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Gram-negative bacterial endocarditis: report of 24 patients with Enterobacteriaceae infective endocarditis in Rio de Janeiro, Brazil

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Background: Gram-positive bacteria remain as the predominant pathogen for bacterial endocarditis infection, accounting for nearly 80% of cases. Non-HACEK Gram-negative endocarditis are relatively infrequent. The aim of this study is to report the epidemiology, risk factors and clinical characteristics of 24 patients with infective endocarditis caused by Enterobacteriaceae.

Material/methods: It was an observational and retrospective study of infective endocarditis (IE). The Infectious Diseases Department at two Brazilian tertiary referral centers analyzed 24 patients who were diagnosed with Enterobacteriaceae endocarditis (EE). The diagnosis of IE was based on the modified Duke criteria. Patients were classified into two groups: Community Associated Infective Endocarditis (CAIE) and Health Associated Infective Endocarditis (HAIE). We recruited patients from the Hospital Universitário Clementino Fraga Filho (HUCFF-UFRJ) since 1975 and Hospital Universitário Pedro Ernesto (HUPE) since 2009. From these two teaching hospitals, records of 24 patients with IE were analyzed. All statistical analysis was performed by using Stata® program (version 9.2 StataCorp®).

Results: The 24 patients diagnosed with Enterobacteriaceae Endocarditis (EE) came from two Brazilian university hospitals, 19 belonged to the HUCFF and 5 to HUPE. The mean ages were 50.8 ± 5.2 and 13 (54.2%) patients were male. The mean time between the onset of symptoms and admission at hospitals was 40 ± 10.9 days. The most relevant clinical aspect was fever 20 (83.3%) and vascular phenomenon was physically observed in 9 (37.5%). Two-dimensional transthoracic or transesophageal echocardiography of 18 (75%) patients revealed a mean vegetation size of 0.9 ± 0.3 cm. Prior structural heart disease was observed in 17 (70.8%) patients. A total of 9 (37.5%) cases were CAIE and the other 15 (62.5%) were HAIE caused by Enterobacteriaceae. The most prevalent bacteria causing CAIE was 5 (62.5%) *E.coli* and HAIE was 6 (37.5%) *K.pneumoniae*. Native endocarditis developed in 17 (70.8%) patients and the mitral valve was the most commonly affected 11 (45.8%) patients. The main identified source of EE was 7 (31.8%) urinary tract infections. The most frequent clinical complications of EE were 12 (54.5%) heart failure, 4 (16.6%) acute kidney injury and 4 (16.6%) cardiac abscess. In our analysis, patients with infective endocarditis due to Enterobacteriaceae had a higher risk of death (ODD 2.66; 95% CI:1.17-6.03; p = 0.015).

Conclusions: The principal agent causing EE was *K.pneumoniae. E.coli* was the principal agent in CAIE while *K.pneumoniae* the etiologic main agent of HAIE. In this retrospective study of 24 EE patients, 37.5% developed CAIE and 62.5% HAIE. The most frequent clinical complications of EE were heart failure, acute kidney injury and cardiac abscess. The main identified source of EE in this cohort was urinary tract infection.