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EDITORIAL

A never-ending story. *Clostridioides difficile*, one more postoperative factor to look out for[☆]



Un cuento de nunca acabar. *Clostridioides difficile*, un factor más a vigilar en el postoperatorio

The basic principle of surgery, whatever its indication, is to restore function, preventing to the maximum the development of complications, and in some cases, death. The maxim followed by surgeons in the performance of their procedures is “*primum non nocere*”. However, complications can develop in the postoperative period, most of which are inherent to the baseline status of the patient. Postoperative fever, postoperative pain, surgical wound infection, postoperative pneumonia, and thrombotic events are situations that surgeons try to prevent, being on the look-out for their manifestations, so there can be opportune detection and intervention. In other words, the concerns related to the surgical act are “a never-ending story”. Recently, a new condition has been added to the virtually interminable list: *Clostridioides difficile* (*C. difficile*) infection (CDI).¹

CDI is an emerging public health situation worldwide.^{2,3} That bacillus is the main cause of nosocomial diarrhea and its incidence has increased substantially over the past decades. Even though *C. difficile* can form part of the normal microbiota (asymptomatic colonization can be present in up to 15% of healthy volunteers), it can produce symptoms varying from mild diarrhea to toxic megacolon in immunocompromised patients or those with risk factors for the infection.⁴ Spores can be transmitted via the fecal–oral route or by contact with contaminated hands or surfaces. The risk factors for acquiring CDI may depend on the status of the host (comorbidities, immunosuppression), spore exposure (previous hospitalizations, residing in assisted-living facilities), and factors that alter the gut microbiota, such as antibiotic abuse, chronic proton pump inhibitor (PPI) use, and more recently, having undergone surgery.^{1,4,5}

Mexico has not been exempt from this emergent situation, illustrated by the fact that the number of articles on CDI has increased over the last 5 years. In addition, a first Mexican consensus on the prevention, diagnosis, and treatment of CDI was published.^{2,3} We also know (based on a retrospective multicenter study) that the number of cases in Mexico increased considerably (7-fold) between 2012 and 2015⁶ and that close to 11% of the cases evaluated at a tertiary care hospital center were community-acquired.⁷ Moreover, the prevalence of the hypervirulent strain (NAP1/BI/027) has been determined to vary from 28 to 91% of cases, as in other parts of the world.^{2,6,8,9}

In the present issue of the *Revista de Gastroenterología de México*, Morfin-Otero et al.¹⁰ evaluated the characteristics and factors associated with diarrhea secondary to CDI in a case-control study that included all the cases that presented with diarrhea at the surgery services of a tertiary care hospital center in Western Mexico. From a total of 424 patients with diarrhea at the surgery services, encompassing a 3-year period, 123 (29%) corresponded to CDI. That figure is very important, because for the first time, it establishes that one-third of nosocomial diarrheas in the surgery services could be prevented, given that they were cases of CDI. It is also important to emphasize that the majority of surgical patients with CDI belonged to the areas of neurosurgery, heart surgery, orthopedics, and general surgery. A total of 53% of the cases of CDI were associated with the hypervirulent strain and the presence of mucus in stools (odds ratio [OR] 1.5, $p=0.001$), fever (OR 1.4, $p=0.011$), leukocytes in stools (OR 3.2, $p\leq 0.001$), hospitalization within the past 12 weeks (OR 2.0, $p\leq 0.001$), and antibiotic use (OR 1.3, $p=0.023$), especially ceftriaxone (OR 1.4, $p=0.01$), were independent risk factors for the development of CDI.

As the authors state in the Discussion section, the prevalence and associated factors are similar to those reported internationally. There are numerous causes for a

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postoperative patient to be at greater risk for CDI and they include: a higher probability of being exposed to the indiscriminate use of antibiotics and medications that suppress gastric secretion (PPIs) and the presence of comorbidities or immunosuppression (diabetes, neoplasias, inflammatory bowel disease) in some patients. Factors that are preventable at all hospital units must also be considered, such as adequate surface cleansing and hand washing. They were not contemplated in the work discussed herein and could be considered study limitations. Another limitation was the fact that the authors only reported CDI prevalence by service and did not specify which type of surgery was most associated with CDI. For example, according to the updated guidelines of the World Society of Emergency Surgery (WSES), the risk is considered greater in amputation surgeries of the lower limbs, abdominal surgeries, esophagogastric surgeries, colectomies, and transplantations, whereas it is considered lower in gynecologic surgeries, endocrinologic surgeries, and appendectomies.¹ Other situations related to the postoperative period that can be considered risk factors for CDI, but were not contemplated in the present work, are nasogastric tube use¹¹ and obesity.¹²

The study by Morfín-Otero et al.¹⁰ showed that CDI was frequent in patients that underwent surgery and risk factors were clarified, but there are still crucial questions that need to be answered, such as what the real incidence of CDI in the surgical services in Mexico is. To answer that question, prospective studies guided by epidemiologic surveillance teams at each and every hospital unit performing surgeries are needed. As the authors elegantly comment in their Discussion section, the participation of surgical services is essential for implementing strategies to opportunely combat CDI and having it cease to be one more preoccupation for the surgeon during the postoperative period. How important should that be? In light of the results of the present study, I believe it is very relevant and deserving of immediate action. Otherwise, the preoccupation regarding the postoperative period, specifically in patients presenting with diarrhea, rather than being “a never-ending story”, will become one with “an unfortunate ending”, if we take into account that 5% of the cases of diarrhea due to CDI in the present case-control study died.

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Conflict of interest

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