Lassa fever: 10 years on

David Cummins, MD

We tell ourselves that pestilence is a mere bogey of the mind, a bad dream that will pass away. But it doesn't always pass away and, from one bad dream to another, it is men who pass away. — Albert Camus, *The Plague*

The fever came on gradually over a couple of days. Then one afternoon, in the hospital grounds, I had a rigor. My fever seemed out of place in the intense, tropical heat. Within hours I became seriously unwell.

Segbwema lies in the rain forest of eastern Sierra Leone, an area of rolling hills, rutted roads, and diamond mines. I was researching Lassa fever, a disease highly endemic in the region and a leading cause of death. The natural host of Lassa virus is *Mastomys natalensis*, one of several types of rat that live in and around the village houses; most human infections are acquired through contamination of broken skin with the rodent's urine. It has been estimated that in the whole of west Africa there may be up to 300 000 human Lassa virus infections each year. Many patients experience a mild, flu-like illness, but some deteriorate rapidly, developing facial oedema, encephalopathy, haemorrhage, and shock. Such patients usually die.

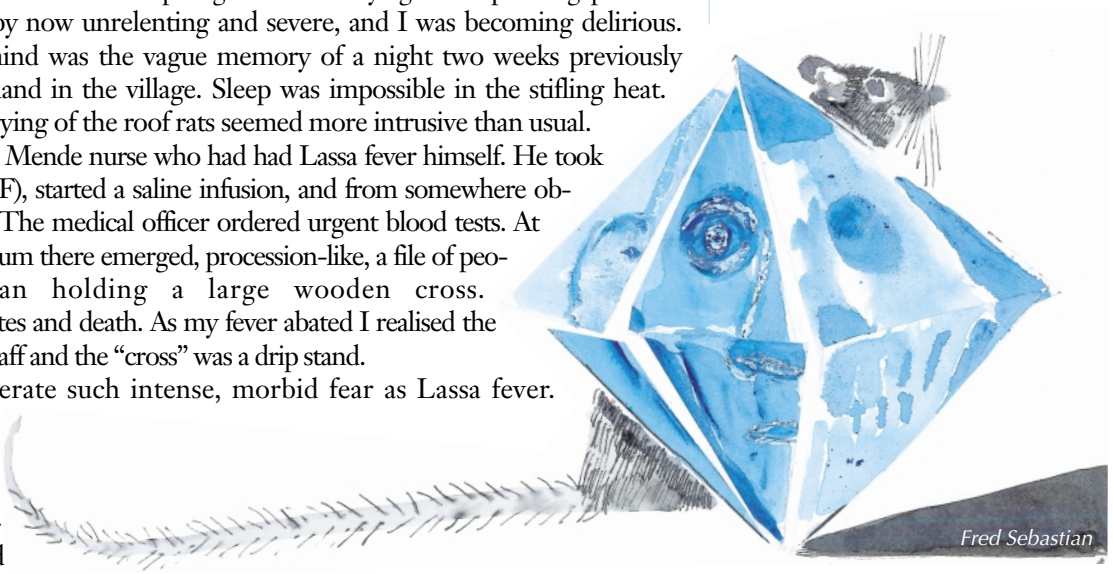
I lay under my mosquito net and waited for the fever to settle, but it became worse, and was accompanied by headache, nausea, and frequent diarrhoea. In the "white man's grave" fever is a most unwelcome visitor, and I preferred not to think deeply about its many possible origins. It was especially difficult to contemplate that I might have Lassa fever, perhaps because I had seen patients with illnesses like mine develop severe forms of the disease.

One such patient was a young, pregnant woman who was carried to the hospital from a village several miles away. She had been febrile for 10 days, her face was swollen and her gums were bleeding. A nurse asked me to see her urgently. By torchlight he led me to a dark cubicle where the distressed relatives were waiting. She appeared dazed and breathless. The placenta and the stillborn fetus lay between her legs in a large pool of blood which dripped into a pot on the floor. Her distraught husband donated some compatible blood and watched anxiously as his wife was transfused. But she continued to bleed and died soon after. Later, I could hear the wails of her grief stricken family as they roamed the hospital compound.

Over the next 24 hours I developed generalised myalgia and piercing pleuritic pain. The fever was by now unrelenting and severe, and I was becoming delirious. At the back of my mind was the vague memory of a night two weeks previously when I had cut my hand in the village. Sleep was impossible in the stifling heat. The squeals and scurrying of the roof rats seemed more intrusive than usual.

I was attended by a Mende nurse who had had Lassa fever himself. He took my temperature (104°F), started a saline infusion, and from somewhere obtained an electric fan. The medical officer ordered urgent blood tests. At the height of my delirium there emerged, procession-like, a file of people led by a man holding a large wooden cross. I thought of the last rites and death. As my fever abated I realised the people were nursing staff and the "cross" was a drip stand.

Few diseases generate such intense, morbid fear as Lassa fever. I heard of one case in which a teenage girl was close to death. News of her imminent demise reached



Fred Sebastian

Experience

Expérience

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a local witchdoctor, who performed ceremonial rites in her village. The girl eventually recovered but when taken home to convalesce she was ostracised by her friends and family. For reasons unknown she died some time later.

My Lassa antibody results were negative. I felt relieved, despite being aware that antibodies often do not appear until late in the illness. A confirmed diagnosis of Lassa fever would have required me to confront the reality that I would either die or stand a 30% risk of developing nerve deafness. From my research I knew that sudden hearing loss occurs more frequently after Lassa fever than after any other viral infection; in some villages up to one in 10 adults may have a hearing defect due to the disease. Tribavirin (ribavirin), which improves survival in Lassa fever, does not prevent its development.

After treatment with antipyretics, analgesics, and antimalarials my condition improved and I subsequently made a full recovery. The diagnosis was established by chance six months later, when blood that I donated in Atlanta for use as a negative control was found to contain Lassa virus antibodies at high titre.

Over the past 10 years people have asked me why, despite living and working so closely with the disease, I failed to diagnose Lassa fever when I became ill. Before I went to Africa sensationalised media reports and pictures of air bubble isolators had made Lassa fever seem fantastically unreal. In Sierra Leone the disease became a harsh reality, but it was a reality that, perhaps out of psychological necessity, I perceived as belonging to a domain remote from myself. This sense of detachment persisted throughout much of my illness and convalescence. All who work with dangerous pathogens should be aware that when faced with a substantial threat the human capacity for self deception is immense.

Why is Lassa virus able to cause catastrophic disease in humans? In fatal cases necropsy findings are remarkably trivial, suggesting a widespread disturbance of cellular function rather than direct, virus induced structural damage. Recent work has shown that plasma from patients with severe Lassa fever contains humoral factor(s) that profoundly inhibit the function of normal cells in vitro. More research is needed.

Since the military rebelled in 1992 Sierra Leone has been sliding into civil war, with thousands fleeing the eastern province. This violence is rooted in diamonds, as were the deforestation and population shifts that led to the emergence of Lassa fever in the region a quarter of a century ago. ?