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Bad Oral Bacteria May Trigger Parkinson's Disease

Here is one more reason to brush your teeth carefully every day. Researchers in Korea have found strong evidence that bacteria from the mouth can take hold in the gut, influence neurons in the brain, and may help set off Parkinson's disease.

Parkinson's disease is a widespread neurological condition marked by tremors, muscle stiffness, and slowed movement. It affects roughly 1 to 2 percent of people over the age of 65, making it one of the most common brain disorders associated with aging.

Earlier research had shown that the gut microbiome of people with Parkinson's differs from that of healthy individuals, but which microbes were involved and how they influenced the disease was not well understood.

New findings help clarify that connection. Researchers discovered that people with Parkinson's had elevated levels of *Streptococcus mutans*, a bacterium typically associated with tooth decay, within their gut microbiomes. Once established in the gut, this bacterium produces an enzyme called urocanate reductase (UrdA) and a metabolic byproduct known as imidazole propionate (ImP).

Both substances were found at higher concentrations in the gut and bloodstream of patients. The evidence suggests that ImP can circulate through the body, reach the brain, and contribute to the loss of dopamine-producing neurons.

The research behind these discoveries was conducted by a collaborative team led by Professor Ara Koh and doctoral candidate Hyunji Park from POSTECH's Department of Life Sciences. They worked alongside Professor Yunjong Lee and doctoral candidate Jiwon Cheon from Sungkyunkwan University School of Medicine, as well as Professor Han-Joon Kim from Seoul National University College of Medicine.

Together, the team identified how chemical byproducts released by oral bacteria after colonizing the gut could play a role in triggering Parkinson's disease. Their findings were recently published in *Nature Communications*.

Using mouse models, the researchers introduced *S. mutans* into the gut or engineered *E. coli* to express UrdA. As a result, the mice showed elevated ImP levels in blood and brain tissue, along with the hallmark features of Parkinson's symptoms: loss of dopaminergic neurons, heightened neuroinflammation, impaired motor function, and increased aggregation of alpha-synuclein, a protein central to disease progression.

A signalling pathway links microbes to neurons

Further experiments demonstrated that these effects depend on the activation of the signalling protein complex mTORC1. Treating mice with an mTORC1 inhibitor

significantly reduced neuroinflammation, neuronal loss, and alpha-synuclein aggregation, and motor dysfunction. This suggests that targeting the oral–gut microbiome and its metabolites may offer new therapeutic strategies for Parkinson's disease.

"Our study provides a mechanistic understanding of how oral microbes in the gut can influence the brain and contribute to the development of Parkinson's disease," said Professor Ara Koh. "It highlights the potential of targeting the gut microbiota as a therapeutic strategy, offering a new direction for Parkinson's treatment."

Source:

SciTech Daily

Opportunity to take part in research

The University of Sydney and NeuRA are running a research study to look at the feasibility and acceptability of a high intensity aerobic exercise program for people with mild Parkinson's disease. They are also exploring the effects of this exercise program on slowing down progression of the disease.

Researchers are seeking volunteers to participate in this study. You may be eligible to participate in this study if you:

- Are an adult with mild Parkinson's disease
- Are on a stable Parkinson's disease medication regime (if taking medication)
- Are able to walk by yourself without an aid
- Live in Sydney.

Taking part in this study will involve you performing aerobic exercise at high intensity, i.e., where you are breathing hard and fast, 3 times a week, for 6 to 12 months.

The exercise program will be designed to meet your preferences and needs. You will be able to choose the:

- *type* of exercise, e.g., brisk walking, jogging, running, cycling, rowing, elliptical cross-training, stair climbing,
- *where* you exercise, e.g., at home, local park, gym,
- *how* you exercise, e.g., continuous exercise or interval training.

You will be supervised (up to 4 sessions) by an experienced Physiotherapist or Accredited Exercise Physiologist with expertise in Parkinson's disease. You will also be provided with health coaching to help you start and continue your exercise program.

If you would like more information about this study, please contact Dr Lina Goh (Discipline of Physiotherapy, School of Health Sciences, Faculty of Medicine and Health, University of Sydney) at **lina.goh@sydney.edu.au** or phone **02 9351 9566**.

This study has been approved by the South Eastern Sydney Local Health District Human Research Ethics Committee (HREC) [2023/ETH02554].

Unlocking Parkinson's Disease Before It Begins

Parkinson's disease has long resisted early detection. By the time motor symptoms appear, more than half of the brain's dopamine-producing neurons are already gone. But a convergence of data, including sleep studies, digital monitoring and molecular assays, may give neurologists an opportunity to thwart the disease long before symptoms appear.

"When I started my career, neurologists were known for making brilliant diagnoses but having little to offer afterward," said Michele Tagliati, MD, director of the Division of Movement Disorders and the Caron and Steven D. Broidy Chair in Movement Disorders at Cedars-Sinai Hospital in Los Angeles. "Now, we're catching these processes before they manifest clinically, when intervention might prevent or slow disease progression and preserve quality of life."

Unveiling Parkinson's hidden biology

For more than a century, doctors diagnosed Parkinson's disease based on clinical symptoms – tremor, rigidity, slow movements and gait instability – but without a full understanding of the underlying biology.

Today, researchers know that the microscopic culprit associated with disabling motor symptoms is alpha-synuclein, a naturally occurring protein that, in Parkinson's and related disorders, misfolds and forms sticky clumps known as Lewy bodies.

"Whether these clumps cause neurons to die or are simply markers for degeneration is still up for debate," Tagliati says. "But diagnostically, they're extremely important."

Alpha-synuclein is relevant to a cluster of neurodegenerative disorders widely referred to as 'synucleinopathies,' which include Lewy body dementia and multiple system atrophy. Until recently, the only ways to detect aggregates of the protein were through analysis of postmortem brain tissue or invasive tests such as a spinal tap.

Now, scientists can use a simple skin biopsy to uncover abnormal accumulation of alpha-synuclein in the nerves of the skin years, or even decades, before motor symptoms appear. "The skin biopsy marks a tremendous advance," Tagliati said. "It's minimally invasive yet highly predictive."

An open window for prevention

Every night, while most people lie still in deep REM sleep, a small subset of individuals thrash, speak or even act out their dreams – a condition known as REM sleep behaviour disorder (RBD). For decades, neurologists dismissed the phenomenon as a curious sleep disturbance.

Then, in the mid-1980s, doctors began to notice that many of these patients went on to develop Parkinson's disease, sometimes years after first exhibiting RBD.

"Nearly 100% of people over age 50 who develop RBD will eventually develop Parkinson's disease," said Tagliati. "That makes RBD a reliable biomarker of neurodegeneration—one that clinicians can now confirm with a skin biopsy."

Tagliati's research suggests that roughly three-fourths of RBD patients with no neurological symptoms already test positive for alpha-synuclein in their skin.

"People who appear neurologically healthy may already be harbouring the biological seeds of Parkinson's," he said.

This early identification creates an unprecedented opportunity to intervene before neurodegeneration takes hold. Cedars-Sinai – along with Yale School of Medicine; the University of California, San Francisco; and the Mayo Clinic – is planning a multicentre clinical trial to test whether potent anti-inflammatory drugs known as TNF-alpha inhibitors can stall or halt disease progression among patients with a positive skin biopsy.

These drugs already are producing remarkable effects in diseases such as psoriasis and rheumatoid arthritis, and studies show that people who take anti-inflammatory medications have a lower incidence of Parkinson's disease.

"We're dramatically accelerating the pathway from concept to patient testing by using a drug that is already approved for immune disorders," says Tagliati. "If it works as we predict, we may be able to treat abnormal inflammation early and stop the neurodegenerative cascade before it produces clinical symptoms."

From clinic visits to continuous monitoring

Building on these biological insights, Cedars-Sinai investigators are exploring technology-driven ways to monitor subtle changes in motor function long before patients become symptomatic.

Through a collaboration with a company in the United Kingdom, the team is piloting the Kneu Health Accelerator app, which collects continuous patient-generated data via smartphones and wearable sensors.

“The app uses AI analytics to identify trends, prevent complications and potentially detect early signs of decline,” Tagliati said.

In regions of England where the technology was widely deployed, emergency visits among Parkinson’s patients decreased by 2% even as the national rate increased by 8%. At Cedars-Sinai, nearly 100 patients are already enrolled, generating more than 20,000 data points.

“This level of real-time feedback is unprecedented in Parkinson’s care,” Tagliati says. “We typically see patients every three to six months. Now we can monitor their data continuously and check on them monthly to potentially intervene before problems escalate.”

Charting a new course in care

The implications of this work extend beyond Parkinson’s to other neurodegenerative disorders. Doctors are now better equipped to recognize symptoms like loss of smell, constipation and sleep disturbance as early warning signs that the brain may be under dangerous chronic stress.

“These signs should be taken seriously, especially after age 50,” Tagliati says.

This change in perspective is integrated into Cedars-Sinai’s multidisciplinary model of care, which brings together neurologists, sleep specialists and primary care physicians to identify and monitor individuals at risk, often years before symptoms interfere with daily life.

The result is a fundamental shift in neurology: from diagnosing disease after it emerges to proactively detecting and intervening while the nervous system is still intact.

By combining biological, behavioural and technological data, Cedars-Sinai researchers are assembling a more complete picture of disease progression and identifying opportunities for earlier, targeted therapy. The convergence of these insights – molecular biomarkers, sleep patterns and continuous digital monitoring – points toward a future in which neurodegeneration can be tracked, quantified and perhaps prevented.

“Paradoxically, my goal is to take Parkinson’s disease out of the hands of neurologists,” Tagliati says. “To prevent the disease from taking root in the first place: That would be the holy grail for neurology.”

Sources:

Original article by Amy Bieber, MS, MPH

Cedars-Sinai Hospital

Generous Wolper Grant Enables Extension of Specialist Counselling Service

The Wolper Jewish Hospital Health Foundation has generously provided a grant of $20,000 to ensure the continuity of Parkinson's NSW specialist counselling services through the Hospital as it responds to growing demand.

This counselling service is offered free of charge, making it accessible to everyone and avoiding additional financial stress for clients. It is the only Parkinson's specialist counselling service of its kind in this state.

Parkinson's NSW provides this service both in person and remotely, ensuring that individuals across the state – both metropolitan and rural – are not disadvantaged by their location. In Sydney, face-to-face sessions are held at three locations: War Memorial Hospital in Waverley, Wolper Jewish Hospital in Woollahra, and the Parkinson's NSW head office in North Ryde. For those in rural and regional NSW, counselling sessions are delivered via telephone and teleconferencing.

The Counselling team takes part in monthly Support Group meetings at Wolper Jewish Hospital. During these meetings, they provide support, advice, and access to guest speakers from various health professions. Members of the Wolper Support Group and patients at the Hospital are frequently introduced to the counselling service and often utilise its support.

"We are delighted to extend our working relationship with Wolper Jewish Hospital, enabled by this generous grant," said Mary Kay Walker, CEO of Parkinson's NSW.

"Our counsellors help individuals navigate changes in mood, cognition, and physical abilities. They guide people living with Parkinson's on how to disclose their diagnosis to others and provide assistance in adapting to changes in work, relationships, and daily activities. Additionally, they support treatment for symptoms such as apathy, depression, and anxiety, while encouraging active involvement in treatment and self-management.

"Then, as Parkinson's progresses there are the challenges of hospital stays, the need to make a decision around entry to Aged Care and living with grief and loss. Our counsellors support individuals and their families as they navigate all of this."

Managing Hallucinations and Delusions: Tips for Carers

A hallucination is when someone sees, hears, feels, smells or even tastes something that isn't actually real.

Delusions are strongly held thoughts or beliefs that aren't based on evidence. This can be one of the most difficult experiences to come to terms with, especially if someone has delusions about their carer or someone close to them.

Here are some tips to help you support your loved one – and yourself – if someone you know is experiencing these symptoms.

Everyday support

1. It's important to get medical advice. Don't rely on someone telling you they are experiencing hallucinations or delusions – they may not realise what they are, or they may not want to tell you. If they seem to be behaving or reacting in a strange way, gently ask them what the matter is. If you are unsure, explain that you are going to contact their GP, specialist or Parkinson's nurse. If the person with Parkinson's understands there is something wrong, make sure you are clear who you are going to contact and why. This will avoid any extra confusion.

   In general, hallucinations and delusions can be treated. They should improve with the right treatment and medication, but this doesn't always work. In this case it's important to get help dealing with any distress from the person's healthcare team. Even if the hallucinations are not upsetting or disturbing, it is still important to tell a member of their medical team if they are a new problem. You should also speak to a member of the medical team if the hallucinations or delusions seem to be getting worse. Don't wait for the next appointment.

2. If hallucinations or delusions are very severe, telling the person experiencing them that they aren't real may not help. It could lead to conflict and is unlikely to be effective. You should instead acknowledge their experience and try distracting them from it. Do not engage or join in with their hallucination.

3. Anxiety may make hallucinations and delusions worse. Try to find ways to help the person relax such as talking to them calmly or taking them somewhere quiet to unwind.

4. Some delusions can lead to safety issues, such as someone leaving the house in the middle of the night. In these cases, get advice from their specialist or Parkinson's nurse.

5. Sometimes, your loved one may think you're part of the hallucination or delusion. Consider having a pre-agreed 'code' to use to help reorientate and

bring them back to the present. This could be an object like your wedding ring or a necklace.

Talking to others

Managing hallucinations or delusions and giving support can be tiring. So get support for yourself from those around you and remember to recharge your batteries.

- Sometimes it helps to speak to someone about how another person's symptoms are affecting you. This could be your own GP or a counsellor. You can also get support from other local services to help you manage at home.
- Talk to other people affected by Parkinson's who may have had a similar experience and can provide tips and advice.
- You can speak to others at your local Parkinson's NSW Support Group. Call the Parkinson's NSW InfoLine on 1800 727 567 for advice on finding your nearest Support Group.
- Counselling can help you and the person experiencing hallucinations and delusions. Parkinson's NSW has Counsellors on staff. Call the InfoLine for more information.

Sources:

Parkinson's UK

Parkinson's NSW InfoLine 1800 727 567

Parkinson's Disease Top Foods to Avoid – Dietitian Approved

Expert dietitian Kinga Topolowska explains how diet can impact Parkinson's symptoms and medication, and why moderation and timing matter.

Why is nutrition so important to help people with Parkinson's live well?

Eating well can make a big difference for people living with Parkinson's. A diet with plenty of vegetables, fruit, whole grains, and good sources of protein (such as eggs, fish, tofu, or beans) helps the body stay strong and healthy.

Many people with Parkinson's lose weight without meaning to, often because of swallowing problems, constipation, reduced appetite, or side effects from medication. Losing weight can lead to weakness, tiredness, and a higher risk of falls, so keeping to a balanced diet is important.

Can nutrition affect Parkinson's symptoms?

Good nutrition can also help with symptoms. Drinking enough fluids and eating more fibre can relieve constipation. Staying well-hydrated can improve energy, thinking, balance, and reduce dizziness.

The timing of meals matters too. Parkinson's medicines, like levodopa, often work better when taken on an empty stomach or with a light snack rather than a large meal.

In the long term, people with Parkinson's may benefit from a mostly plant-based diet, such as the Mediterranean-style way of eating or MIND diet. This includes plenty of vegetables, fruits, nuts, seeds, whole grains, and olive oil, with less red meat and sugary foods.

Although more research is needed, this type of diet has been linked to better health, slower symptom progression, and improved quality of life.

Why do people with Parkinson's need to avoid specific foods?

There is no single 'Parkinson's diet', but some foods can make symptoms worse or interfere with medication, so it's helpful to know what to limit. Problematic foods usually fall into a few categories:

Foods that interfere with Parkinson's medication

In a small group of people living with Parkinson's, high-protein meals can reduce how well levodopa is absorbed, meaning it may not work as effectively. Protein itself is important, but timing matters—try taking levodopa on an empty stomach or with a light snack and eat larger protein portions later in the day. Iron supplements and iron-fortified foods can also block levodopa, so take them a few hours apart from your medication.

Foods that worsen Parkinson's symptoms

Constipation, low blood pressure, reflux, and fatigue are common in Parkinson's. Highly processed foods, low-fibre diets, dehydration, and large sugary meals can make these symptoms worse. Caffeine or acidic foods may trigger heartburn or jitters for some people. If a food regularly makes you feel unwell or 'off', it's worth limiting.

Foods that are unsafe to swallow if you have Parkinson's

Many people with Parkinson's develop swallowing difficulties. Hard, dry, or chewy foods (like tough meat, dry crackers, popcorn, or nuts) can increase the risk of choking or food going down the wrong way. These foods may need to be avoided or prepared differently – cut smaller, softened, moistened, or pureed. A speech therapist can give personalised advice.

Foods that can affect the overall health

Foods high in fat and sugar – such as packaged sweets made with palm oil or products with very long shelf lives – and those rich in saturated fats offer little nutritional value. They can contribute to weight gain, inflammation, and poorer heart health.
In general, what is not good for overall health is unlikely to benefit brain health, so these foods are best limited. Choosing whole foods – vegetables, fruits, whole grains, legumes, lean proteins, nuts, seeds, and healthy fats – supports better energy, digestion, and overall wellbeing.

How can people with Parkinson's identify quickly whether a food should be avoided or not?

Dietitian-approved tips to help to spot foods best avoided with Parkinson's:

- Choose fresh, whole foods over processed ones
- Consider medication timing, especially with levodopa and iron
- Notice personal triggers that worsen symptoms (keeping food and symptoms diary can help to identify triggers)
- Adapt food textures if swallowing is difficult.

What foods should people with Parkinson's avoid or limit?

Examples of foods to limit if you have Parkinson's:

- **Fatty meats, butter, cream, fried foods.** SWAP FOR: choose olive oil, lean proteins, nuts, and seeds instead
- **Fast foods, processed meats, packaged snacks.** SWAP FOR: fresh meals and fibre-rich foods
- **Sugary drinks and sweets.** SWAP FOR: fruit or water
- **Large protein meals at medication time.** SWAP FOR: protein spread in smaller portions throughout the day or later in the day, if possible
- **Iron supplements taken with levodopa.** SWAP FOR: take separately instead
- **Excess alcohol** (as it can affect balance, hydration, and medication)
- **Hard or dry foods if swallowing is difficult** (soften, moisten, or change texture)

What else do people with Parkinson's need to know about diet, nutrition, and foods to limit or avoid?

Nutrition won't cure Parkinson's, but it can make a meaningful difference. Eating mostly whole, fibre-rich foods, staying well hydrated, and timing protein away from medication

can help many people feel better and get more benefit from their treatment. Small, realistic changes work best.

A helpful approach is the 80:20 rule – aim to eat nourishing foods most of the time, while allowing some flexibility for enjoyment or social occasions. Balance and moderation are key.

No single food is the enemy, and exclusion diets are not recommended, as they can increase stress and lead to nutrient deficiencies. For personalised advice, speak with a registered dietitian familiar with Parkinson's.

Sources:

Kinga Topolowska is a UK-registered dietitian with over a decade of clinical experience, mainly working in neurosciences. Kinga currently practices as a freelance dietitian and as a Highly Specialist Neurosciences Dietitian at The National Hospital for Neurology and Neurosurgery in London.

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