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Rising Threat of Infections Unfazed by Antibiotics

By ANDREW POLLACK

A minor-league pitcher in his younger days, Richard Armbruster kept playing baseball recreationally into his 70s, until his right hip started bothering him. Last February he went to a St. Louis hospital for what was to be a routine hip replacement.

By late March, Mr. Armbruster, then 78, was dead. After a series of postsurgical complications, the final blow was a bloodstream infection that sent him into shock and resisted treatment with antibiotics.

“Never in my wildest dreams did I think my dad would walk in for a hip replacement and be dead two months later,” said Amy Fix, one of his daughters.

Not until the day Mr. Armbruster died did a laboratory culture identify the organism that had infected him: Acinetobacter baumannii.

The germ is one of a category of bacteria that by some estimates are already killing tens of thousands of hospital patients each year. While the organisms do not receive as much attention as the one known as MRSA — for methicillin-resistant Staphylococcus aureus — some infectious-disease specialists say they could emerge as a bigger threat.

That is because there are several drugs, including some approved in the last few years, that can treat MRSA. But for a combination of business reasons and scientific challenges, the pharmaceuticals industry is pursuing very few drugs for Acinetobacter and other organisms of its type, known as Gram-negative bacteria. Meanwhile, the germs are evolving and becoming ever more immune to existing antibiotics.

“In many respects it’s far worse than MRSA,” said Dr. Louis B. Rice, an infectious-disease specialist at the Louis Stokes Cleveland V.A. Medical Center and at Case Western Reserve University. “There are strains out there, and they are becoming more and more common, that are resistant to virtually every antibiotic we have.”

The bacteria, classified as Gram-negative because of their reaction to the so-called Gram stain test, can cause severe pneumonia and infections of the urinary tract, bloodstream and other parts of the body. Their cell structure makes them more difficult to attack with antibiotics than Gram-positive organisms like MRSA.

Acinetobacter, which killed Mr. Armbruster, came to wide attention a few years ago in infections of soldiers wounded in Iraq.

Meanwhile, New York City hospitals, perhaps because of the large numbers of patients they treat, have become the global breeding ground for another drug-resistant Gram-negative germ, Klebsiella pneumoniae.

According to researchers at SUNY Downstate Medical Center, more than 20 percent of the Klebsiella infections in Brooklyn hospitals are now resistant to virtually all modern antibiotics. And those supergerms are now spreading worldwide.

Health authorities do not have good figures on how many infections and deaths in the United States are caused by Gram-negative bacteria. The Centers for Disease Control and Prevention estimates that roughly 1.7 million hospital-associated infections, from all types of bacteria combined, cause or contribute to 99,000 deaths each year.

But in Europe, where hospital surveys have been conducted, Gram-negative infections are estimated to account for two-thirds of the 25,000 deaths each year caused by some of the most troublesome hospital-acquired infections, according to a report released in September by health authorities there.

To be sure, MRSA remains the single most common source of hospital infections. And it is especially feared because it can also infect people outside the hospital. There have been serious, even deadly, infections of otherwise healthy athletes and school children.

By comparison, the drug-resistant Gram-negative germs for the most part threaten only hospitalized patients whose immune systems are weak. The germs can survive for a long time on surfaces in the hospital and enter the body through wounds, catheters and ventilators.

What is most worrisome about the Gram-negatives is not their frequency but their drug resistance.

“For Gram-positives we need better drugs; for Gram-negatives we need any drugs,” said Dr. Brad Spellberg, an infectious-disease specialist at Harbor-U.C.L.A. Medical Center in Torrance, Calif., and the author of “Rising Plague,” a book about drug-resistant pathogens. Dr. Spellberg is a consultant to some antibiotics companies and has co-founded two companies working on other anti-infective approaches. Dr. Rice of Cleveland has also been a consultant to some pharmaceutical companies.

Doctors treating resistant strains of Gram-negative bacteria are often forced to rely on two similar antibiotics developed in the 1940s — colistin and polymyxin B. These drugs were largely abandoned decades ago because they can cause kidney and nerve damage, but because they have not been used much, bacteria have not had much chance to evolve resistance to them yet.

“You don’t really have much choice,” said Dr. Azza Elemam, an infectious-disease specialist in Louisville, Ky. “If a person has a life-threatening infection, you have to take a risk of causing damage to the kidney.”

Such a tradeoff confronted Kimberly Dozier, a CBS News correspondent who developed an Acinetobacter infection after being injured by a car bomb in 2006 while on assignment in Iraq. After two weeks on colistin, Ms. Dozier’s kidneys began to fail, she recounted in her book, “Breathing the Fire.”

Rejecting one doctor’s advice to go on dialysis and seek a kidney transplant, Ms. Dozier stopped taking the antibiotic to save her kidneys. She eventually recovered from the infection.

Even that dire tradeoff might not be available to some patients. Last year doctors at St. Vincent’s Hospital in Manhattan published a paper describing two cases of “pan-resistant” Klebsiella, untreatable by even the kidney-

damaging older antibiotics. One of the patients died and the other eventually recovered on her own, after the antibiotics were stopped.

“It is a rarity for a physician in the developed world to have a patient die of an overwhelming infection for which there are no therapeutic options,” the authors wrote in the journal Clinical Infectious Diseases.

In some cases, antibiotic resistance is spreading to Gram-negative bacteria that can infect people outside the hospital.

Sabiha Khan, 66, went to the emergency room of a Chicago hospital on New Year’s Day suffering from a urinary tract and kidney infection caused by E. coli resistant to the usual oral antibiotics. Instead of being sent home to take pills, Ms. Khan had to stay in the hospital 11 days to receive powerful intravenous antibiotics.

This month, the infection returned, sending her back to the hospital for an additional two weeks.

Some patient advocacy groups say hospitals need to take better steps to prevent such infections, like making sure that health care workers frequently wash their hands and that surfaces and instruments are disinfected. And antibiotics should not be overused, they say, because that contributes to the evolution of resistance.

To encourage prevention, an Atlanta couple, Armando and Victoria Nahum, started the Safe Care Campaign after their 27-year-old son, Joshua, died from a hospital-acquired infection in October 2006.

Joshua, a skydiving instructor in Colorado, had fractured his skull and thigh bone on a hard landing. During his treatment, he twice acquired MRSA and then was infected by Enterobacter aerogenes, a Gram-negative bacterium.

“The MRSA they got rid of with antibiotics,” Mr. Nahum said. “But this one they just couldn’t do anything about.”

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