GENE EXPRESSION PROFILING IN LOW-RISK CARDIAC TRANSPLANT PATIENTS: A SINGLE-CENTER EXPERIENCE

ACC Poster Contributions
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Background: Gene expression profiling (GEP) of mononuclear peripheral blood cells is being proposed as a non-invasive test to exclude patients with acute cellular rejection after heart transplant. Recent reports suggest that GEP could be used as a substitute of Endomyocardial Biopsy (EMB) to monitor low risk patients. However, concerns regarding the validity of the results have been raised.

Methods: We retrospectively analyzed the temporal variations of GEP and its correlation with EMB in heart transplant recipients. A total of 276 patients who were followed at our institution and had AlloMap scores from March 2006 to April 2010 were analyzed. A total of 1242 biopsies and 926 AlloMap tests were obtained.

Results: At the time of first AlloMap test the temporal distribution of patients was: 0-6 months 15.2%, 7-12 months 12.0%, 13-24 months 7.2%, 25-60 months 19.2%, 61-120 months 28.3% and >120 months 18.1%. There were 68 episodes of rejection >2R detected by EMB, 55.9 % and 78% occurred in the first 6 and 12 months post transplant, respectively. The frequency of moderate rejection decreased progressively after 1 year post transplant, with a prevalence of 5.2%, 2.8%, 1.9%, 0% for 1-2 years, 3-5 years, 6-10 years and >10 years, respectively. No episodes of rejection occurred after 10 years. There were 284 AlloMap scores higher than 34. Of these, only 4 lead to the performance of EMB ahead of the schedule. There were 197 biopsies with corresponding AlloMap scores in patients >6 months after heart transplantation, with 7 episodes of >2R rejection. Considering 34 of AlloMap score as the threshold for detecting >2R rejection, the contingency table showed a sensitivity of 29%, specificity of 72%, positive predictive value of 4%, negative predictive value of 97%. Prevalence of >2R rejection was 3.6%.

Conclusion: GEP has been postulated as an alternative to EMB for monitoring of significant cellular rejection in heart transplant patients. This has been based on the high negative predictive value which could exclude the presence of rejection in a given individual. Data from this study further support the fact that the negative predictive value of this test is mainly due to the very low prevalence of rejection in low risk patients.