

## Relationship between TNF- $\alpha$ and Central Serotonergic Activity using Scalp and Source Analysis of Auditory Evoked Potentials in Patients with Major Depressive Disorder

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**Rationale:** Proinflammatory cytokines such as TNF- $\alpha$  can induce major depressive disorder (MDD). Some studies have assumed that TNF- $\alpha$  is associated with tryptophan depletion and finally result in MDD with low serotonergic activity. However, another studies revealed TNF- $\alpha$  increased serotonin firing in raphe and serotonergic activity. Therefore, it is still unclear whether TNF- $\alpha$  increases or decreases the serotonin activity.

**Objectives:** The aim of this study was therefore to determine the relationship between TNF- $\alpha$  and central serotonergic activity using the loudness dependence of auditory evoked potentials (LDAEP).

**Methods:** Scalp and standardized low-resolution brain electromagnetic tomography (sLORETA)-localized auditory evoked potentials and TNF- $\alpha$  were evaluated in 64 MDD outpatients with mild-moderate severity at baseline. The Beck Depression Inventory (BDI), Hamilton Depression Rating Scale, Hamilton Anxiety Scale, Beck Scale for Suicidal Ideation, Beck Hopeless Scale, and Barrett Impulsivity Scale (BIS) were also applied to them. They were dichotomized according to the median TNF- $\alpha$  level into low- and high-TNF- $\alpha$  groups.

**Results:** The mean BDI and BIS scores were higher in the high-TNF- $\alpha$  group than in the low-TNF- $\alpha$  group. In addition, the average P2 LDAEP, left N1 sLORETA-LDAEP, left P2 sLORETA-LDAEP, average P2 sLORETA-LDAEP, left N1/P2 sLORETA-LDAEP, and average N1/P2 sLORETA-LDAEP were lower in the high-TNF- $\alpha$  group than in the low-TNF- $\alpha$  group. When multiple binary logistic regression analysis for TNF- $\alpha$  was carried, the relationship between TNF- $\alpha$  and N1/P2 sLORETA-LDAEP was also significant.

**Conclusions:** This study supports that TNF- $\alpha$  can increase the central serotonin activity in outpatients with MDD of mild-to-moderate severity.

### Biography:

Dr. Young-Min Park is associate professor, Department of Psychiatry, Ilsan Paik Hospital, Inje University College of Medicine, Goyang, Republic of Korea (South Korea). He is graduated from Korea University College of Medicine, Seoul. Resident training in psychiatry was conducted at Korea University College of Medicine, Anam Hospital. Clinical instructor, instructor and assistant professor of Department of Psychiatry in Inje University College of Medicine, Ilsan Paik Hospital. His research interest are in mood disorder and sleep disorder.