Clinical Factors Associated with a Positive C. difficile PCR Test

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Background. C. difficile infection (CDI) remains a significant cause of morbidity and mortality. The most appropriate clinical scenario for CDI testing is unclear. The IDSA/SHEA guideline recommends testing patients with unexplained new-onset 23 stools in 24 hours. This study sought to evaluate clinical factors associated with a positive C. difficile PCR test.

Methods. We conducted a retrospective cohort study of adults (age ≥18 years old) admitted to the University of Colorado Hospital for whom a C. difficile PCR, either as a standalone test or part of the Biofire® FilmArray™ Gastrointestinal Panel (GI Panel), was ordered between October 1, 2015 and August 31, 2017. Data collected included time since admission to test order, hospital length of stay, history of CDI, antibiotic use in the past 500 days, clinical presentation in the 24 hours preceding test order (fever, leukocytosis, number of stools), and laxative or antibiotic administration within 24 hours of test order. Multivariate logistic regression was used to evaluate the association of the above variables with having a positive C. difficile PCR test. If multiple tests were ordered during a single hospital encounter, only the first test was included in our analysis.

Results. 3,070 tests were performed; of these, 72% were ordered within the first 72 hours of admission. Overall, 19% of tests were positive. After adjusting for clinical variables, patients with a prior history of C. difficile or who had received antibiotics in the past 24 hours were significantly more likely to have a positive test [OR 2.95 CI (1.54, 5.38) P < 0.0001] and [OR 16.95 CI (8.22, 31.41) P < 0.0001], respectively. Patients who used laxatives were significantly less likely to have a positive test [OR 0.70 CI (0.56, 0.89) P = 0.004]. The number of stools and presence of fever or leukocytosis were not significantly associated with a positive test.

Conclusion. Prior history of C. difficile and antibiotics use was highly associated with a positive C. difficile test, while laxative use was associated with a negative test. The number of stools was not significantly associated with a positive C. difficile test; however, this may be less important clinical factor than previously believed; however, restricting testing in patients receiving laxitives is likely warranted.

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