Medical Xpress

Emory Healthcare physicians describe care of first two patients with Ebola virus disease

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Five physicians who treated patients with Ebola virus disease at Emory University Hospital have published an article in the *New England Journal of Medicine* describing details of the care of the first two patients – Kent Brantly and Nancy Writebol, Americans who were transferred to Emory in early August after becoming ill in Liberia. The article was published online Wednesday, Nov. 12.

The authors are members of Emory's Serious Communicable Disease Unit: G. Marshall Lyon, MD, Aneesh Mehta, MD, Jay Varkey, MD, Colleen Kraft, MD, and Bruce Ribner, MD, along with Dr. Brantly and co-authors from the Centers for Disease Control and Prevention.

The article focuses primarily on the aggressive supportive care given to the patients, including monitoring symptoms and vital signs, providing fluids and correcting levels of electrolytes.

The main points:

- Both patients experienced severe fluid loss, low blood volume and electrolyte problems. One developed irregular heart rhythms ("premature ventricular contractions") as a result of low potassium. The physicians propose that advanced supportive care, including adjusting oral rehydration formulas to include potassium, calcium and magnesium, especially for patients with severe diarrhea, is valuable in the treatment of Ebola virus disease.
- The course of experimental treatment with the monoclonal antibody cocktail ZMapp that was started in Liberia was continued at Emory for these patients. While some anecdotal evidence was positive for the results of this treatment, there was not enough information to determine whether ZMapp actually helped the two patients or whether their improvements were the result of advanced supportive care coupled with the response of their own immune systems. Controlled clinical trials are needed to assess the effectiveness of ZMapp against Ebola virus disease.
- Although there was not enough information to determine whether blood transfusions from Ebola survivors might help patients, the authors support the idea of plasma and platelet transfusions to help stabilize blood clotting.

The paper also details changes in electrolytes, measures of liver and kidney function, limited signs of internal bleeding, fluid retention, the need for supplemental oxygen, and blood cell levels over time.

During their stays in the hospital, the blood of both patients contained abundant antibodies against Ebola proteins, the authors found. Since ZMapp consists of three antibodies against the Ebola virus' external glycoprotein (GP), the doctors looked for antibodies against an internal viral nucleoprotein (NP), and were able to detect its production in both patients.

The patients were discharged from the hospital on days 30 and 29, respectively, following initial diagnosis, after two consecutive plasma specimens collected at least 24 hours apart were negative for Ebola virus on quantitative RT-PCT testing.

The authors' conclusion:

"Our limited experience with two patients cannot be extrapolated to all patients with EVD. However, intensive care nursing, aggressive oral and intravenous rehydration, electrolyte supplementation and transfusion of blood products appeared to be critical for a positive outcome in our patients with EVD."

More information: "Clinical Care of Two Patients with Ebola Virus Disease in the United States." *NEJM*, November 12, 2014. DOI: 10.1056/NEJMoa1409838

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