

Renal Function Impairment in Patients with Infective Endocarditis (IE). The Key is Previous Renal Function

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BACKGROUND: Renal dysfunction is common in patients with infective endocarditis and underlying sepsis, exposure to antibiotics and other nephrotoxic agents may be contributory. We sought to identify the rate and risk factors for acute kidney dysfunction (AKD), the role of nephrotoxic antibiotics and its relationship with previous kidney function in a large national endocarditis cohort (GAMES).

METHODS: Prospective study of 1000 consecutive patients with IE from 2008-2011 conducted in 26 Spanish centers. Duke's criteria for endocarditis were used. Patients on chronic dialysis or with IE caused by fungi were excluded. Previous chronic kidney dysfunction (CKD) was defined as serum creatinine above 1.4 mg/dL. Nephrotoxicity was defined as an increase of 25% over baseline in creatinine clearance or creatinine levels above 1.4 mg/dL.

RESULTS: 925 patients were included. Median age was 68 years (IQR, 55-76), 194 (21%) had CKD before the IE episode and Gram-positive microorganisms accounted for 82.2% of the episodes. Heart surgery was performed in 44.7%, and in-hospital mortality was 26.8%.

AKD complicated 367 (39.7%) of the IE episodes. Risk factors for AKD included septic shock, heart failure, *S. aureus* infection and Charlson's comorbidity index. AKD was significantly more frequent in patients with previous renal function impairment (64% vs 33.2%; $p < 0.01$). When comparing the use of nephrotoxic antimicrobials, such as vancomycin (VAN) or gentamicin (GEN), in patients with and without previous CKD shows: VAN use (34.5% vs 34.1%; NS); GEN use (45% vs 58%, 0.001); VAN + GEN use (17% vs 21.5%, 0.1); days of VAN (7 vs 11, $p = 0.02$); days of GEN (12 vs 13, 0.3); median VAN serum level (15.5 vs 13; 0.01). Multivariate analysis demonstrated that the use of VAN and/or GEN was independently associated with AKD only in patients without previous CKD (OR 1.84; 95%CI: 1.2-2.8; $p < 0.005$).

CONCLUSION: AKD occurs in almost 40% of patients with IE and this complication is more common in patients with previous CKD. However, the use of nephrotoxic antimicrobials induces more AKD in patients without previous renal impairment, probably because more prolonged courses are prescribed in this population and higher serum levels are maintained. We conclude that careful therapeutic monitoring is also needed in IE patients without previous CKD if nephrotoxic agents are used.