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Outpatient parenteral antimicrobial therapy for native valve infective endocarditis in Hospital at Home units in Spain. Identification of risk factors for failure and 30 days readmission

Victor J. González-Ramallo¹, Manuel Mirón-Rubio², Maria Eugenia Garcia-Leoni¹, Antonio Vena^{*3}, Abel Mujal⁴, Josep Oriol Estrada⁵, Patricia Munoz³

¹*Hospital at Home Unit, Department of Internal Medicine, Gregorio Marañón Hospital*

²*Hospital at Home Unit, Department of Internal Medicine, Torrejón Hospital*

³*Hospital General Universitario Gregorio Marañón; Clinical Microbiology and Infectious Diseases*

⁴*Sabadell Hospital. Corporació Sanitària Parc Taulí; Hospital at Home Unit, Department of Internal Medicine*

⁵*Northern Metropolitan Area, Catalan Health Institute (Ics)*

Background: Infective endocarditis (IE) is a severe infection with high mortality that required extended intravenous antimicrobial treatment. Since 1970' there are growing experience to complete antimicrobial treatment by outpatient parenteral antimicrobial therapy (OPAT). In Spain this procedure is usually performed in Hospital at Home Unit (HHU), a multidisciplinary team that visits patients daily in their homes. The risk factors associated with bad outcome of IE treated partially at home remain not totally clear. The objectives of our study are: to describe the features of cases of native valve IE treated in HHU and to identify the risk factors associated with OPAT failure and 30 days hospital readmission.

Material/methods: We studied native valve IE cases treated in Hospital at Home units in Spain included in an online multicentric general OPAT database during four years. We registered: age, sex, comorbidity, aetiology, acquisition, length of hospital and HHU stay, antimicrobials, infusion device and type of catheter used, and outcome. We analysed risk factors for OPAT failure by univariate analysis. OPAT failure was defined as unplanned readmission or dead at home. We also registered readmission in hospital during the 30 days after discharge from HHU and compared his features with

cases without readmission.

Results: 86 (64%) male; age 65.4 (SD 19.7; range 13-98 years); Charlson index 2.37 (SD 2.3). Microorganism more frequent isolated were: *Streptococcus* 55 (*viridans* group 28, *agalactiae* 3), *Enterococcus faecalis* 18, *Staphylococcus aureus* 17 and *Staphylococcus* coagulase negative 12 (*S. epidermidis* 9). IE was nosocomial in 16 cases (12%). There were 165 parenteral antimicrobial agents prescribed, so that in 32 patients (24%) more than one antimicrobial was used. The antibiotics more frequent prescribed were: ceftriaxone (77), daptomycin (34), gentamicin (13), cloxacillin (10), ampicillin (9) and vancomycin (5). Only in 3 cases teicoplanin were used. Electronic pump and elastomeric device were used in 52 (31%) treatments, whereas self-administration in 24 patients (14%). The venous lines were: peripheral catheter 80, peripheral inserted central catheter 27 and central catheter 18. During the OPAT period 16 patients (12%) return to hospital and one patient died at home. There were 9 hospital readmissions during the 30 days after discharge from HHU. The factors associated with OPAT failure were *S. aureus* ($p = 0.02$) and nosocomial acquisition ($p < 0.001$). The factors associated with 30 days readmission were *S. aureus* ($p = 0.002$) and Charlson index ($p = 0.049$).

Conclusions: OPAT administered by HHU is an effective and safe tool in IE treatment. *Staphylococcus aureus* aetiology and nosocomial acquisition are risk factors for bad outcome in native valve IE treated as OPAT. High comorbidity measured as Charlson index correlated with early hospital readmission after HHU discharge.