Ebola—lessons still to be learned

In this issue of the Journal (page 729), Dr. Kyle Brizendine reviews the basics of the Ebola virus and its natural history, diagnosis, and management.

Like many of you, I have followed the Ebola story with disquietude. So far, the disease has barely touched our country, with fewer than 10 confirmed cases on US soil, but it has had a big impact on our health care system and our national psyche.

The creation of specialized containment and management units may deplete some hospitals and their communities of intensive care beds. Specially trained caregivers will need to be diverted to staff these units, and the public's fear may dissuade patients from undergoing elective procedures at hospitals caring for patients with Ebola. All of these pose a financial challenge to the hospitals most capable of dealing with these patients.

We have yet to hear about management guidelines dealing with renal replacement therapy and ventilator support, which may extend life but also pose extra risks to caregivers. Do we understand the disease well enough to know when advanced supportive therapies might be futile? Many lessons were learned from the Liberian patient who died of Ebola in Dallas, but many more clinical questions remain. I had hoped that in our sophisticated ICUs patients treated relatively early with aggressive supportive care would likely survive. We do not yet know if that is true. One death does not make it false, but it does give one pause.

About a half dozen other Ebola patients have survived with treatment here, but they were not African. Does genetic background play a role in disease severity and survival? Were the survivors treated sooner or differently in ways that matter? How much of the end-organ damage from the virus is from direct organ infection that cannot be reversed or prevented by even the best supportive treatment? Does the ability of the virus to suppress the immune system doom patients to opportunistic infections during prolonged supportive therapy? Is the viral-associated immunosuppression enough to prevent some patients from mounting an effective innate (interferon-based) or acquired (viral-specific T-cell or humoral) antiviral response? And is transfusing blood from survivors, presumably conferring passive immunity, actually efficacious?

I was relieved there were no new Ebola cases among the staff caring for Mr. Duncan at his second emergency room visit in Dallas, since at that time he was clearly quite ill, viremic, and contagious. Universal safety precautions must have helped. But how did the other nurses become infected, even though they presumably wore better protection? Hopefully, we will gain further understanding of transmissibility and resistance. We need this knowledge to inform safe and manageable protocols of care, particularly if successful vaccine development is delayed.

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