

Antibodies successful in the treatment of the hemolytic-uremic syndrome from EHEC

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In the online version of the *New England Journal of Medicine*, physicians and scientists in Heidelberg, Montreal, and Paris reported on the successful treatment of three young children who were suffering from a severe hemolytic-uremic syndrome (HUS) after an infection with enterohemorrhagic *Escherichia coli* (EHEC). The infections occurred in 2010. EHEC are the bacteria that cause the current wave of infections that have already claimed ten lives in Germany. The number of suspected and confirmed cases of EHEC has now reached 700.

Eculizumab has been approved in Germany since 2007 and is used to treat a rare blood disease and a rare congenital form of HUS. Two years ago, American physicians reported similar success in children with this form of HUS (NEJM 2009; 360:544-546).

The children suffered from kidney failure and severe neurological disorders. "After several exchanges of blood plasma had no effect, we decided to attempt treatment with Eculizumab," reports Professor Dr. Franz Schaefer, head of the section of Pediatric Nephrology at the Center for Child and Adolescent Medicine at Heidelberg University Hospital.

Within 24 hours of the initial infusion, which was repeated once or twice at intervals of seven days, the clinical condition of the children improved dramatically. Dialysis due to acute kidney failure from HUS could be discontinued. All three children recovered and had no sequelae even six months after the illness.

The researchers decided on using the monoclonal antibody Eculizumab as it interrupts the destructive immune reactions that occur after an infection with EHEC. Eculizumab binds to protein C5, which activates what is called the complement cascade and lead to the destruction of blood cells among other things. With EHEC infections there can also be complement activation, triggered by the Shiga toxin formed by the bacteria.

"We now hope that these results will help the acutely ill patients," said Professor Schaefer. He assumes that even adult patients can profit from therapy with the antibody. "Because of the epidemic in Germany, the publishers of the [New England Journal of Medicine](#) decided to accelerate the publishing date of the article, which they have had since February, and they published it immediately after reviewing it," said Schaefer. In addition, the article was sent to all kidney specialists in Germany.

Meanwhile, first treatments of adults and [children](#) in German hospitals have started. The German Society of Nephrologists has issued guidelines that the antibody may be given if all others standard treatments like dialysis and plasmapheresis have failed.

More information: Article in the New England Journal of Medicine: www.nejm.org/doi/full/10.1056/NEJMc1100859

Provided by University Hospital Heidelberg

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