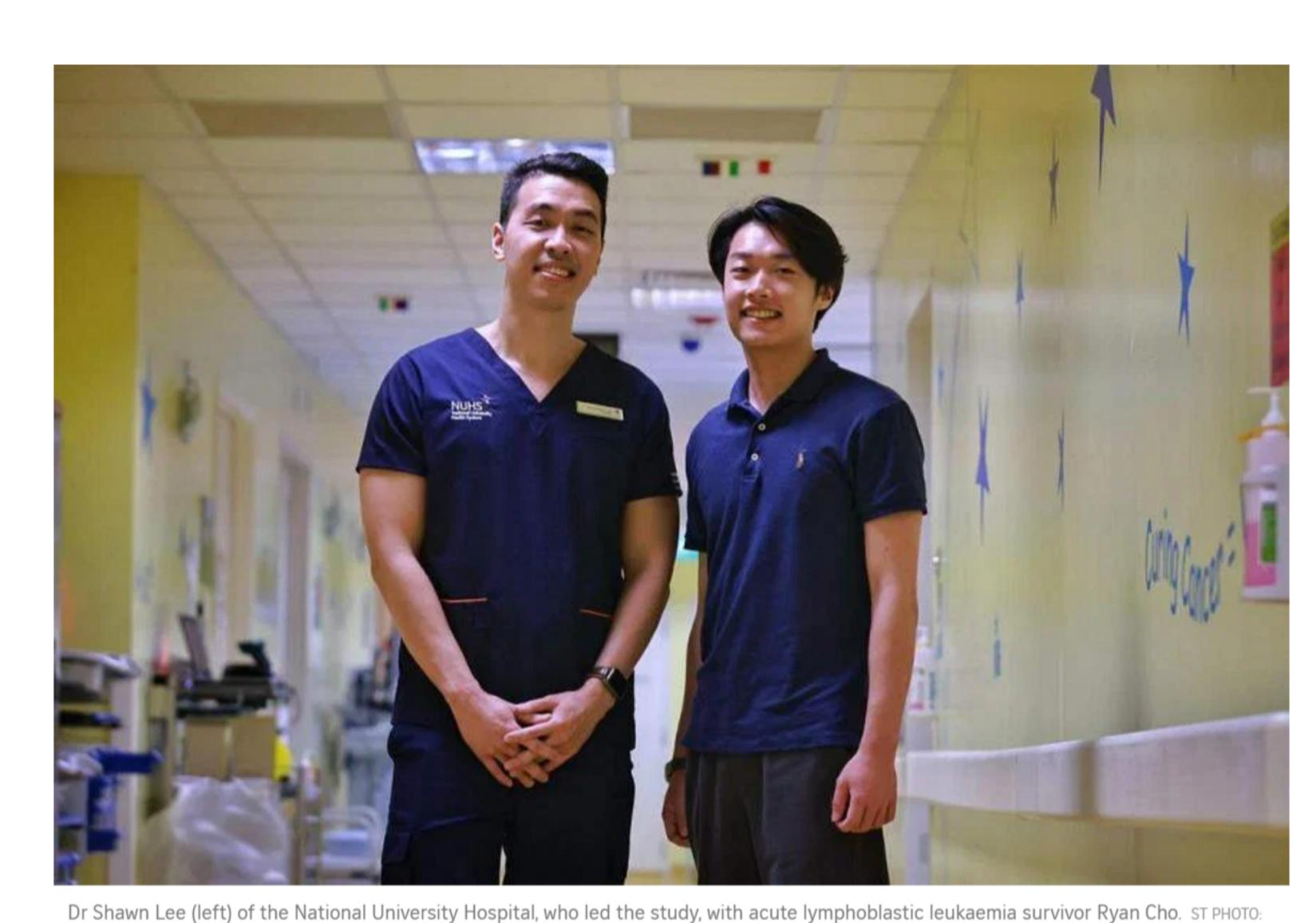
Study by S'pore, US doctors to tailor treatment for childhood leukaemia to reduce side effects



Josiah Teo

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SINGAPORE - Children who have been diagnosed with acute lymphoblastic

leukaemia can typically expect to be given a plethora of different chemotherapy

drugs to treat their condition. The aggressive childhood cancer – known as ALL for short – has many different subtypes, but patients are mostly prescribed a uniform treatment regime involving 10 to 12 different chemotherapy drugs.

This may result in them experiencing a range of side effects, some of which could be lifelong, including limb paralysis, heart damage, and abnormal bone or muscle growth. But the occurrence and severity of these side effects could soon be minimised with

attempting to tailor ALL treatment for each specific subtype to reduce the amount

the work of 22 researchers from Singapore and the United States, who are

of chemotherapy drugs given to patients.

Their study, published in the journal Nature Medicine in January, evaluated the leukaemia cells of 800 children from six months to 18 years old in the US. The cells were genetically sequenced in a laboratory to determine their subtype and also tested for their response to various chemotherapy drugs. From this, the researchers were able to assess how effective 18 different chemotherapy drugs were in fighting 23 subtypes of ALL.

broadly into two groups known as B-cell ALL and T-cell ALL – arise as the specific genetic abnormality found in each patient's lymphocyte cells may be different. The study's results showed that the subtypes reacted differently to individual drugs, which the researchers said was an indication that they should not be treated in an identical way.

Though every ALL case is caused by the production of too many lymphocytes (a

type of white blood cell) by the bone marrow, the many subtypes – categorised

vincristine and daunorubicin, common drugs used in the majority of ALL treatment regimes. Most of the other subtypes, however, were responsive to the two drugs. Fortunately, newer and potentially more effective drugs such as venetoclax have

For example, early T-cell precursor ALL was found to be generally less responsive to

been identified as a potential replacement for the two medications. Dr Shawn Lee, a consultant with the National University Hospital's division of paediatric oncology and haematology who led the study, said: "After analysing

which of the chemotherapy drugs were not effective for a particular ALL subtype, we can possibly drop them from the treatment regime in question. "By removing some of these ineffective drugs that are potentially toxic, we can reduce the impact of the side effects from chemotherapy."

The study also found that certain chemotherapy drugs could be effective for some

For example, dasatinib, a drug normally used to treat a type of B-cell ALL known as Philadelphia-positive ALL, was found to be effective against T-cell ALL as well.

ALL subtypes that they were not conventionally used to treat.

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planning to incorporate its findings in the design of upcoming ALL trials for children in Singapore and other parts of South-east Asia.

The most common paediatric cancer in Singapore, ALL accounts for about 35 per

treatment, I hope that we will be able to defeat patients' leukaemia in a way that will

The team hopes to share its work with hospitals here and in the US, and is also

cent of cancer diagnoses in children locally. This figure is expected to continue increasing in the future.

Said Dr Lee: "With our study that could pave the way for more tailored ALL

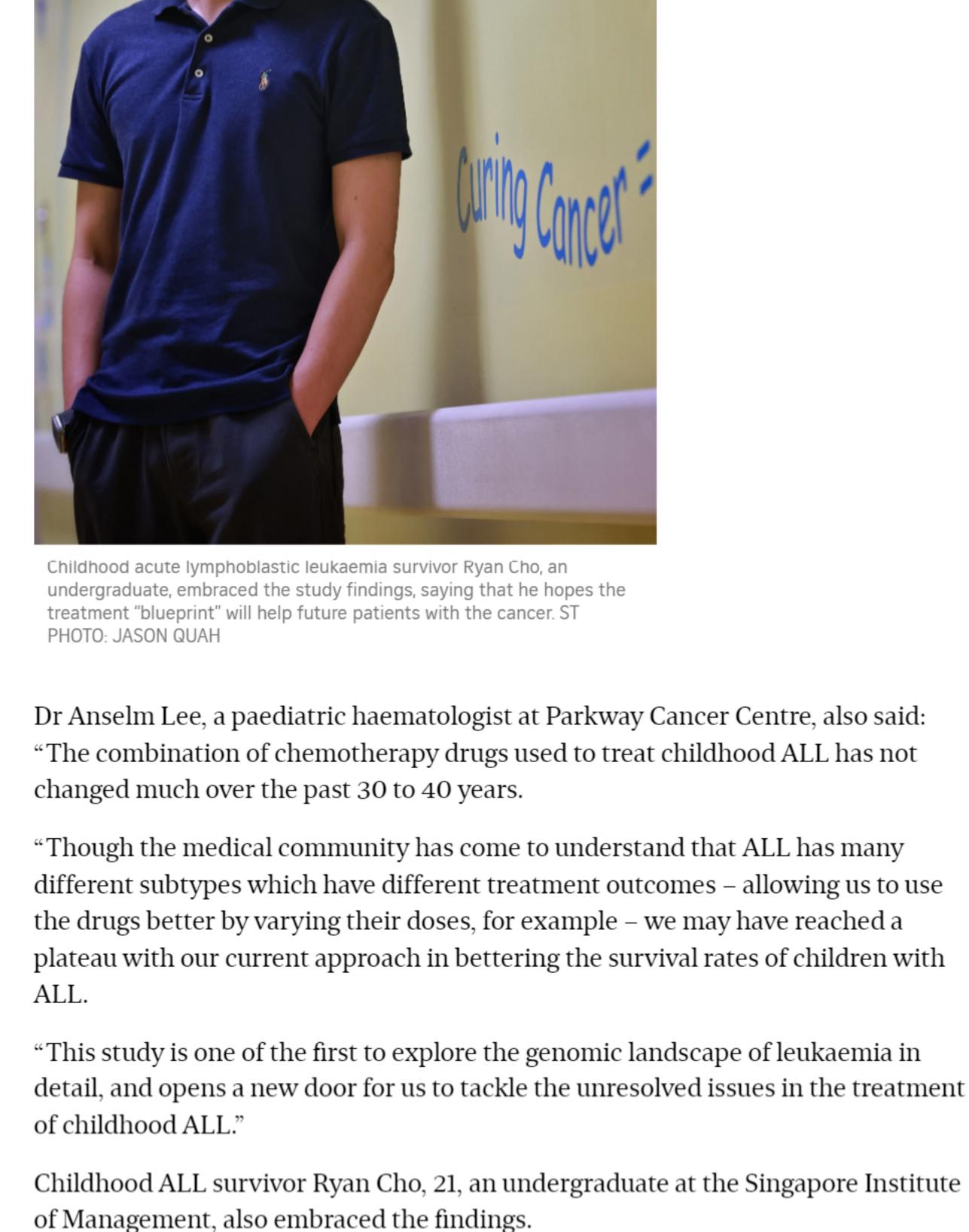
spare them a lifetime of adverse health effects." Doctors not involved in the team's study said that it advanced the understanding of ALL treatment in the medical community.

Dr Soh Shui Yen, a senior consultant at KK Women's and Children's Hospital's

Children's Blood and Cancer Centre, said the study could lead to more precise

diagnoses, enabling more personalised treatment regimes to be developed to

achieve the best cancer outcomes, with fewer adverse side effects.



Diagnosed with the cancer in 2019, Mr Cho, who was then 17, underwent chemotherapy using the standard treatment regime. After 2½ years of chemotherapy, he made a full recovery from ALL, but was plagued with avascular necrosis in the hips – a condition where the bone tissue dies

due to a lack of blood supply – as a result of steroids used in the chemotherapy.

His condition left him limping for months, and deteriorated till he had to go for hip

"I'm very excited about this breakthrough study, which could minimise the side effects that ALL patients face from chemotherapy. Future patients may be able to go

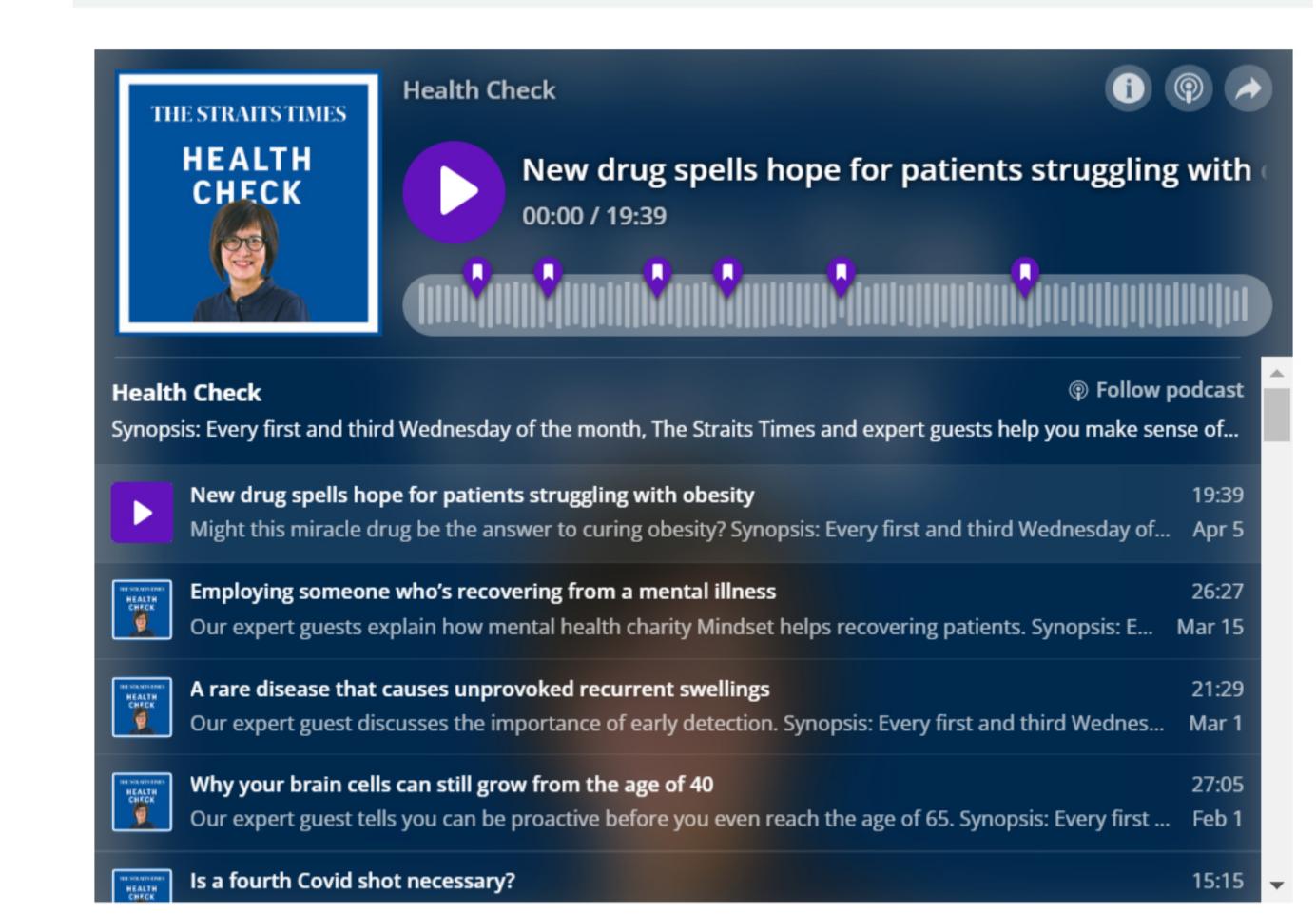
Mr Cho said he hopes this treatment "blueprint" will help future ALL patients.

replacement surgery in 2022.

run," he said.

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for treatment that remedies the cancer without creating other problems in the long



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