Monoclonal component and Epstein Barr virus infection outcome in pediatric liver transplant recipients

THE CHILDREN'S MEMORIAL HEALTH INSTITUTE

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INTRODUCTION AND PURPOSE

Pediatric liver transplant (LTx) patients (pts) are at particular risk for developing EBV related post-transplant lymphoproliferative disorders (PTLD) following administration of immunosuppressive therapy. PTLD is heterogenous group of lymphoproliferations ranging from polyclonal lymphoproliferation to monoclanal malignancies. The prognosis in PTLD pts depends on early diagnosis and timely therapy. The risk of PTLD is higher in pts with high viremia. However, EBV load testing alone, has insufficient specificity for PTLD identification, thus additional monitoring with host immune component has been proposed to overcome this limitation. EBV-induced cloanl B-cell outgrowth can be determined by evaluation of monoclonal component (MC) in serum.

The aim of this study was to assess the MC presence in relation to EBV infection outcome, including CHVL and PTLD development in pediatric liver transplant recipients.

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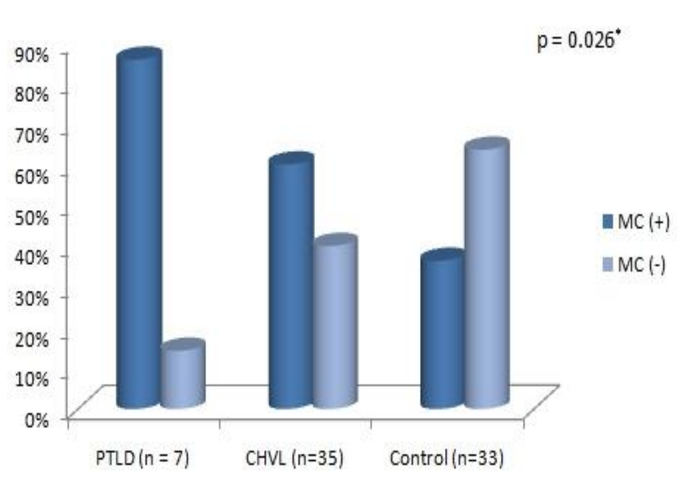

Fig.1. Association between Monoclonal Component (MC) -status and EBV infection outcome durinhg 1st year post-LTx.
*Chi^2 = 7.31; df = 2; p = 0.026

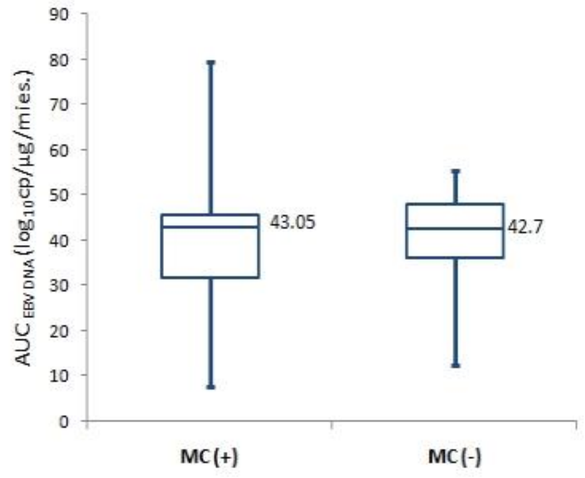

Fig.2. No relation was found between MC -status and EBV DNAemia level post-LTx.

MATERIAL AND METHODS

Seventy five children after LTx (median age at LTx = 0.9 y, range: 0.4 – 14.3 y) with minimum 12-month follow-up were included in this study. PTLD development was histologically confirmed in 7 pts. A group of 35 pts with CHVL (i.e. the presence of EBV DNA level > 4000 copies/ µg DNA in > 60% of blood samples for min. 6 months) was selected. The remaining 33 pts with moderate or undetectable viremia consisted a control group. MC was assessed by immunofixation electrophoresis (Hydragel Double K20) in multiple blood samples collected at different time points during post-transplant checkups. Longitudinal data such as EBV DNA load and immunosuppression (tacrolimus) level were expressed as the average area under the curve (AUC).

RESULTS

MC were detected in 86% (6/7) pts with PTLD, 60% (21/35) CHVL-carriers and in 36% (12/33) controls. There was significant association between MC and EBV infection outcome (p = 0.026; Fig.1). There was no correlation between MC-positivity and viremia level over first year after LTx (Fig. 2), however the presence of MC in serum was associated with increased risk (OR = 5.2, 95% CI:1.4-19.7; p = 0.007, corrected for recipient/donor EBV mismatch before LTx) for EBV DNA*emia* development during the first 12-months after LTx.

CONCLUSION

Assessment of MC together with EBV DNA load monitoring might be beneficial in children after LTx allowing early implementation of suitable preemptive therapy.