



HLA-DQA1 and -DQB1 Alleles as Risk Factors for Acute Lymphoblastic Leukemia

ARTICLE INFO

Article Type

Original Research

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How to cite this article

Abdul-Rahman M T, Al-Ammar N S, Kreyenberg H. HLA-DQA1 and -DQB1 Alleles as Risk Factors for Acute Lymphoblastic Leukemia. Iranian Journal of War & Public Health. 2022;14(2):189-195.

ABSTRACT

Aims The link between Acute Lymphoblastic Leukemia (ALL) susceptibility to Human Leukocyte Antigen (HLA) may reveal information about the development of leukemia in combination with other risk factors. This study aimed to compare the most frequent -DQA1 and -DQB1 alleles in ALL patients with healthy individuals.

Materials & Methods In this case-control study conducted during 2020-2022, 50 children with ALL aged between 1-15 years and 50 sex and age-matched controls were investigated. Patients were diagnosed by a specialist physician in the Oncology Unit of Basrah Children's Hospital, Iraq. Blood samples were collected from patients and controls for DNA extraction and further work with HLA-DQA1 and -DQB1 genotyping and sequencing.

Findings Out of 50 patients with ALL, the highest percentage was B-ALL (92.0%) and the lowest percentage was T-ALL (8.0%). Two alleles of DQA1 including the 0201 allele and 040101 allele showed high frequency. One allele among HLA-DQA1 alleles appeared in IMTG/HLA as a new variant (03*new). Regarding DQB1, two alleles showed significant association with ALL but in the opposite way. The allele 030201 showed high frequency (33.33%) in controls, while 060301 indicated high frequency (20%) in ALL patients. Among the results of DQB1, two alleles showed new variants and were present in both patients and controls (03*new and 06*new).

Conclusion By The HLA-DQA1 alleles (0201 and 03*new) and the HLA-DQB1 allele (060301) have a high frequency in ALL Patients. Also, new variants have appeared in all patients and controls during HLA-DQB1 typing (03*new and 06*new).

Keywords Acute Lymphoblastic Leukemia; HLA G Antigens; HLA-DQA1; HLA-DQB1; Iraq

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Article History

Received: April 21, 2022

Accepted: June 10, 2022

ePublished: May 30, 2022

CITATION LINKS

[1] Perspectives on the causes of childhood ... [2] Infection, immune responses and the aetiology of childhood ... [3] Genetic variants in HLA-DP/DQ contribute to risk of acute myeloid leukemia ... [4] Gene map of the extended human ... [5] A high-resolution survey of deletion polymorphism ... [6] Escape of human solid tumors ... [7] Functional epistasis on a common ... [8] Genetic variation in the extended major ... [9] The human major histocompatibility complex ... [10] Association of HLA alleles with ... [11] HLA-DQA1 and HLA-DQB1 genotyping among ... [12] HLA-B*40 allele plays a role in development ... [13] Genomics of acute myeloid ... [14] Identification of new markers discriminating between myeloid and lymphoid ... [15] Acute leukemias of ambiguous ... [16] Going back to Class I: MHC and Immunotherapies for childhood ... [17] Study on the association of the polymorphism ... [18] High expression of HLA-DQA1 predicts poor ... [19] The frequency of HLA class I and II alleles in Turkish childhood acute ... [20] Frequencies of HLA-DRB1 in Iranian normal population and in ...