



## ORIGINAL

# *Clostridium difficile* in the ICU: Study of the incidence, recurrence, clinical characteristics and complications in a University Hospital

S. Salva<sup>a</sup>, N. Duran<sup>a</sup>, V. Rodriguez<sup>b</sup>, L. Nieto<sup>b</sup>, J. Serra<sup>a</sup>, J. Rello<sup>c,\*</sup>, CRIPS Investigators<sup>◇</sup>

<sup>a</sup> Critical Care Department, Vall d'Hebron University Hospital, Barcelona, Spain

<sup>b</sup> Microbiology Department, Vall d'Hebron University Hospital, Barcelona, Spain

<sup>c</sup> Critical Care Department, Vall d'Hebron University Hospital, CIBERES & CRIPS, Universitat Autònoma de Barcelona, Barcelona, Spain

Received 5 December 2012; accepted 27 March 2013

Available online 14 June 2013

### KEYWORDS

*Clostridium difficile*;  
ICU;  
Recurrence;  
Lung transplant

### Abstract

**Objective:** Although several studies have established the association between antibiotics and *Clostridium difficile* infection (CDI), there is a lack of epidemiological studies on the incidence of CDI in European Intensive Care Units outside the context of infection outbreaks. The present study describes the incidence, patient characteristics, complications, and recurrence rates of CDI in a Spanish ICU.

**Design:** A retrospective study was carried out.

**Setting:** A clinical–surgical ICU with 34 beds, a tertiary referral hospital with 1400 beds.

**Patients:** All patients over 18 years of age admitted to the ICU from January 2010 to December 2011 with diarrhea for more than 48 h.

**Interventions:** None.

**Study variables:** Underlying diseases, risk factors, fever, leukocyte count, complications, recurrence of infection.

**Results:** A total of 1936 adult patients were admitted. Seven patients acquired CDI (0.36%), representing an infection rate of 3.1 per 10,000 bed-days and a cumulative incidence rate of 3.6 in two years. The mean age was 61 years. Six patients showed some degree of immunosuppression. The mean APACHE II score at ICU admission was 17 (IQR 13–24). Severe sepsis was reported in 5 cases of CDI, three of which presented shock and multiorgan dysfunction. Four patients presented recurrence of CDI during hospitalization. ICU admission was prolonged for a mean of 24 days (SD 17.8) after diagnosis.

**Conclusions:** Less than 1% of the patients admitted to a clinical–surgical ICU in a large teaching institution in Spain developed CDI. However, a high risk of recurrence/complications was associated with prolonged ICU stay.

© 2012 Elsevier España, S.L. and SEMICYUC. All rights reserved.

\* Corresponding author.

E-mail address: [jrello@crips.es](mailto:jrello@crips.es) (J. Rello).

◇ The Clinical Research/Innovation in Pneumonia & Sepsis group (CRIPS). List of CRIPS Investigators in detailed at [Appendix A](#).

**PALABRAS CLAVE**

*Clostridium difficile*;  
UCI;  
Recurrencia;  
Trasplante pulmonar

## ***Clostridium difficile* en UCI: estudio de la incidencia, recurrencias, características clínicas y complicaciones en un hospital universitario**

**Resumen**

**Objetivo:** El objetivo de este estudio es describir la incidencia, características de los pacientes, complicaciones y la recurrencia de infección por *Clostridium difficile* en una UCI de un hospital universitario en un período fuera de brote.

**Diseño:** Serie de casos.

**Ámbito:** UCI médico-quirúrgica de 34 camas en hospital de referencia de 1.400 camas.

**Pacientes o participantes:** Todo paciente mayor de 18 años ingresado en la UCI desde enero de 2010 hasta diciembre de 2011 que tuviese diarrea durante más de 48 h.

**Intervenciones:** Sin intervención.

**Variables de interés principales:** Enfermedades de base, factores de riesgo, recurrencia de infección.

**Resultados:** Un total de 1.936 pacientes fueron ingresados en el periodo de estudio, de los cuales 177 presentaron diarrea durante más de 48 h y 7 cumplieron criterios de infección por *Clostridium difficile* (0,36%). Una tasa de infección de 3,1 pacientes por cada 10.000 camas/día y una incidencia acumulada de  $3,6 \times 1.000$ , en 2 años. La edad media fue de 61 años. Seis mostraron algún grado de inmunosupresión. La media del score APACHE II al ingreso fue de 17. Cinco casos presentaron sepsis grave, 3 de los cuales tuvieron shock y disfunción multi-orgánica. Un paciente de los 7 (14%) falleció. Cuatro pacientes sufrieron recurrencia durante la hospitalización (57%). La estancia media se prolongó 24 días (DE 17,8) después del diagnóstico.

**Conclusiones:** Menos del 1% de los pacientes hospitalizados en una UCI médico-quirúrgica desarrollaron infección por *Clostridium difficile*. Sin embargo, se asoció a un alto grado de recurrencia/complicaciones y a una larga estancia en la UCI.

© 2012 Elsevier España, S.L. y SEMICYUC. Todos los derechos reservados.

**Introduction**

*Clostridium difficile* infection (CDI) is an important hospital-acquired (nosocomial) complication associated with the use of antibiotics. Some patients remain asymptomatic after exposure, while in others the disease can vary from mild diarrhea to fulminant colitis.<sup>1,2</sup> Colonization of the intestinal tract occurs via the feco-oral route by disruption of normal intestinal flora, especially related to the use of antibiotics, in immunosuppressed situations or related to the use of proton pump inhibitors. Incidence of diarrhea in hospitalized patients associated with CDI has increased fourfold from 1991 till 2002 rising from 3 to 12 per 1000 people and from 25 to 43 per 1000 people in 2003–2004. In previous studies, cases were found to be serious and refractory to therapy with significant rates of toxic megacolon requiring colectomy. Ten percent of cases required admission to an intensive care unit (ICU) and 2.5% required emergent colectomy. Mortality was 16%. The CDI increase was reported primarily in individuals over 65 years.<sup>3,4</sup> After an outbreak in Canada, there was an increase in the incidence, severity and mortality associated with CDI in North America and Europe which was attributed to the emergence of the new strain NAP1/B1/0.27. The virulence of this new strain was defined by: increased production of A and B toxins, fluoroquinolone resistance and production of binary toxin.<sup>5,6</sup> Antibiotic use is the most widely recognized and modifiable risk factor for CDI. Other risk factors include hospitalization, advanced age and severe underlying disease.<sup>7</sup> Besides, gastric acid suppression, enteral feeding, gastrointestinal surgery, cancer chemotherapy and hematopoietic stem cell transplant could

be considered as risk features too. Nevertheless, CDI can occur without the presence of risk factors.

Although several studies have established the association between antibiotics and CDI we lack of epidemiological studies that determine the incidence or the prevalence of CDI in European Intensive Care Units except during outbreaks and little is known about the real associated risk factors. Data on recurrence or relapse are also limited. The main objective of the study was to establish the incidence of *C. difficile* infection in a medical–surgical Intensive Care Unit, outside an epidemic outbreak period. Secondary objectives were to determine patient characteristics for this type of infection, to document complications, to identify the treatments used and to record the recurrences.

**Patients and methods**

This study was conducted at Vall d'Hebron University Hospital, an urban tertiary referral academic center (1400 beds) in Barcelona, Spain. We included all patients admitted to the Medical/Surgical ICU (34 beds) between January 2010 and December 2011. The Vall d'Hebron University Hospital Clinical Research Ethics Committee approved the study, and the need for informed consent was waived (Number 54/2012). This retrospective study identifying ICU patients with CDI was based on information from the microbiology laboratory electronic database and a retrospective review of medical charts. All patients over 18 years old were included. Data were recorded on demographic characteristics of all patients and clinical manifestations for CDI.

Download English Version:

<https://daneshyari.com/en/article/3112709>

Download Persian Version:

<https://daneshyari.com/article/3112709>

[Daneshyari.com](https://daneshyari.com)