Scientists pinpoint how non-alcoholic fatty liver disease increases risk of vascular diseases

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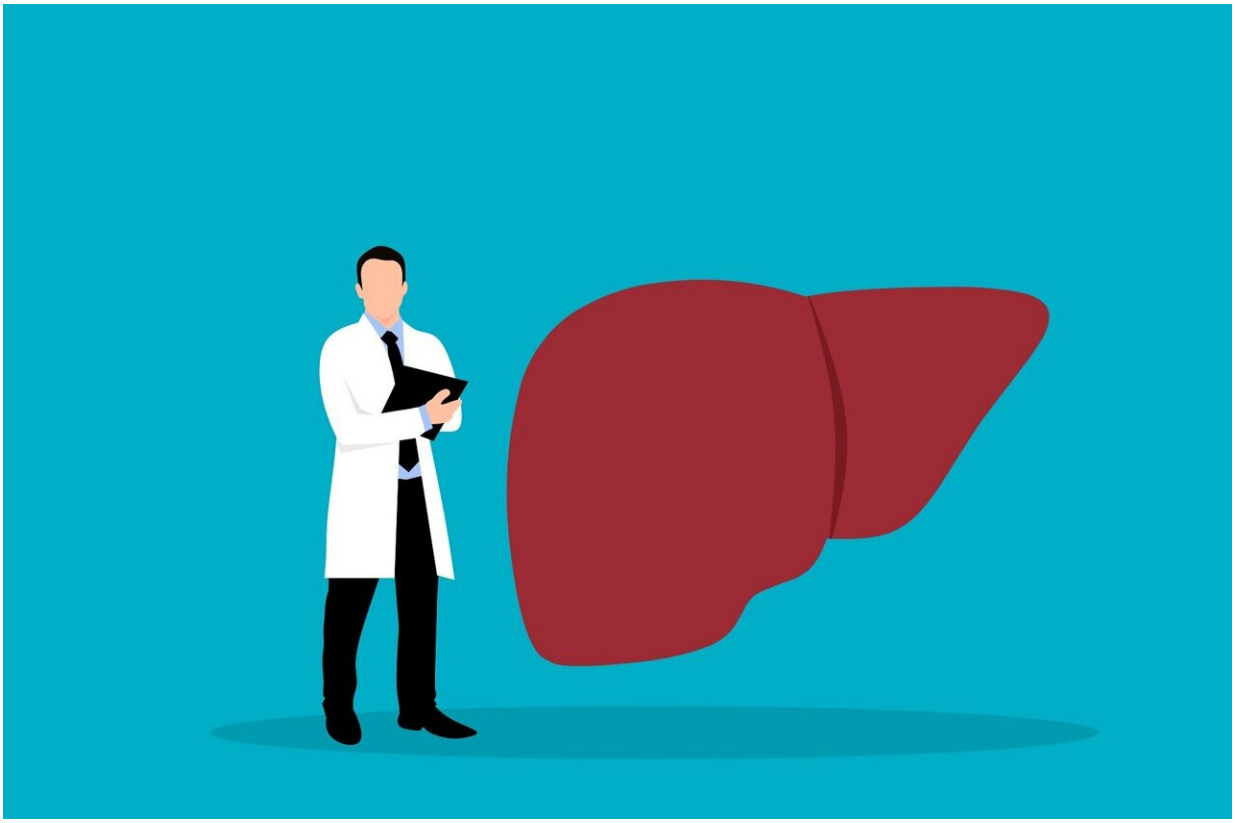

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A team of researchers led by NTU scientists have discovered why patients with non-alcoholic fatty liver disease (NAFLD) are at higher

risk of cardiovascular disease, thus shedding light on why the leading cause of mortality in NAFLD patients is cardiovascular complications instead of liver damage.

The researchers found that NAFLD prompts the over-production of a class of proteins that cause inflammation and damage to their blood vessels.

NAFLD is a general term for liver diseases affecting patients who drink little to no alcohol. It is mainly characterized by having too much fat stored in liver cells and can lead to liver cirrhosis and liver cancer.

The team found that the blood vessel cells of fatty liver disease patients contained higher levels of a class of proteins called chemokines—up to three times higher than in healthy individuals.

Chemokines are strong attractants of immune cells, and are tasked with drawing immune cells to sites of infections to combat foreign particles. However, when abnormally high levels of immune cells are recruited into a blood vessel, it becomes harmful.

The researchers discovered that the higher level of chemokines in fatty liver disease patients was attracting T cells into blood vessel walls. These T cells then cause inflammation of blood vessels, damaging them.

Higher levels of damage and inflammation can lead to leakiness in the blood vessels, impairing blood vessels' integrity over time and increasing the risk of blood clot formation.

Understanding how NAFLD affects heart health can help to inform clinical care for patients, the researchers say.

The research team, led by Nanyang Assistant Professor Christine

Cheung from NTU's Lee Kong Chian School of Medicine (LKCMedicine), found a higher level of blood vessel damage in NAFLD patients, which increases the risks of blood clots and cardiovascular diseases.

Asst Prof Cheung says that "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."

The team published their findings in *EMBO Reports* in April.

More information: Chun-Yi Ng et al, Endothelial-immune crosstalk contributes to vasculopathy in nonalcoholic fatty liver disease, *EMBO reports* (2022). DOI: 10.15252/embr.202154271

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