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## Return of a devastating mystery illness in India

MUZAFFARPUR, INDIA

Disease that killed children was linked to lychees, but doubt is cast on the theory

BY ROD NORDLAND

Every year, a mysterious disease stalks the area around the eastern Indian city of Muzaffarpur, killing children seemingly at random — there, and nowhere else.

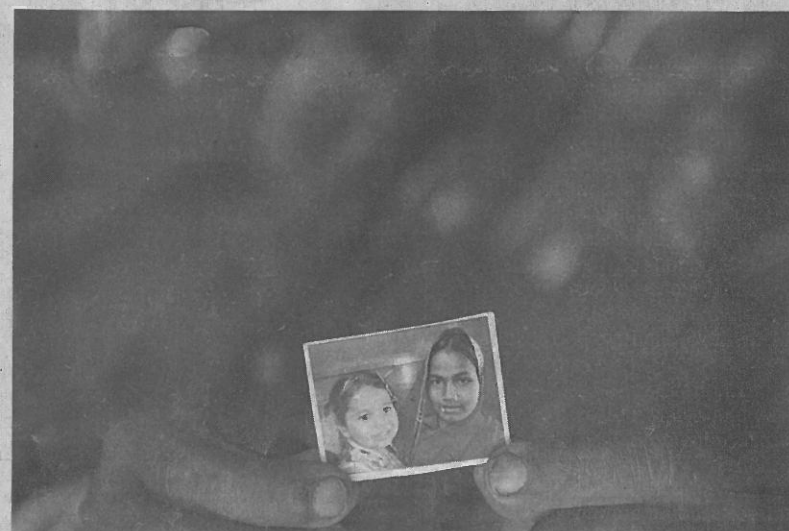
It mostly afflicts poor children younger than 10. They go to sleep apparently healthy, and wake up with a high fever and brain swelling that leads to convulsions, seizures and, in a third of the cases, death — often within 24 to 36 hours.

Two years ago, researchers declared the mystery solved, saying that the cause was the prized lychee fruit that grows around this area during the hottest months of the year. A chemical in the lychee caused hypoglycemia, a catastrophic fall in the child's blood sugar, when consumed on an empty stomach, they found. That was more likely to happen to a poorly nourished child with no reserves of glucose, the chemical form that sugar takes to be digested by the body.

As a result of research sponsored by the Centers for Disease Control in the United States, published in the respected British medical journal *The Lancet* in 2017, the health authorities began to warn families to make sure that children did not eat lychee without a meal. Cases plummeted from hundreds each season to a few dozen.

Until this year. There have been hundreds of cases again — 719 as of Monday, with 152 deaths — all among poor children here in the Muzaffarpur lychee belt, in a heavily populated area of Bihar State. And this time, doctors say they are finding many cases in which lychees were not a factor.

The treatment epicenter is the Sri Krishna Medical College and Hospital in Muzaffarpur, where 102 of the deaths this year occurred. That amounts to a 27 percent fatality rate for the disease at that hospital, according to Dr. BrajMohan, the doctor in charge of a pediatric recovery ward there. On Friday, there were 65 children sharing 40 beds in his ward, and 16 mattresses in a corridor accommodated 30 others. Those were the lucky ones, the ones who survived the hospital's three pediatric intensive care units.



farming area where there have been 47 confirmed cases this year of what scientists are calling acute encephalopathy syndrome, or A.E.S. Thirteen children have died, according to local officials. In another Minapur village, a 15-minute drive from Ms. Kumari's, Rani Devi lost her 5-year-old daughter, Gunja Kumari, to the disease this month. She went to bed on an empty stomach but had not eaten lychees that day, Ms. Devi said; she woke up convulsing and died the next day.

"She was the healthiest of my four children," said Ms. Devi, 24.

Aakash Shrivastava, a scientist at India's National Center for Disease Control who was the lead author of the *Lancet* report, said senior officials had ordered him not to discuss the outbreak. Repeated attempts to reach the center's director, Dr. Sujeet Kumar Singh, for comment were unsuccessful.

Officials from the Centers for Disease Control who are based in the American Embassy in New Delhi declined to comment on the outbreak, according to an embassy spokeswoman.

**After a warning not to eat the fruit, cases plummeted from hundreds each season to a few dozen. Until this year.**

Dr. Arun Shah, a Muzaffarpur pediatrician and one of the authors of an early scientific paper on the disease, said that scientists were still convinced by the lychee theory — even if saying so has become problematic. He blamed government laxity for the surge in cases this year. "Government just didn't do what they should have done," Dr. Shah said. "They did nothing. At first they did pay attention, but then 2017, 2018, there were few cases — last year only 25 cases, and they became complacent," he said.

Kaushal Kishore, a state health department official, denied that the authorities had been amiss in not pursuing the lychee connection. "Nobody's clear about the causative factor, the causative agent has not been zeroed in," he said. "How can we blame a specific food? It has to be based on research and evidence, and there is no evidence."

The authorities have been going door to door to homes in the affected area, looking for children with symptoms and telling parents what to do, Mr. Kishore said. In recent days, deaths from the disease have started to taper off.

Hospital admissions for the disease have also declined, as officials spread the word about first aid that parents

Most of the children who got sick this time were younger than 5, and many were only 1 or 2 and still breastfeeding, said Dr. BrajMohan, who uses just one name. "They were hardly eating lychees at that age," he said.

Many other doctors and officials at the hospital are also skeptical about the lychee theory.

"It must be some sort of virus or bacteria, we just haven't detected it yet," said Dr. J.P. Mandal, who, like Dr. Braj-Mohan, is a pediatrician and a medical

**Clockwise from top: The pediatric ward at Sri Krishna Medical College and Hospital in Muzaffarpur, India, where 102 of the 152 deaths reported so far this year from a mysterious disease have occurred; Gunja Kumari, 5, who died this month from the disease, with her mother Rani Devi; Anshu Kumar, 3, who is recovering at the hospital.**

PHOTOGRAPHS BY SAUMYA KHANDELWAL FOR THE NEW YORK TIMES

professor. "You have to transport samples to labs at minus 80 degrees Celsius, when the temperatures outside are 45 degrees — no wonder we haven't found it," he added. (Forty-five degrees Celsius is 113 degrees Fahrenheit.)

But decades of searching have failed to find any microbe responsible for what locals often just call the "lychee dis-

ease." Even during seasons when hundreds fall ill, there are not clusters of cases among families or communities — usually just one in a village, which undermines the infectious disease theory.

But if lychees are to blame, some ask, why are there no cases in other lychee-growing areas in India, or in other countries, for that matter? And what ac-

counts for the deaths among children too young to eat fruit, or the ones that have occurred outside of lychee season?

"Why we're having so many cases of hypoglycemia needs investigation," said the superintendent of Sri Krishna Hospital, Dr. Sunil Kumar Shahi. "But the lychee has no relation to it."

The countryside around Muzaffarpur

accounts for up to 70 percent of lychee production in India, which is the second-biggest grower of the fruit after China.

"We all eat lychee around here," said Kamini Kumari, whose 3-year-old daughter Anupa fell sick with convulsions but recovered after days in the hospital.

Ms. Kumari lives in Minapur Block, a

the word about first aid that parents could easily administer: feeding sugar and salt to a stricken child right away. If symptoms persisted, they were to quickly bring the child to a hospital, where an intravenous infusion of dextrose and electrolytes was the primary treatment.

For a disease so devastating to have such a simple cure is one of the many perplexities surrounding A.E.S.

"I think we'll find that it is multifactorial, but so far it is a mystery," Dr. Mandal said. "A mystery we have to solve."