More liver transplant cases linked to obesity and diabetes, and not hepatitis B

This mirrors global trend; vaccinations and treatments have also curbed viral hepatitis

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Madam Lian Pooh Kim, 60, with her husband, Mr Tan Yian Tee, 62. She represents the growing pool of liver transplant patients whose cirrhosis is linked to metabolic risk factors like obesity, Type 2 diabetes and hypertension.
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Twice, when she was expecting her now 28-year-old son and 30-year-old daughter, Madam Lian Pooh Kim, now 60, developed gestational diabetes. However, the condition resolved itself after she gave birth.

It was not until she was in her 40s that she found out during a health screening that she had developed Type 2 diabetes and hypertension.

At the same time, fat had begun to accumulate in her liver, progressing silently into a diagnosis of cirrhosis or late-stage liver disease in 2015. The homemaker was told that the condition was irreversible and needed monitoring.

Her blood sugar and lipid control were mostly adequate from 2015 until 2023, when she developed complications from her liver cirrhosis, which had progressed over the years.

By 2024, her condition had worsened and the doctor told Madam Lian that her liver was 80 per cent to 90 per cent cirrhotic, putting the organ on the brink of failure. She needed a transplant as soon as possible.

Aware of the waiting list, she asked her doctor how much time her body could hold out without a liver from a deceased donor.

"I was told I had a year to live and I burst into tears," she recalled in Mandarin. "I knew I could die from it, but I never knew it could be one year."

Madam Lian represents the growing pool of liver transplant patients whose cirrhosis is linked to metabolic risk factors like obesity, Type 2 diabetes and hypertension, a stark contrast to past decades when viral hepatitis infections were the most common cause.

Data from nearly 1,200 cirrhosis patients in SingHealth's Chronic Liver Disease Registry showed that metabolic dysfunction-associated steatohepatitis (MASH) – a more severe, inflammatory form of fatty liver disease – has become the dominant cause of cirrhosis, overtaking hepatitis B.

In 2015, hepatitis B was the primary cause, accounting for 63.3 per cent of cases, while MASH represented 1.8 per cent, according to the clinical database led by the Singapore General Hospital (SGH) and SingHealth Duke-NUS Transplant Centre.

However, by 2024, the landscape had shifted significantly: MASH cases surged to 39.8 per cent, in contrast to a drop in hepatitis B-related cases to 23.5 per cent.

Professor Brian Goh, director of the SingHealth Liver Transplant Programme at SGH, said this is reflected in the transplant referrals in recent years and mirrors a trend seen globally, especially in developed countries in the West, amid the global epidemic of obesity and Type 2 diabetes.

The National University Centre for Organ Transplantation (NUCOT) at National University Hospital, the other public hospital that performs such transplants here, also said fatty liver and viral hepatitis are the top causes of liver transplants.

With the widespread success of vaccinations and antiviral treatments in controlling viral hepatitis, a silent epidemic is taking over. Studies estimate that fatty liver disease affects 38 per cent of adults globally, according to Associate Professor George Goh, a senior consultant at the SGH gastroenterology and hepatology department.

Approximately 12 per cent to 40 per cent of patients with metabolic dysfunction-associated steatotic liver disease – the type of fatty liver disease not associated with excessive alcohol intake but with metabolic risk factors – could develop MASH, and be at a higher risk of getting cirrhosis and liver cancer.

Fatty liver disease develops silently and slowly, often taking about 20 to 30 years to progress from a normal state to cirrhosis, Prof George Goh said.

Lifestyle interventions such as regular exercise and dietary choices like adhering to a Mediterranean diet, as well as managing conditions like diabetes, are the primary treatment, before the disease progresses to liver inflammation or cirrhosis, when the damage may become permanent, he said.

In mid-2023, Madam Lian started to experience fluid retention in her abdomen due to her liver cirrhosis. The condition worsened, causing her abdomen to bloat excessively.

She also had constipation, which led to episodes of memory loss and severe confusion due to the toxin build-up in her body. In those moments, she could not even recognise her own husband, logistics supervisor Tan Yian Tee, or her two adult children.

These issues repeatedly landed her in hospital where medical help was needed to drain the excess fluid or rapidly clear her bowels, she said.

In 2025, there were 32 liver transplants performed: 22 from deceased donors and 10 from living donors. There were 50 people waiting for a transplant that year and those who received a deceased donor liver transplant waited 18 months on average.

In 2024, Madam Lian was among the 63 patients waiting for a deceased donor liver and the 24 who received a deceased donor liver transplant.

Many liver failure patients wait for a call that will not come in time. Unlike kidney failure patients who can rely on dialysis to sustain life, liver patients have no safety net. Most of them will die after two to three years if they do not receive a new liver, said Prof Brian Goh, who is also the head and senior consultant at the SGH hepatopancreatobiliary and transplant surgery department.

Additionally, not everyone in need of a liver transplant can qualify for the deceased donor list. This is often because they are either too ill or have reached the age of 70, a restriction imposed due to the limited availability of organs, Prof Goh explained.

However, machine perfusion, a method to keep organs in a viable condition for longer outside the body, is being explored for liver transplants. Prof Goh said the biggest impact of this technology will be its ability to expand the deceased donor pool by ensuring the viability of donation after circulatory death (DCD) livers, allowing them to be transplanted safely.

In DCD, the organ donation occurs after death, when the heart has permanently stopped beating. To address the severe shortage of transplantable organs, Western countries like the United States and Britain have been increasing the number of DCD transplants.

At NUCOT, senior consultant and medical director of its adult liver transplantation programme Mark Muthiah said there are plans to carry out machine perfusion in the near future. It has set the processes in place but has to ensure that the roll-out is done safely and the necessary individuals are trained, he added.

Madam Lian's gift of life came on Christmas Day in 2024, relieving her of her suffering. "I felt like I was reborn," she said.

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