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Cortical excitability in patients with focal epilepsy: Letter to the Editor

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Dear editor, we read with interest the article by Gilio et al. (2008). Previous transcranial magnetic stimulation (TMS) studies in focal epileptic patients brought to controversial results. In one study, increased motor threshold (MT) was reported in cryptogenic partial epileptic patients and the results were considered to be related to antiepileptic drug treatment (Cincotta et al., 1998). In other studies, MT did not differ between healthy subjects and treated/untreated focal epileptic patients. (Hamer 2005; Varrasi et al., 2004; Werhahn et al., 2000). One recent study showed MT is not at all different from normal subjects in treated focal epileptic patients; decreased MT was reported in untreated patients (Kotova et al., 2007). In cryptogenic localization-related epileptic patients, higher resting MT (RMT) was found on the left hemisphere whereas there were no differences not only in RMT of the right hemisphere stimulation but also in activated MT (AMT) of both hemispheres (Cantello et al., 2000). In spite of the hemispheric asymmetry in this group, they did not compare affected and unaffected hemispheres and proposed that these results probably depended on drug effect. Gilio et al. (2008) reported that in focal epileptic patients, RMT in the affected hemisphere was higher than in the unaffected hemisphere and in healthy subjects. In our opinion these results might also be related to antiepileptic drugs. In healthy subjects, Pascual, Leone et al. first reported that rTMS ≥5 Hz delivered to the hand area, induced an increase in the MEP size of the target muscle (Pascual-Leone et al., 1993 and 1994). Similarly, Gilio et al. showed progressively increasing MEP size on both hemispheres in normal subjects and also less increasing MEP size on unaffected hemisphere in focal epileptic patients compared to normal volunteers (Gilio et al., 2008). Conversely, in the affected hemisphere there were no MEP amplitude changes during 5 Hz rTMS. They suggested that these results were in contrast with the assumption that epilepsy was related to hyperexcitability of the cortical areas. They also reported that during 5 Hz rTMS, all antiepileptic drugs decreased MEP facilitation increasing dosage and proposed that their results might depend on drug effects or reflection of abnormal short-term synaptic enhancement.

In conclusion, the results of the TMS studies in epileptic patients should be interpreted cautiously. Ideally, new studies should be planned on new diagnosed and untreated patients.

Moreover, methodological differences must be taken into account. However, large controlled studies probably will help us understanding pathophysiology of cortical excitability changes and encourage us using rTMS for therapy in epileptic patients.

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