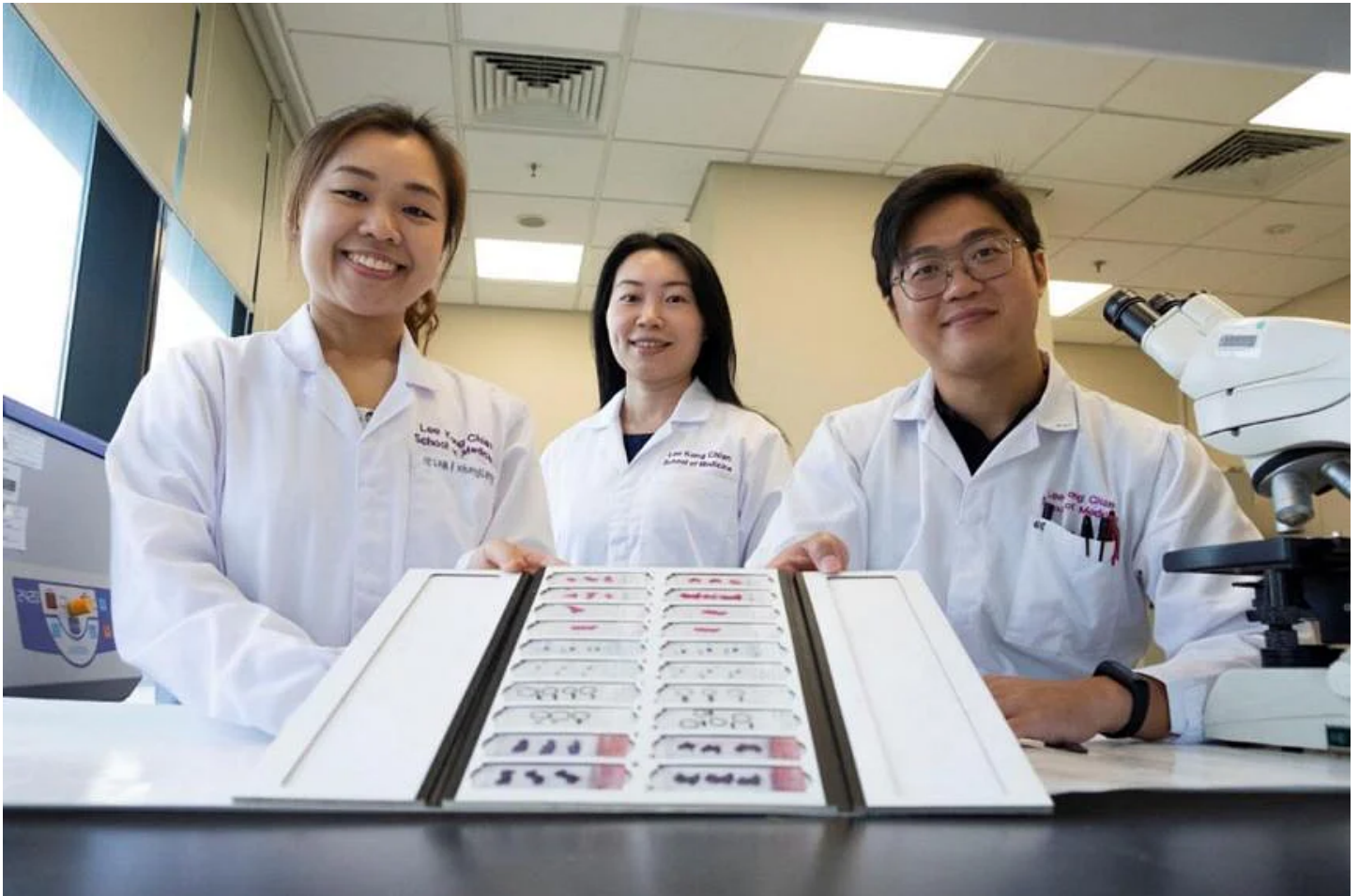


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Liver condition suffered by non-drinkers can lead to cardiovascular diseases



(From left) NTU's Lee Kong Chian School of Medicine (LKC Medicine) PhD student Lee Khang Leng, NTU LKC Medicine Assistant Professor Christine Cheung and NTU LKC Medicine research fellow Ng Chun-Yi. PHOTO: COURTESY OF NTU

Fatimah Mujibah

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SINGAPORE - The patients drink little to no alcohol and yet end up with a condition - called non-alcoholic fatty liver disease (NAFLD) - that can lead to serious cardiovascular complications, for example, heart failure, stroke and cardiac arrest.

The condition is traced to a build-up of fats in liver cells, and also prompts an over-production of a class of proteins, which sparks inflammation and damage to blood vessels.

It is estimated that up to 40 per cent of the population in South-east Asian countries, including Singapore, have NAFLD, according to a news release from Nanyang Technological University (NTU) on Wednesday (May 25).

To study the cause and why it does more damage to cardiovascular health instead of only liver damage, scientists here started a study in 2018.

The team was led by Assistant Professor Christine Cheung from NTU's Lee Kong Chian School of Medicine (LKCMedicine) and comprised researchers from NTU, the National University Health System and the Agency for Science, Technology and Research.

They published their findings in scientific journal *Embo Reports* in April this year.

The team recreated blood vessel cells from samples donated by 99 NAFLD patients and 56 healthy individuals.



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They found that the blood vessel cells of the NAFLD patients contained three times the amount of chemokines, a class of proteins, compared with the other group.

Chemokines are small protein molecules that are strong attractants of immune cells, and their purpose is to divert such cells to infection sites.

However, when abnormally high levels of immune cells are present in a blood vessel, it can cause harm to an individual.

Inflammation, blood clots and obstruction of blood flow to vital organs may occur.

The paper's first author, NTU LKCMedicine research fellow Ng Chun-Yi, said: "Blood vessels are likely to be sensitive to the inflammatory mediators and abnormal lipid metabolism which underlie non-alcoholic fatty liver disease.

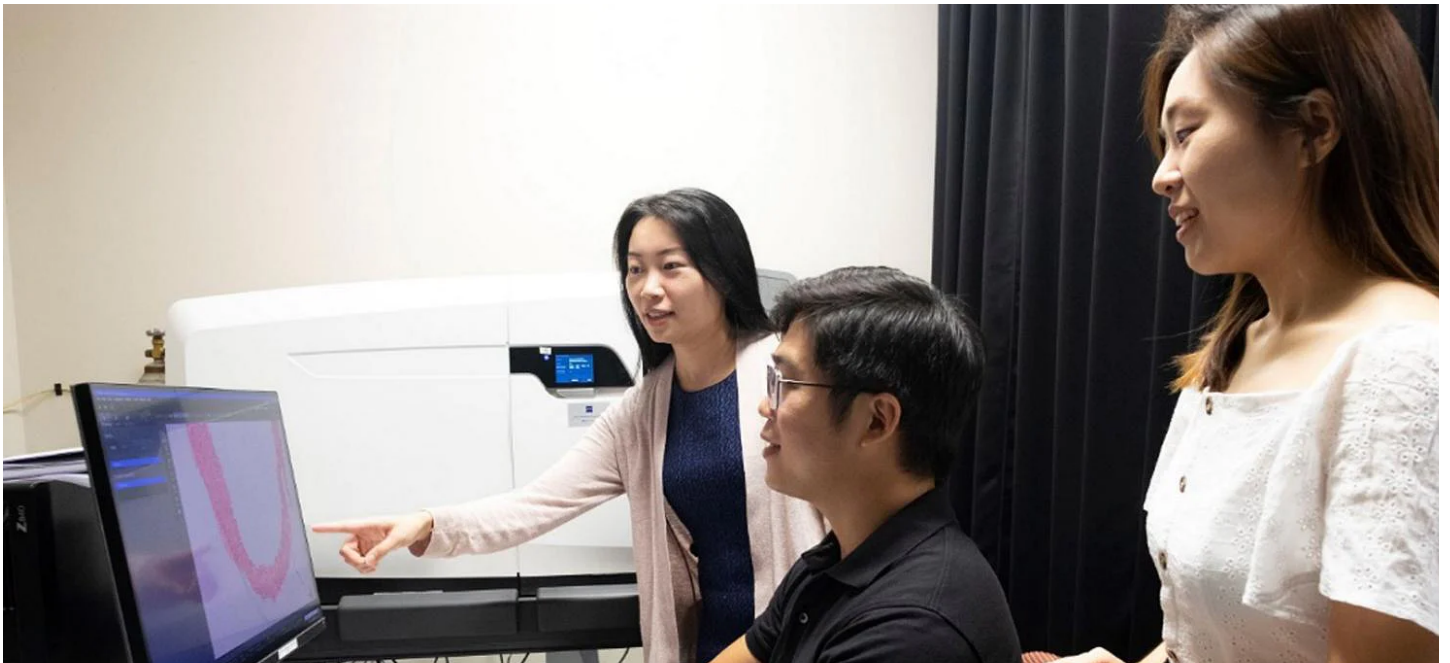
"We discovered that non-alcoholic fatty liver disease blood vessel cells are more 'activated', making them susceptible to vascular inflammation."

There is currently no cure for patients with NAFLD. However, early detection of the disease allows for quicker action and can improve cardiovascular health.

Prof Cheung said: "The growing prevalence of fatty liver disease globally is a concern. In Singapore, one in three is likely to develop non-alcoholic fatty liver disease over the next 10 years.

"These patients are at increased risk of developing vascular diseases, such as coronary artery disease and cerebrovascular disease. The good news is that liver disease, at its early stages, is reversible."

Vascular diseases affect an individual's system of blood vessels, coronary artery disease affects one's heart, and cerebrovascular disease affects blood vessels connecting to the brain.



(From left) NTU LKCMedicine's Assistant Professor Christine Cheung, research fellow Ng Chun-Yi and PhD student Lee Khang Leng. PHOTO: COURTESY OF NTU

Most patients who have NAFLD are also not aware that they have had the disease for years, as they remain asymptomatic. Those who have NAFLD may experience symptoms such as fatigue, jaundice and weight loss.

Prof Cheung added: "Liver disease at its early stage is reversible with lifestyle changes such as exercise and a healthy diet.

"Lifestyle modification is key at an early stage to slow down the progression of both fatty liver disease and cardiovascular disease before they become too advanced for functional recovery."

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Health screenings critical

As symptoms of non-alcoholic fatty liver disease (NAFLD) may not be experienced by all patients, Assistant Professor Christine Cheung from Nanyang Technological University's Lee Kong Chian School of Medicine urges the public to go for regular health screenings, which include blood tests.

Ultrasound is used as a more accurate tool to detect diffuse liver disease, such as fatty liver.

People who are obese, diabetic and are smokers are also more prone to contracting NAFLD. Those with a family history of liver diseases should be cautious.

NAFLD is not prevalent in a specific age group, added Prof Cheung, who led a study on why the leading cause of mortality in NAFLD patients is cardiovascular complications, instead of liver damage alone.

Avoiding fast food, consuming fewer sugary drinks and maintaining a healthy lifestyle are recommended.

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