

Association of serum bilirubin levels with multiple sclerosis

Nafiseh Esmaeil ¹, Omid Mirmosayyeb ², Vahid Shaygannejad ³,
Mahdi Barzegar ^{4*}, Roya Akbari ⁵, Samane Valipour ⁶

1-Department of Immunology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

2-Al-Zahra Hospital, Isfahan University of Medical Sciences, Isfahan, Iran; Medical Student Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

3-Department of Neurology, School of Medicine, Research Center of Neurosciences, Isfahan University of Medical Sciences, Isfahan, Iran

4-Al-Zahra Hospital, Isfahan University of Medical Sciences, Isfahan, Iran; Medical Student Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

5-Al-Zahra Hospital, Isfahan University of Medical Sciences, Isfahan, Iran; Medical Student Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

6-Al-Zahra Hospital, Isfahan University of Medical Sciences, Isfahan, Iran; Medical Student Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Introduction: Bilirubin is a strong antioxidant with effective protects against lipid peroxidation, so plays an important role in neuroprotection. Previous studies in animal model of multiple sclerosis have shown that bilirubin has beneficial effect in amelioration of disease episodes. However few studies have investigated the relationship between bilirubin and multiple sclerosis (MS).

Objective: The aim of present study was to determine serum bilirubin concentration in relapsing remitting (RR) MS patients compared to healthy control subjects (HCs).

Methods: Serum samples were collected from participants who attended to Kashani MS clinic in Isfahan. A total of 80 RRMS patients (67 females and 13 males) and 94 HC (62 female and 32 male) enrolled in this study and bilirubin levels were measured in all subjects. Patients didn't receive immunosuppressive or interferon medication at least 6 months prior to study entry.

Result: The level of direct bilirubin (Dbil) was significantly lower in MS patients compared with HCs ($P < 000$). Otherwise the serum concentration of total bilirubin (Tbil) and indirect bilirubin (Ibil) were higher in MS patients. Bilirubin level was decreased in females compared to males in both study groups. There was a negative correlation between Extended Disability Status Scale (EDSS) and bilirubin levels in MS patients, but it was not statistically significant.

Conclusion: Our results suggest that bilirubin as an endogenous antioxidant can relieve neuroinflammation course. So we can conclude that in addition to immunomodulator therapy, we should pay more attention to antioxidant roles in neuroinflammatory diseases treatment in future.

Keywords: Multiple Sclerosis, Bilirubin