



DIAGNOSTICA: POINT OF CARE, BIOLOGIA MOLECOLARE E TECNICHE STRUMENTALI

EPIDEMIOLOGICAL CHANGES IN PEDIATRIC CLOSTRIDIODES DIFFICILE INFECTION: THE ROLE OF PCR AS A DIAGNOSTIC TOOL

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Introduction: Clostridioides difficile infection (CDI) in pediatrics has increased in both hospital and community settings. This study focuses on the impact of introducing PCR as a diagnostic method at a tertiary pediatric hospital, highlighting how its adoption has played a crucial role in the increased detection of new CDI cases, improving diagnostic accuracy and timeliness.

Methods: A retrospective descriptive study was conducted at a Spanish tertiary hospital (Virgen del Rocío University Hospital, Seville). Pediatric patients aged 2 to 18 years with confirmed CDI between January 2011 and December 2024 were included. CDI was diagnosed based on compatible clinical presentation and detection of GDH and toxin by immunochromatography or PCR. Since 2019, molecular stool culture using PCR was implemented as a diagnostic method. The median (Mann-Whitney U test) of episodes and the frequency of recurrences and risk factors (Chi-square) were compared between the periods 2011-2018 and 2019-2024.

Results: A total of 91 patients were included (52.7% female). The median age was 9 years (IQR 4-13). The number of CDI cases significantly increased in 2019-2024 (69 cases, median=10.5 [IQR: 9-12.8]) compared to 2011-2018 (26 cases, median=3 [IQR: 1.5-4.5]) ($p=0.012$). The year with the highest number of diagnoses was 2022, with a total of 20. A history of antibiotic exposure was the most frequent personal risk factor (54/91, 59.3%), with beta-lactams in monotherapy being the most commonly used class (40/54, 74%). Other identified risk factors included solid tumor neoplasia (39/91, 42.9%), hematological tumors (21/91, 23.1%), solid organ transplants (15/91, 16.5%), primary immunodeficiency (4/91, 4.4%), inflammatory bowel disease (3/91, 3.3%), chronic kidney disease (6/91, 6.6%), congenital cardiopathy (1/91, 1.1%), and cystic fibrosis (1/91, 1.1%). Risk factors were stratified in the two periods, before and after the introduction of PCR, and no significant differences were observed, except for patients with solid tumor neoplasia, whose incidence decreased significantly (57.7% vs. 31.8%; $p=0.039$). CDI recurrence was observed in 16.1% of the cases, with no significant difference between the two periods (19.2% vs. 11.6%; $p=0.528$).

Conclusions: The increase in CDI diagnoses during 2019-2024 is primarily attributed to the introduction of PCR as a new diagnostic tool, which allowed for more precise and timely identification of cases. The proportion of risk factors remained consistent across both periods, with no significant changes in the distribution of these factors. This suggests that the introduction of PCR and heightened clinical suspicion have been the key factors in the detection of new cases, rather than significant changes in traditional risk factors. Continued surveillance and prospective studies are essential to identifying underlying causes and improving prevention and treatment strategies.