Phenotype and TCR-gamma gene rearrangements in a Malaysian cohort of T-cell leukaemia/lymphoma cases

ABSTRACT

T cells undergo a series of complex phenotypic changes before achieving maturation. Discrete stages of T-cell differentiation are simplified to four stages (pro-, pre-, cortical and mature-T cell) and used in the classification of T-cell leukaemia. HLA-DR has been reported to be expressed in immature T-cell acute lymphoblastic leukemia (ALL) and also confer a poorer treatment outcome. Simultaneously, the genotype goes through distinct pattern changes due to rearrangement of T-cell receptor (TCR) genes. TCR gene rearrangement is important in the diagnosis of clonality and used as markers to detect minimal residual disease in lymphoproliferative disorders. We identified a subset within Pro-T and Pre-T cell cases distinguished by the expression of HLA-DR. These subgroups appeared to be more immature as rearrangement of the TCR-gamma gene was either at germline or involved only the first constant region (C1) unlike a more rearranged pattern in the HLA-DR-subgroups. We also observed a higher incidence of mediastinal mass (67%) in the HLA-DR-subgroup in the Pre-T stage. These characteristics may be useful as markers to further refine staging of T-cell ALL and determine prognosis.

Keyword: T-cell ALL; HLA-DR; T-cell receptor; Immunophenotyping; Gene rearrangement.