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VNS-Neuro-immunological aspect of vagal nerve stimulation in epilepsy

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Epilepsy is a one of most troublesome and chronic disorder of the brain that affects people of all ages worldwide. In the pharmac-resistant epileptic (PRE) group, vagal nerve stimulation (VNS) is a new hope for epilepsy. The idea of a link in between epilepsy and immune system is present at for the last 30 years. Some favorable responses of resistant epileptic syndromes to immune-modulatory treatment and association of certain obvious immune-mediated diseases with epilepsy all support this link. Pro-inflammatory cytokines such as IL-1 β , IL-2, IL-6 and TNF- α have a correlation in seizure. Besides, there is association between epilepsy and certain autoimmune diseases. Some antibodies (such as; GluR₃, phospholipid, cardiolipin, β_2 -glycoprotein I, nuclear, hemocyanin, anti-prothrombin and GAD) are all important in autoimmune epilepsies. From July 2012 to September 2017, totally 7 PRE patients are studies on behalf of this ideas. These selected patients are important because of that all of them are VNS patients. All patients were evaluated with aforementioned cytokines, immunoglobulin and some specific antibodies just pre-implantation and 6 mo/1-2-3-4-5 y post-implantations. Most of blood immunoglobulin is not changed in times. But the striking changes belong to IL-1 β decrement and IL-6 significant decrement in serum concentration with elongation of time. Cytokine levels of patients start to improve. VNS may play a role in neuro-immunity of PRE patients. Since our sampling patient group is so small, there should be more investigation on the role of VNS in immunology of resistant epilepsy.

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