Adult Thymus: A Forgotten Jail for Autoreactive T Cells

Thymus is regarded as a fundamental organ providing space for T lymphocyte maturation and development. It is commonly believed that over 90% of T cell precursors migrating to thymus from bone marrow undergo the process of apoptosis. This mandatory event in thymus is explained by the fact that T cell receptor gene rearrangement is taken place randomly. Therefore, it is expected that a wide array of autoreactive T cell clones are generated during intra-thymic events. On the other hand, thymus physiological function is thought to be limited up to early adulthood as the course of thymus degeneration is started immediately after puberty.

The association of autoimmune diseases with thymoma is well recognized, particularly the frequent association of thymoma with myasthenia gravis in which thymus cellularity is somehow indistinguishable from that of the secondary lymphoid organs. Presentation of a 40 year old woman with multiple autoimmune diseases and thymoma (Ghayumi SMA, Current Issue: *IJI*; **2(1)**: 63-65) points to important but silence functions of thymus in adulthood. Based on the observation upon this case, it is postulated that although the function of thymus for maturation of T cell may be halted after puberty, the thymus gland my serve as a place to preserve and keep captured the unwanted and deadly autoreactive T cell repertoire for the whole life. With this understanding, one can assume that any insult, proliferation or malignancies initiated anytime in thymus during the life may provide a chance of reactivation of the arrested and unwanted lymphocytes. Of great importance, a neoplastic transformation such as thymoma may trigger a break in the walls of the gland which had been surrounded the self-specific unwanted autoreactve inmate T cells. As a result, the release of such deadly autoreactive T cells may contribute to the process and the initiation of the autoimmune diseases in adult. To gain support for this postulation, the cellularity, structural changes and molecular events within the thymus of patients with major autoimmune diseases should be revisited.

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