Polymorphism in first Intron of Interferon- Gamma Gene (+874A/T) among Sudanese BCG-vaccinated Health Care Workers

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Abstract

Cytokines especially interferon-gamma (IFN-γ) are largely responsible for the regulation of the protective immune response against mycobacterial infections. Several studies have clarified the importance of common variants of IFN-γ gene regarding the susceptibility to tuberculosis. Bacille Calmette-Guérin (BCG) vaccine which is used to prevent severe forms of tuberculosis could produce local and systemic side effects. This study hypothesized that assesses the level of INF-γ among BCG vaccinated Health Care Workers (HCWs) who were tested for (Purified Protein Derivative) PPD compared with TB-unexposed individuals. One-hundred thirty-seven HCWs (20-70 years old with ratio of TB-exposed and unexposed in females and males of 7: 3) were screened by conventional methods using microscopy, (Tuberculin Skin Test) TST, (Human Immuno Virus) HIV test and Chest X-Ray). Results of these tests showed that all subjects were apparently healthy and consequently they were allocated according to the TST results into three groups (moderate TST-positive, strong TST-positive and negative groups). DNA samples were obtained from 80 TB-exposed HCWs and 20 apparently healthy individuals. Distribution of HLA-DR, DQ alleles were determined by DNA typing and the INF-γ polymorphism (+874 T → A) was assessed by Allele Specific Polymerase Chain Reaction (AS-PCR). Frequency of A/A INF-γ genotype was totally absent among the strongly positive group, while it was 8% among the TST negative group. Polymorphism at +874 was identified using AS-PCR. The variations in allelic frequencies of IFN-γ gene polymorphisms were also shown in the different population groups and genetic polymorphisms associated with tuberculosis had yielded conflicting results in different ethnic groups. Keywords: Human leukpcyte allele (HLA), tuberculosis (TB) Bacille Calmette-Guérin (BCG), Interferon Gamma Gene, Purified Protein Derivative (PPD).

Recent Publications

1. Hanaa MA Abdallah, El. A. Elobied, Ibrahim El Amin Elneama, Genetic Basis for Clinical Manifestations of Onchocerca volvulus Infection among Displaced Patients from Southern Sudan (under publication).

2 .Hanaa Mahmoud, Abdelrahim El Hussien , Book entitled "HLA And BCG Vaccination", Editions Norte Savoir, (2020-07-21) - ISBN-13: 978-620-2-63721-3, 17/07/2020.

3. Abdalla MH, A. K. Bolad, El. A. Elobied, A.M. Babikir, Ali Yousif Osman and A. M. EL Hussien1 (2020). Characterization the HLA class II alleles of unresponsiveness to BCG –vaccinated Sudanese Health Workers: (Annals of Immunology & Immunotherapy, MEDWIN PUBLISHERS ISSN: 2691-5782 Volume 2 Issue 2 Received Date: May 25, 2020 Published Date: June 05, 2020).

4. Hanaa MA Abdallah, (2018), Determination of Blood Lipid Concentrations Among TypeII Diabetic Patients in Aldwadmi Province, KSA. Medical Journal of Clinical Trials & Case Studies (MJCCS), ISSN: 2578-4838.

5. Hanaa MA Abdallah, A. K. Bolad, El. A. Elobied, A.M. Babikir, Ali Yousif Osman and A. M. EL Hussien (2016), Polymorphism in first Intron of Interferon- Gamma Gene (+874A/T) among Sudanese BCG-vaccinated Health Care Workers: Journal of Medicine and Medical Research, Vol. 4(4): 33-40, September, ISSN: 2350-1502

Biography

Dr Hanaa is a PhD holder in immunology, working for Sudan Academy of Sciences (SAS) for ten years now. She is an active member of a Sudanese Research Group working on Human Leukocyte Antigen (HLA) and other related immunology issues. She has many pieces of published research. She has been teaching biology at different universities in Sudan And Saudi Arabia for almost twelve years.

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