

Statins could protect against motor neurone disease

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Space-filling model of the Cholesterol molecule. Credit: RedAndr/Wikipedia

High cholesterol has been found to be a possible risk factor for the development of motor neurone disease (MND), according to a large study of genetic data led in the UK by Queen Mary University of

London, in collaboration with the National Institutes of Health in the USA.

The results suggest that cholesterol-lowering drugs, such as statins, could be used to prevent the onset of MND, if confirmed in clinical trials.

Dr. Alastair Noyce from Queen Mary University of London said: "This is the largest study to-date looking at causal risk factors for [motor neurone disease](#) and we saw that higher levels of LDL cholesterol were causally linked with a greater risk of the disease.

"We have well-established drugs that can [lower cholesterol](#) and we should look into whether they could protect against this terrible disease, which currently has no cure.

"The next steps will include studying whether lowering levels of cholesterol might have a [protective effect](#) against MND, and potentially evaluating the use of cholesterol-modifying drugs in people at risk of MND."

MND or Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disease for which there is no cure. The condition affects the brain and nerves, with early symptoms including weakness, slurred speech, difficulty swallowing food, muscle cramps and twitches. Some people also experience changes to their thinking and behaviour.

The condition is more likely to affect people over 50, and most patients succumb to the disease within two to five years of symptom onset. It affects up to 5,000 adults in the UK at any one time, and the global prevalence is projected to nearly double by 2040, primarily due to ageing of the global population.

Published in the journal *Annals of Neurology*, the team searched genetic

datasets of around 25 million people (including more than 337,000 people from the UK Biobank) to find risk factors for developing ALS.

While the datasets did not contain data on individuals' actual cholesterol levels, the team studied [genetic markers](#) that are linked to cholesterol levels, and are more likely to suggest a causal link with risk of MND rather than simply associations, which are usually reported from observational studies. A randomised control trial would be the definitive proof to confirm any [causal link](#) and the ability of statins to prevent MND.

In addition to the causal effect of high [cholesterol](#), they also found genetic associations with smoking behaviour and lower levels of educational achievement, and an increased risk of ALS. While low levels of exercise were associated with a protective effect, more aggressive exercise was associated with increased risk. However, of these findings, only [high cholesterol](#) emerged as a clear modifiable factor that could be targeted to reduce risk of MND.

More information: Sara Bandres-Ciga et al. Shared polygenic risk and causal inferences in amyotrophic lateral sclerosis, *Annals of Neurology* (2019). [DOI: 10.1002/ana.25431](https://doi.org/10.1002/ana.25431)

Provided by Queen Mary, University of London

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