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$10m grant for study to address rise in muscle-wasting disease sarcopenia

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Researchers here have secured a $10 million grant for a nationwide programme dedicated to addressing the rising problem of sarcopenia, an age-related disease characterised by the progressive loss of muscle mass, strength and function.

Led by SingHealth Duke-NUS Academic Medical Centre, this initiative is Singapore's first large-scale study on sarcopenia, which contributes to frailty and a lower quality of life as one ages.

The disease leads to increased risks of falls, lower immunity and poorer recovery after surgery, among other adverse effects, but there are no effective treatments at the moment.

If sarcopenia is picked up at all, it is only when people are showing severe symptoms such as loss of muscle mass and strength, said Professor Wang Yibin, director of the cardiovascular and metabolic disorders programme at Duke-NUS Medical School, at a media briefing.

"There's not much of a treatment. We don't have drugs, we can only provide them with dietary management and exercise advice. So still, there's a big mystery behind it and that's the main challenge of our project."

Called Mechanistic Investigation and Clinical Innovation for Sarcopenia Diagnosis and Therapy, or Magnet in short, this research project was awarded the $10 million Open Fund-Large Collaborative Grant by the National Medical Research Council on May 28.

It brings together physicians and scientists from different institutes here who want to investigate why and how sarcopenia is triggered along with ageing or other disease states, and to find new ways of treating it.

In the five-year study, Magnet will build a biobank of muscles and serum from 1,000 sarcopenia patients. It already has 500 such samples, collected in the past three years from surgical patients at Sengkang General Hospital (SKH) under a programme there led by Clinical Associate Professor Frederick Koh, a colorectal surgeon and a Magnet principal investigator.

Professor Teh Bin Tean, the deputy chief executive officer of research at the National Cancer Centre Singapore (NCCS), said he and Prof Koh had worked together to establish the tissue bank.

At NCCS, researchers have been studying cachexia, which is sarcopenia associated with an advanced stage of cancer.

About 20 per cent of advanced-stage cancer patients develop it, and it leads to poor health, poor drug response and reduced quality of life, said Prof Teh.

Prof Koh said sarcopenia is associated with increased complications from surgery, and increased mortality.

"In cancer patients... if you have sarcopenia, cancer cells have been shown to come back earlier. So this gives us a connotation that muscle is not just about movement and it's not just about tolerating stress, but it may also play an immune role... which we do not know much about today."

It is still early days when it comes to treatment possibilities. Prof Koh said they have found from earlier studies in SKH and Changi General Hospital (CGH) that the molecule HMB (beta-hydroxy-beta-methylbutyrate) – a metabolite of the amino acid leucine – may be beneficial, but further studies are needed.

"HMB may be one therapeutic agent which has shown some promise in early clinical trials in our experience, and we are expanding on that experience to run a larger study as part of the Magnet project," he said.

The term sarcopenia was coined in 1989 but it was recognised as a disease only in 2016.

Recent studies have established the prevalence of sarcopenia, which affects nearly one in three Singaporeans aged 60 years or older.

It also affects younger adults with chronic diseases such as cancer and diabetes – one in 14 Singaporeans under 60 is estimated to have the muscle-wasting disease.

"For muscles, you need energy, protein and physical activity. So the high-risk group would be people who don't have enough energy, don't have enough protein, and are inactive," said Associate Professor Samuel Chew, a senior consultant at CGH's geriatric medicine department.

"By the time we are 80, even if we are healthy, we would have lost at least about one-third of our muscle mass," said Dr Chew. It is hence important to "bank" muscle health during younger adulthood to help counter muscle loss over time, he added.

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A MYSTERY

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PROFESSOR WANG YIBIN, director of the cardiovascular and metabolic disorders programme at Duke-NUS Medical School, on sarcopenia.

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