Former Senator Kay Hagan of North Carolina died yesterday at the age of 66 from complications caused by an infection with the Powassan virus. What is that?

Powassan virus is a very rare tickborne infection. When we think of diseases spread by ticks, we usually think of Lyme disease, the most commonly reported one. (About 30,000 cases are reported to the CDC each year, but it's likely that there are roughly 300,000 cases annually.) By comparison, there were only 21 reported cases of Powassan in all of 2018.

A paper published in the journal *The Neurohospitalist* says that Powassan virus is found both in North America and eastern Russia. It is spread by species of ticks belonging to the genus *Ixodes*. The tick *Ixodes scapularis* is particularly nasty, as it spreads not only Powassan but Lyme and several other diseases, such as anaplasmosis, relapsing fever, ehrlichiosis*, and babesiosis.

According to *The Neurohospitalist*, most infections are thought to be asymptomatic. However, among people who develop symptoms -- which may include serious ones such as meningitis, encephalitis, and seizures -- about 10% will die. There is no vaccine or specific treatment for Powassan, other than to prevent seizures and brain swelling.

The *Charlotte Observer* reports that Sen. Hagan was hospitalized in December 2016 for encephalitis due to Powassan. The three-year infection and resulting brain inflammation limited her ability to speak and move, and she unexpectedly passed away in her sleep on October 28.

Why her? This is one of the hardest questions not just in philosophy but medical microbiology. The truth is that we don't really know why some diseases cause no symptoms in some but
potentially deadly outcomes in others. In my opinion, the most likely explanation is immunogenetic; that is, some people may be susceptible to certain infections because of (currently) unknown genetic profiles that affect a person’s immune response.

Unfortunately, we'll never know the exact reason Ms. Hagan died from this rare disease. RIP, Senator.

*Note: Ehrlichiosis [8] was named after German microbiologist Paul Ehrlich, not the unrepentant secular doomsday prophet Paul Ehrlich [9].

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