1673. Microbial and Inflammatory Markers for Fatal *Clostridium difficile* Associated Diarrhea

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Background. With its rising mortality rate in *C. difficile* infection (CDI), understanding the microbial factors and host inflammatory response associated with fatal infection is of public health importance. We hypothesize that subjects with fatal compared with treatment-responsive CDI are different in terms of host fecal inflammatory markers and toxin type of infecting *C. difficile* strain.

Methods. Between June 2011 and March 2013 in a teaching hospital in Texas Medical Center, a prospective study of all consenting CDI subjects identified 34 fatal cases. Patients in a comparison group consisted of the next subjects enrolled in the study without fatality (N = 34). All participates submitted a diarrheal stool that was *C. difficile* cytotoxin B positive. Aliquots of the original stool sample were tested for interleukin (IL)-8.

Results. Twenty-four of 34 (71%) fatal cases died within 10 weeks of onset of CDI. The number of patients with detectable fecal IL-8 concentration for the fatal cases was 12/34 (35%) compared with the non-fatal controls that were positive for IL-8 in 8/34 (24%). The mean value of fecal IL-8 in the fatal group was 940.62 ± 1001.66pg/mL compared with 185.24 ± 592.39pg/Ml for the non-fatal subjects (p = 0.094). Eleven of 21 patients with fatal outcome within 10 weeks of CDI had detectable fecal IL-8 with a mean concentration of 511.17 ± 1168.38pg/mL; statistically higher than in the controls (p = 0.04).

Presence of *tcdC* deletion in *C. difficile* isolates from patients with fatal CDI (13/34 = 38%) was statistically higher than found with controls (5/34 = 15%, p = 0.02). Patients who died within 10 weeks of onset CDI had higher prevalence of *tcdC* deletion (13/24 = 54%) than patients who survived more than 10 weeks (p = 0.007).

Conclusion. Host and microbial factors are important in the fatal outcome in CDI. Patients who had a fatal outcome more often had stools positive for IL-8 and had increased concentrations of fecal IL-8 compared with non-fatal CDAD. Fatal cases of CDAD more often were infected by a potentially hypervirulent strain of *C. difficile* positive for *tcdC* deletion. The differences seemed particularly striking when looking at the group who expired within 10 weeks of a CDI diagnosis, probably more indicative of CDAD-associated mortality than the patients showing more remote fatality.

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