

Certain gut microbes may affect stroke risk and severity, scientists find

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Scientists have identified specific groups of gut microbes that could increase or decrease someone's risk of suffering the most common type of stroke. The research, presented at the European Stroke Organisation Conference (ESOC) in Lyon, France, adds to growing evidence that alterations in the gut microbiome could play a role in cardiovascular disease.



Previous studies have suggested that certain microbes may influence the formation of atherosclerotic plaques in the arteries, and that the gut microbiomes of stroke patients differ from those of healthy controls.

To investigate whether they may also influence people's recovery from stroke, Dr Miquel Lledós from the Sant Pau Research Institute in Barcelona, Spain, and colleagues took stool samples from 89 people who had very recently suffered an ischaemic stroke (where a blood clot blocks the flow of oxygen to the brain), as well as from healthy individuals, and performed DNA sequencing to identify the different microorganisms present in their guts, and whether certain groups of bacteria correlated with their functional recovery.

"We identified new [bacterial] taxa associated with higher risk of stroke severity in the acute phase at six hours and at 24 hours," Lledós said. "We also identified one class, one genus, and one species related to poor functional outcomes at three months after ischaemic stroke.

"The discovery opens the exciting prospect that, in the future, we may be able to prevent strokes or improve neurological recovery by examining the gut microbiota. Nowadays, there are no specific neuroprotective treatments to prevent neurological worsening after stroke. The use of new therapies such as changes in the microbiome through nutritional changes or faecal transplantation could be useful to improve post-stroke evolution."

Meanwhile, separate research presented by Cyprien Rivier from Yale University in Connecticut, US, used a statistical technique called Mendelian randomisation to investigate whether the link between stroke risk and alterations in the gut microbiome is truly causal.

They combined data from 2,300 participants involved in the Flemish Gut Flora Project, plus a further 34,000 people enrolled in a large study examining the role of genetics in stroke risk, looking at whether genes known to increase people's likelihood of harbouring specific microbial species influenced their risk of ischaemic stroke. Doing so identified 26 bacterial species that were significantly associated with stroke.

"Most of the bacteria we found are associated with lower risk, but five of them are associated with an increase in the risk of either ischaemic stroke or one of the subtypes of this type of stroke," said Rivier.

The next step will be to explore the mechanisms by which the presence or absence of certain species contributes to stroke risk.

Rivier said: "Bacteria can release toxins into the blood, they can also produce certain proteins that interfere with physiological processes. There is also what we call the microbiota-gutbrain axis – a bidirectional pathway between the brain and the microbiome, whereby the brain is influencing the gut through the nerves, and the microbiome is in turn influencing the organs, including the brain, mainly through altering the blood pressure."