Effects of Stimulation in the Mesial Temporal Lobe in Persons with Bitemporal Epilepsy

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Abstract

Persons suffering from intractable bitemporal epilepsy present one of the most difficult therapeutic problems. This report concerns five patients with intractable bitemporal epilepsy who have been followed over a number of years and who have not responded to drug therapy. Because recurrence of the seizures repeatedly produced serious physical and psychological limitations in the life of these patients, depth electrodes were implanted in each temporal lobe in the amygdala and hippocampal areas in an effort to determine a possible focal site for the origin of their clinical seizures. Detailed EEG recordings and direct electrical stimulations of the temporal lobe were carried out. Only the effects of stimulation will be reported here. Electrical stimulation was carried out in the amygdala and hippocampal regions while the patients were alert and cooperative. Stimulation of the amygdala produced motor, sensory, autonomic and memory and emotional changes. These changes included adverse head and eye movements, olfactory sensations, vasoconstriction, tachycardia, confusion and feelings of fear. Hippocampal stimulation resulted in motor movements, sensory changes such as paresthesias and contralateral paresthesias. Simultaneous stimulation of the hippocampal regions resulted in a complex motor and sensory change associated with postictal confusion. Unilateral stereotactic lesions of the temporal lobe involved in the clinical focus have resulted in definite improvement in the frequency of seizures in three of the patients. No serious complications have been noted related to the procedure with the longest follow-up now 5 years.

¹ For complete text see: NASHOLD, B. S., jr.; FLANIGIN, H., jr.; WILSON, W. P., and STEWART, B.: Stereotactic evaluation of bitemporal epilepsy with electrodes and lesions. Confin. neurol. 35: 94-100 (1973).