Comparison of neutralizing antibody titer against Rebif and Recigen in Relapsing-remitting Multiple Sclerosis (RRMS) patients and their connection with patient's disability

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Introduction: One of the fist line treatment methods in Relapsing-Remitting Multiple Sclerosis (RRMS) is the administration of human recombinant interferon beta (IFN-β). However the immune system of patients may produce neutralizing antibodies against this drug and impair its function. Rebif and its Iranian biosimilar, Recigen, are two brands of recombinant IFN-β-1a. In this study, Rebif and Recigen were investigated for production of neutralizing antibodies and its correlation with EDSS score of Multiple Sclerosis patients.

Material and method: In this study Serum sample of 71 RRMS patients (34 Recigen and 37 Rebif) was collected during 8 months from MS clinics in Iran. Neutralizing antibody was measured by Mixo virus associated protein A (MxA) assay method using A549 cell line. The cells were treated by mixture of 37.5 IU/ml of Recigen or Rebif and culture medium containing different dilution of patient's serum. After 24 hours incubation, the treated cells were lysed with lysing buffer and the MxA concentration was measured by ELISA kit.

Results: The mean of patient's age and the median of drug usage period in Recigen and Rebif groups were 35, 34 years and 18, 24 months, respectively.

IFN-β usage duration in two groups was significantly different (p=0.03). Therefore the lower and upper quartile data were excluded and all of the analyses were carried out with or without lower and upper quartile. In both analyses, the percent of patients with positive titer of neutralizing antibody (NAb+) between two groups showed no significant difference (p=0.6). There was significantly positive correlation between NAb status and EDSS score in Recigen group (p=0.04) however in Rebif group no significant correlation was observed.

Conclusion: Our results showed duration time of Recigen or Rebif administration in our setting does not affect the NAb production. Type of IFN-β used in this study had no significant effect on neutralizing antibody production .

Key words: RRMS, Recigen, Rebif, Neutralizing Ab