

Epstein-Barr virus infection in patients with autoimmune thyroid disease

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Context

EBV's infection affects about 90-95% of adults. After acute infection stays as a result of latent infection. It is certain that latent infection is associated with lymphomas and cancers. There is also a hypothesis that past EBV infection can also lead to some allergic and autoimmune diseases.

Objective

Epstein-Barr virus may play role in development of autoimmune diseases because of the ability to modify the host immune response and lifetime presence in the body. Epstein-Barr virus can be considered as a contributory factor for the development of autoimmune thyroid diseases. It can also be presumed that in genetically susceptible patients, EBV-infected autoreactive B-cells seed the thyroid gland, produce autoantibodies, and send co-stimulatory signals to autoreactive T-cells.

Methods

Immunohistochemical reactions were performed with Anti-EBV Nuclear Antigen (EBNA), Anti-EBV Latent Membrane Protein 1 (LMP-1), and Anti-EBV viral capsid antigen.

Patients

Surgical specimens of Hashimoto's diseases were obtained from 21 patients. As a control, nodular goiters were obtained from 26 subjects. Inclusion criteria contained: (1) Hashimoto's diseases confirmed histologically and serologically; (2) qualification for a surgery; (3) adults; (4) agreed consciously and voluntarily. Exclusion criteria were as follows: (1) acute phase of the disease; (2) acute disease; (3) active cancer; (4) pregnancy; (5) age under 18 year old; (6) lack of consent.

Results

Immunohistological examination of both Hashimoto's diseases and nodular goiters revealed lack of positive staining of Epstein-Barr's capsid protein in all studied patients. Unlike above molecules, positive immunohistochemical reaction for EBNA expression was observed both in the Hashimoto's disease and the Control group. Also positive immunohistochemical reaction for LMP-1 expression was observed both in the Hashimoto's disease and the Control. However, the EBNA expression was significantly higher in the Hashimoto group as compared with the control (2.8 ± 0.4 vs. 2.1 ± 0.3 ; 95% CI 0.4 – 0.9; $P < 0.001$). Similarly, LMP-1 expression was significantly higher in the Hashimoto than in the Control (2.9 ± 0.3 vs. 2.1 ± 0.6 ; 95% CI, 0.5 – 0.9; $P < 0.001$).

Conclusion

Our study supports the hypothesis that there is relationship between latent EBV infection and Hashimoto's diseases. However, further studies are needed to explain the role of EBV infection in the development of autoimmune thyroid disorders.

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