World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:11, No:03, 2017

The Role of Chemokine Family, CXCL-10 Urine as a Marker Diagnosis of Active Lung Tuberculosis in HIV/AIDS Patients

Authors : Dwitya Elvira, Raveinal Masri, Rohayat Bilmahdi

Abstract : Human Immunodeficiency Virus (HIV) pandemic increased significantly worldwide. The rise in cases of HIV/AIDS was also followed by an increase in the incidence of opportunistic infection, with tuberculosis being the most opportunistic infection found in HIV/AIDS and the main cause of mortality in HIV/AIDS patients. Diagnosis of tuberculosis in HIV/AIDS patients is often difficult because of the uncommon symptom in HIV/AIDS patients compared to those without the disease. Thus, diagnostic tools are required that are more effective and efficient to diagnose tuberculosis in HIV/AIDS. CXCL-10/IP-10 is a chemokine that binds to the CXCR3 receptor found in HIV/AIDS patients with a weakened immune system. Tuberculosis infection in HIV/AIDS activates chemokine IP-10 in urine, which is used as a marker for diagnosis of infection. The aim of this study was to prove whether IP-10 urine can be a biomarker diagnosis of active lung tuberculosis in HIV-AIDS patients. Design of this study is a cross sectional study involving HIV/AIDS patients with lung tuberculosis as the subject of this study. Forty-seven HIV/AIDS patients with tuberculosis based on clinical and biochemical laboratory were asked to collect urine samples and IP-10/CXCL-10 urine being measured using ELISA method with 18 healthy human urine samples as control. Forty-seven patients diagnosed as HIV/AIDS were included as a subject of this study. HIV/AIDS were more common in male than in women with the percentage in male 85.1% vs. 14.5% of women. In this study, most diagnosed patients were aged 31-40 years old, followed by those 21-30 years, and > 40 years old, with one case diagnosed at age less than 20 years of age. From the result of the urine IP-10 using ELISA method, there was significant increase of the mean value of IP-10 urine in patients with TB-HIV/AIDS co-infection compared to the healthy control with mean 61.05 pg/mL ± 78.01 pg/mL vs. mean 17.2 pg/mL. Based on this research, there was significant increase of urine IP-10/CXCL-10 in active lung tuberculosis with HIV/AIDS compared to the healthy control. From this finding, it is necessary to conduct further research into whether urine IP-10/CXCL-10 plays a significant role in TB-HIV/AIDS co-infection, which can also be used as a biomarker in the early diagnosis of TB-HIV.

Keywords : chemokine, HIV/AIDS, IP-10 urine, tuberculosis
Conference Title : ICMNSIBA 2017 : International Conference on Molecular Networks of Systems Immunology and Biomedical Applications
Conference Location : Osaka, Japan
Conference Dates : March 30-31, 2017