched trials in registers for ongoing trials. We used no language restrictions.

Selection criteria

Randomised controlled clinical trials (RCTs) comparing statins alone or in association with other systemic drugs to reduce cholesterol levels versus placebo or usual care.

Data collection and analysis

Primary outcomes were severity of aortic valve stenosis (evaluated by echocardiographic criteria: mean pressure gradient, valve area and aortic jet velocity), freedom from valve replacement and death from cardiovascular cause. Secondary outcomes were hospitalisation for any reason, overall mortality, adverse events and patient quality of life.

Two review authors independently selected trials for inclusion, extracted data and assessed the risk of bias. The GRADE methodology was employed to assess the quality of result findings and the GRADE profiler (GRADEPRO) was used to import data from Review Manager 5.3 to create a 'Summary of findings' table.

Main results

We included four RCTs with 2360 participants comparing statins (1185 participants) with placebo (1175 participants). We found low-quality evidence for our primary outcome of severity of aortic valve stenosis, evaluated by mean pressure gradient (mean difference (MD) -0.54, 95% confidence interval (CI) -1.88 to 0.80; participants = 1935; studies = 2), valve area (MD -0.07, 95% CI -0.28 to 0.14; participants = 127;



studies = 2), and aortic jet velocity (MD -0.06, 95% CI -0.26 to 0.14; participants = 155; study = 1). Moderate-quality evidence showed no effect on freedom from valve replacement with statins (risk ratio (RR) 0.93, 95% CI 0.81 to 1.06; participants = 2360; studies = 4), and no effect on muscle pain as an adverse event (RR 0.91, 95% CI 0.75 to 1.09; participants = 2204; studies = 3; moderate-quality evidence). Lowand very low-quality evidence showed uncertainty around the effect of statins on death from cardiovascular cause (RR 0.80, 95% CI 0.56 to 1.15; participants = 2297; studies = 3; low-quality evidence) and hospitalisation for any reason (RR 0.84, 95% CI 0.39 to 1.84; participants = 155; study = 1; very low-quality evidence). None of the four included studies reported on overall mortality and patient quality of life.

Authors' conclusions

Result findings showed uncertainty surrounding the effect of statins for aortic valve stenosis. The quality of evidence from the reported outcomes ranged from moderate to very low. These results give support to European and USA guidelines (2012 and 2014, respectively) that so far there is no clinical treatment option for aortic valve stenosis.

PLAIN LANGUAGE SUMMARY

Statins for aortic valve stenosis

Review question

What is the evidence regarding the effect of statins in people suffering from aortic valve stenosis?

Background

The heart is responsible for pumping blood throughout the body. It has four valves that control the blood flow within it. One of the valves is the aortic valve that controls the flow of blood from the left ventricle chamber to the body. Aortic valve stenosis is a disease characterised by the narrowing of this valve. This is the most common type of valvular heart disease in the USA and Europe. Its incidence rises with age and 2% to 7% of adults over 65 years old have aortic valve stenosis. Aortic valve stenosis is considered similar to atherosclerotic disease and it is known to have a long asymptomatic period for several decades. When it manifests clinically, symptoms such as syncope (brief lapse of consciousness), angina and dyspnoea (shortness of breath) may lead to death. Some prospective and retrospective trials have shown that statins can delay the progression of aortic valve stenosis. Statins are considered very useful drugs to lower high cholesterol.

Study characteristics

The evidence is current up to 24 November 2015. We searched electronic databases for reports of randomised controlled trials comparing statins alone or in combination with other types of lipid-lowering drugs in the treatment of aortic valve stenosis.

Key results

We evaluated the severity of aortic valve stenosis according to the following echocardiographic criteria: mean pressure gradient, valve area and aortic jet velocity. We also evaluated freedom from valve replacement and death from cardiovascular cause. There were no differences in effect for mean pressure gradient, valve area, freedom from valve replacement and death from cardiovascular cause in the statin group when compared with the placebo group. We were not able to conduct a meta-analysis to assess the aortic jet velocity as only one study analysed this outcome. We also checked the safety of statins by analysing other adverse events among them muscle pain. Muscle pain is the most prevalent adverse event that can limit the use of statin. Muscle pain did not differ in the statin group when compared with the placebo group. Results of four randomised controlled trials with 2360 participants showed that statins did not delay the progression of aortic valve stenosis.

Quality of evidence

The quality of the evidence quality ranged from moderate to very low across the different outcomes due to the limitations of the original studies. Included studies had at least one methodological limitation.

Conclusions

Based on the evidence in this review, there is uncertainty surrounding the effect of statins for aortic valve stenosis. These results give support to European and USA guidelines (2012 and 2014, respectively) that so far there is no clinical treatment option for aortic valve stenosis. An alternative might be to broaden the knowledge of the pathophysiology of this disease and include risk factors such as calcium, heredity, vitamin D, inflammation, oxidative stress, diabetes, hypertension among others that could contribute to aortic valve stenosis. High-quality randomised trials to include risk factors for aortic valve stenosis are needed.