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# Left-sided infective endocarditis in patients with liver cirrhosis



J. Ruiz-Morales <sup>a,\*</sup>, R. Ivanova-Georgieva <sup>b</sup>,  
N. Fernández-Hidalgo <sup>c</sup>, E. García-Cabrera <sup>d</sup>, Jose M. Miró <sup>e</sup>,  
P. Muñoz <sup>f</sup>, B. Almirante <sup>c</sup>, A. Plata-Ciésar <sup>g</sup>,  
V. González-Ramallo <sup>h</sup>, J. Gálvez-Acebal <sup>i</sup>, M.C. Fariñas <sup>j</sup>,  
J.M. Bravo-Ferrer <sup>k</sup>, M.A. Goenaga-Sánchez <sup>l</sup>,  
C. Hidalgo-Tenorio <sup>m</sup>, J. Goikoetxea-Agirre <sup>n</sup>,  
A. de Alarcón-González <sup>d,\*\*</sup>, and the Spanish Collaboration on  
Endocarditis Group-Grupo de Apoyo al Manejo de la Endocarditis  
en España (GAMES) <sup>o</sup>, and the Spanish Network for Research in  
Infectious Diseases (REIPI)

<sup>a</sup> UGC de Enfermedades Infecciosas, Microbiología Clínica y Medicina Preventiva, Hospital Clínico Universitario Virgen de la Victoria, Málaga, Spain

<sup>b</sup> Servicio de Medicina Interna, Hospital Clínico Universitario Virgen de la Victoria, Málaga, Spain

<sup>c</sup> Servicio de Enfermedades Infecciosas, Hospital Universitario Vall d'Hebron, Universitat Autònoma de Barcelona, Barcelona, Spain

<sup>d</sup> UGC de Enfermedades Infecciosas, Microbiología Clínica y Medicina Preventiva, Hospital Universitario Virgen del Rocío, Sevilla, Spain

<sup>e</sup> Hospital Clinic – IDIBAPS, Servicio de Enfermedades Infecciosas y Microbiología, Universidad de Barcelona, Barcelona, Spain

<sup>f</sup> Servicio de Microbiología y Enfermedades infecciosas, H. Universitario Gregorio Marañón, Universidad Complutense de Madrid, Madrid, Spain

**Abbreviations:** CNS, Coagulase-negative Staphylococcal; DD, diastolic dysfunction; EF, ejection fraction; LsIE, left-sided infective endocarditis; LC, liver cirrhosis; SA, *Staphylococcus aureus*; TEE, transesophageal echocardiography; TTE, transthoracic echocardiography.

\* Corresponding author. Unidad de Gestión Clínica de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospital Clínico Universitario Virgen de la Victoria, Campus Teatinos s/n. 29010, Málaga, Spain (Infectious Diseases, Microbiology Clinical Unit and Preventive Medicine, University Hospital Virgen de la Victoria, 29010, Malaga, Spain).

\*\* Corresponding author. Unidad de Gestión Clínica de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospital Universitario Virgen del Rocío, Av. Manuel Siurot, s/n, 41013, Sevilla, Spain. Tel.: +34 955 01 20 00.

**E-mail addresses:** [mjruizm@gmail.com](mailto:mjruizm@gmail.com) (J. Ruiz-Morales), [drradabg@yahoo.com](mailto:drradabg@yahoo.com), [rivang2012@gmail.com](mailto:rivang2012@gmail.com) (R. Ivanova-Georgieva), [nufernan@gmail.com](mailto:nufernan@gmail.com) (N. Fernández-Hidalgo), [emiliogcabrera@gmail.com](mailto:emiliogcabrera@gmail.com) (E. García-Cabrera), [jmmiro@ub.edu](mailto:jmmiro@ub.edu) (J.M. Miró), [pmunoz@micro.hggm.es](mailto:pmunoz@micro.hggm.es) (P. Muñoz), [benitoalmirante@gmail.com](mailto:benitoalmirante@gmail.com) (B. Almirante), [nonispc@hotmail.com](mailto:nonispc@hotmail.com) (A. Plata-Ciésar), [vgramallo@orange.es](mailto:vgramallo@orange.es) (V. González-Ramallo), [jga@us.es](mailto:jga@us.es) (J. Gálvez-Acebal), [mcfarinas@humv.es](mailto:mcfarinas@humv.es) (M.C. Fariñas), [josem.bravoferrer.acosta@hotmail.com](mailto:josem.bravoferrer.acosta@hotmail.com) (J. M. Bravo-Ferrer), [goenagasanchez@gmail.com](mailto:goenagasanchez@gmail.com) (M.A. Goenaga-Sánchez), [chidalgo72@gmail.com](mailto:chidalgo72@gmail.com) (C. Hidalgo-Tenorio), [anejosune.goikoetxeaagirre@osakidetza.net](mailto:anejosune.goikoetxeaagirre@osakidetza.net) (J. Goikoetxea-Agirre), [aa2406ge@yahoo.es](mailto:aa2406ge@yahoo.es), [aristidesdealarcon@gmail.com](mailto:aristidesdealarcon@gmail.com) (A. de Alarcón-González).

<sup>o</sup> See Appendix 1.

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<sup>g</sup> UGC de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospital General Universitario, Málaga, Spain

<sup>h</sup> Unidad de Hospitalización a Domicilio, H. Universitario Gregorio Marañón, Madrid, Spain

<sup>i</sup> UGC de Enfermedades Infecciosas, Microbiología Clínica y Medicina Preventiva, Hospital Universitario Virgen Macarena, Sevilla, Spain

<sup>j</sup> Servicio de Enfermedades Infecciosas, Hospital Universitario Marqués de Valdecilla, Universidad de Cantabria, Santander, Spain

<sup>k</sup> Servicio de Enfermedades Infecciosas, Complejo Hospitalario Universitario Juan Canalejo, A Coruña, Spain

<sup>l</sup> Servicio de Enfermedades Infecciosas, Hospital Universitario Donosti, San Sebastián, Spain

<sup>m</sup> Servicio de Enfermedades Infecciosas, Hospital Universitario Virgen de las Nieves, Granada, Spain

<sup>n</sup> Servicio de Enfermedades Infecciosas, Hospital Universitario Cruces, Bilbao, Spain

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## KEYWORDS

Liver cirrhosis;  
Left-sided infectious  
endocarditis;  
Risk stratification;  
Prognostic;  
Surgery

**Summary Objective:** To evaluate the course of left-sided infective endocarditis (LsIE) in patients with liver cirrhosis (LC) analyzing its influence on mortality and the impact of surgery. **Methods:** Prospective cohort study, conducted from 1984 to 2013 in 26 Spanish hospitals.

**Results:** A total of 3.136 patients with LsIE were enrolled and 308 had LC: 151 Child–Pugh A, 103 B, 34 C and 20 were excluded because of unknown stage. Mortality was significantly higher in the patients with LsIE and LC (42.5% vs. 28.4%;  $p < 0.01$ ) and this condition was in general an independent worse factor for outcome (HR 1.51, 95% CI: 1.23–1.85;  $p < 0.001$ ). However, patients in stage A had similar mortality to patients without cirrhosis (31.8% vs. 28.4%  $p = \text{NS}$ ) and in this stage heart surgery had a protective effect (28% in operated patients vs. 60% in non-operated when it was indicated). Mortality was significantly higher in stages B (52.4%) and C (52.9%) and the prognosis was better for patients in stage B who underwent surgery immediately (mortality 50%) compared to those where surgery was delayed (58%) or not performed (74%). Only one patient in stage C underwent surgery.

**Conclusions:** Patients with liver cirrhosis and infective endocarditis have a poorer prognosis only in stages B and C. Early surgery must be performed in stages A and although in selected patients in stage B when indicated.

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## Introduction

Cirrhotic patients, particularly those with advanced disease, have leukocyte dysfunction and phagocytic defects that make them prone to focal and systemic bacterial infections<sup>1,2</sup> that can affect their prognosis. These infections frequently produce bacteremias which can develop to endocarditis, but to date, the incidence and prognostic implications of left-sided infective endocarditis (LsIE) in patients with liver cirrhosis (LC) is not well known.<sup>3</sup> Prognosis and perioperative mortality in patients with LC varies depending on the functional degradation of the liver measured by the Child–Pugh scale or the MELD (Model for End-Stage Liver Disease) score, that is an objective scale for predicting mortality risk in abdominal and thoracic surgery, including cardiac and aortic repair surgery.<sup>4–15</sup> The European System for Cardiac Operative Risk Evaluation (EuroScore) is generally used to estimate perioperative risk in patients undergoing cardiac surgery,<sup>16–18</sup> including infective endocarditis.<sup>19,20</sup> However, this scale does not consider LC a risk factor, and cardiac surgery is likely to be delayed or not performed due to the high risk that this

procedure involves for these patients (encephalopathy, bleeding, ischemic hepatic damage...).

The aim of this study was to evaluate the course of heart valve infection in cirrhotic patients and to determine the factors related with mortality. Similarly, applying scales (Child–Pugh, MELD and EuroScore), we analyze if LC and LsIE patients would benefit from heart surgery, when needed.

## Methods and study design

### Study population

This is a multicenter, observational, prospective study performed from 1984 to 2013 in 26 hospitals in Spain grouped in three cohorts. Consecutive adult patients ( $\geq 18$  years) with IE were recruited and their data were analyzed. The national database GAMES<sup>20</sup> has recorded cases of IE in 25 hospitals in Spain since 2008 (24 have a Cardiac Surgery Unit). The database GAEL-SAEI<sup>21</sup> has recorded cases of IE in seven hospitals of Andalusia (South

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