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Cytomegalovirus Serostatus and DNAemia After Heart Transplantation: A 10-Year Single-Center Experience

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Introduction: Cytomegalovirus (CMV) remains an important opportunistic pathogen after heart transplantation (HT). Donor-recipient (D/R) CMV serostatus is a major determinant of post-transplant infection risk.[1-4] Regional differences in CMV seroprevalence may influence the distribution of risk groups and patterns of post-transplant infection.

Patients and Methods: We retrospectively analyzed 190 HT recipients treated at University Hospital Centre Zagreb between January 2014 and December 2023. We assessed baseline donor and recipient CMV serostatus, the distribution of D/R serostatus combinations, and the frequency and clinical presentation of CMV DNAemia. CMV polymerase chain reaction (PCR) monitoring data were available from November 2015 onward. Serostatus distributions were descriptively compared with published international HT cohorts.

Results: CMV seroprevalence was 85.2% among recipients and 73.5% among donors. Among 184 patients with available D/R serostatus, D+/R+ was the predominant combination (116/184, 63.0%), whereas the high-risk D+/R− combination accounted for only 19/184 patients (10.3%). D−/R+ and D−/R− combinations represented 22.8% and 3.8%, respectively. Compared with several published Western European and North American HT cohorts, our population showed a higher proportion of D+/R+ and a lower proportion of D+/R− recipients (**Table 1**). Among 124 patients with available PCR and D/R serostatus data, 37 (29.8%) had quantifiable CMV DNAemia, while an additional 31 (25.0%) had detectable DNAemia below the lower limit of quantification. Quantifiable DNAemia was most frequent in D+/R− recipients (8/14, 57.1%). Most patients with quantifiable DNAemia were asymptomatic (31/37, 83.8%), while six (16.2%) developed symptomatic CMV disease. No cases of refractory or resistant CMV infection were detected.

Conclusion: Our HT cohort was characterized by high CMV seroprevalence and a relatively low proportion of high-risk D+/R− recipients compared with many Western European and North American transplant cohorts. Despite frequent CMV DNAemia, symptomatic disease was uncommon, and no refractory or resistant CMV infections were detected. These findings highlight the importance of regional CMV epidemiology in post-transplant risk stratification and interpretation of clinical outcomes.

TABLE 1. Donor-recipient cytomegalovirus serostatus distribution across heart transplant cohorts.

Cohort (reference)	N	D+/R+	D+/R−	D−/R+	D−/R−
Croatia (UHC Zagreb)	184	63.0	10.3	22.8	3.8
Spain (Delgado et al.[1])	199	60.0	14.5	22.0	3.5
Germany (Immohr et al.[2])	174	31.6	14.9	31.0	22.4
USA (Suarez-Pierre et al.[3])	21,878	37.9	23.9	22.6	15.6
Canada (Mabilangan et al.[4])	620	29.8	19.8	30.2	20.2

* Comparisons are descriptive and unajusted.
D/R = donor-recipient cytomegalovirus serostatus

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