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LETTER TO EDITOR

Predictors of response to vagus nerve stimulation in drug resistant epilepsy

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Dear Editor,

We read with great interest the article of Chrastina J et al "Vagus nerve stimulation outcome prediction: from simple parameters to advanced models" (1), in which the Authors reviewed the potential predictors of vagus nerve stimulation (VNS) response in epileptic patients. They analyzed patient age at implantation, seizure duration, epilepsy etiology, previous resective surgery, type of epilepsy, EEG findings, MRI images and other potential predictors suggesting a better outcome in younger patients with shorter history of epilepsy, with specific etiologies such as post-traumatic epilepsy and tuberous sclerosis complex and in cases with non-diffuse epileptic discharges. VNS is a palliative surgery offered to epileptic patients in whom an epilepsy surgery cannot be performed because of the lack of identifiable epileptic focus or because the resection of the epileptogenic focus implies the onset of neurological deficits. In this setting, there are other palliative procedures that can be proposed, such as corpus callosotomy, multiple subpial transections, deep brain stimulation and responsive neurostimulation. While there is a lack of clear indications for each of these procedures, we recently performed a pooled analysis of these different palliative techniques (2), clearly showing that VNS is significantly associated with a lower death rate. Moreover, a significant lower incidence of different complications, such as infections, neuropsychiatric adverse events, seizure exacerbation and neurological deficit, was found in VNS cohort compared with the other techniques. Significantly, due to the type of operation, no risk of intracranial hemorrhage exists with VNS. Our department is a third-level center for epilepsy surgery and we have performed VNS implants since 1994 (3). Among these patients, we have 30 patients who are currently undergoing VNS with a follow-up of more than 10 years. Noticeably only 6 out of 30 (20%) of patients have a specific etiology (3 malformations, 2 post-infection and 1 neoplastic) while in the other cases no identifiable etiology was evident. In our opinion, these data are of particular interest. While we agree that it is important to find prognosticators in order to select the right patient for the appropriate palliative drug resistant epilepsy surgery, we think that, to date, we have not enough data to exclude '*a priori*' a patient from the VNS therapy. In this setting, it is important to better understand the importance of the stimulation parameters (4) with some stimulation cycles showing additional benefits in seizures control (5). In conclusion, we think that due to its safety, VNS should be offered to drug-resistant epilepsy patients who are not candidates for resective surgery regardless the etiology of epilepsy. Moreover, a better understanding of VNS mechanism of action and advances in the stimulation programs will probably help to increase the population of responders to VNS therapy.

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