

# Bacteria in 2015 blood poisoning cases still a threat: Study

Strain found in freshwater fish more common in region and more aggressive than earlier thought

Shabana Begum

A highly infectious bacterial strain which caused blood poisoning in more than 160 people here in 2015 – after they ate raw freshwater fish – is far more aggressive and more entrenched in the region than previously thought.

Researchers led by Tan Tock Seng Hospital (TTSH) have discovered that the Group B *Streptococcus* (GBS) bacteria – GBS ST283 – has caused disease in humans and freshwater fish in mainly South-east Asia for more than two decades.

The ST283 strain is also the only known GBS bacteria to cause foodborne diseases. While most GBS strains do not infect healthy adults, the ST283 strain turned out to be especially aggressive. In the 2015 outbreak, the largest of its kind in the world, the victims had fever, joint infections and meningitis.

By analysing the DNA of bacteria samples collected from local hospitals dating back to 1995 and regional data, the researchers found that more than 350 ST283 infections have occurred in Laos, Thailand, Vietnam, Singapore,

Malaysia and Hong Kong. “Our research reveals a previously unknown disease pattern that has escaped detection,” said the principal lead investigator of the research, Dr Timothy Barkham, a senior consultant medical microbiologist at TTSH’s department of laboratory medicine.

In the 2015 outbreak, a 50-year-old man lost all his limbs, and a 52-year-old man fell into a coma for two weeks and lost his hearing.

The infectious disease scare prompted the Government to ban hawkers from selling raw freshwater fish. Infection rates dropped after the ban, which is still in place.

The bacterial strain has not been found in saltwater fish.

The ST283 strain could have appeared in South-east Asia before 1995, but there is no data to prove that, said Dr Barkham. It is almost absent in the rest of the world, except for four cases in France, Britain and the Netherlands.

Based on data from regional fish farms, the ST283 strain was found mainly in tilapia. Between 2007 and 2016, it was detected in all diseased tilapia in 14 fish farms in Malaysia and Vietnam.

The research team, which com-



Genome Institute of Singapore’s Professor Swaine Chen (left) and Tan Tock Seng Hospital’s principal medical technologist Tang Wen Ying are part of the research team that studied the ST283 strain, with principal lead investigator Timothy Barkham. ST PHOTO: ZHANG XUAN

prised 30 international collaborators and the Agency for Science, Technology and Research’s Genome Institute of Singapore (GIS), published these findings in the peer-reviewed scientific journal *PLOS Neglected Tropical Diseases* earlier this year.

It is not known why the ST283 strain is localised in South-east Asia, but the scientists say it could be due to the prevalence of aquaculture and the popularity of raw freshwater fish dishes in the region.

“If people didn’t eat raw fish, ST283 would not be found in humans,” said Dr Barkham.

The first known cases of ST283 infections in Singapore were in 1998, when five people caught meningitis.

Patients’ bacteria samples collected from hospitals such as TTSH, Changi General Hospital and Singapore General Hospital from 1995 to

TACKLING THE BACTERIAL STRAIN

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**PROFESSOR SWAINE CHEN**, group leader of infectious diseases at the Genome Institute of Singapore.

2017 showed that out of 744 patients infected with GBS, 23 per cent were infected with the ST283 strain.

The researchers also suspect that the 2015 outbreak was caused by higher amounts of the bacterial strain in freshwater fish due to an increase in temperature.

Dr Barkham said: “2015 was an El Nino year, so this might support a theory that due to an increase in temperature, the amount of bacteria in fish was more than normal. Human infection depends on the degree of contamination in food.”

The infectious strain is still lingering here. Since 2016, TTSH has seen fewer than 10 patients every year infected with it, he said.

ST283 infections can be treated with antibiotics such as penicillin.

Currently, very little is known about GBS ST283, and Dr Barkham said cross-border collaborations in

animal and human health are urgently needed so that its transmission can be understood and halted.

The team is continuing research to determine the bacterial strain’s origin, spread, transmission and the extent of harmfulness.

Professor Swaine Chen, group leader of infectious diseases at GIS, said: “We need to find out how to curb the strain and explore solutions such as developing a vaccine for freshwater fishes or informing people in the region to avoid eating raw fish.”

Singaporeans should heed the Government’s advisory not to consume ready-to-eat meals containing raw freshwater fish and avoid consuming raw or under-cooked fish when they travel to neighbouring countries, the researchers said.

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