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Letter to the Editor

To assess the effect of FES on complete peripheral facial palsy, large, homogeneous groups need to be studied

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We read with interest the article by Meinicke et al. on a prospective study on the effect of functional electrical stimulation (FES) of 2 times 20 minutes per day over an average period of 95 days on the cross-sectional area (CSA) of denervated facial muscles in 10 patients with complete peripheral facial nerve palsy (PFP) [1]. While the CSA of most non-stimulated muscles decreased significantly due to PFP, a significant CSA increase of the zygomaticus muscle, which was regularly trained with FES, was demonstrated [1]. It was concluded that FES can halt the atrophy of the denervated zygomaticus muscle in patients with total PFP [1]. The study is impressive, but some points should be discussed.

The first point is that the definition of "complete" PFP is unclear. The methods section states that "total" PFP has been confirmed by needle EMG [1]. Since not all muscles innervated by the facial nerve are accessible to needle EMG, it is conceivable that those that were not examined by needle EMG were also not denervated. Since denervation can also be documented by nerve conduction studies, we should know whether all included patients actually showed a lack of stimulability of all branches of the facial nerve. It was also not mentioned whether the facial muscles examined by needle EMG showed only a lack of voluntary activity or also fibrillation potentials.

The second point is that recovery from a total PFP can be highly dependent on the underlying cause. A total PFP due to a viral infection may have a different prognosis than a total PFP due to a benign facial nerve tumour, parotid carcinoma or trauma. It is therefore also conceivable that the effect of FES depends on the underlying cause of PFP. Since the cause of the overall PFP was heterogeneous in the ten included patients, it cannot be excluded that apparent FES treatment effects are actually due to the different etiology.

The third point is that the effect of FES may also depend on the duration of paralysis. Since the duration of paralysis ranged from 3 to 1004 days, it is conceivable that those with shorter duration of paralysis benefited more than those with longer duration of paralysis.

The fourth point is that the stimulation parameters were obviously individualized, which means that the included patients did not receive the same therapy but different current intensities. Different stimulation parameters can lead to different therapeutic effects and thus to inconclusive results.

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The fifth point is that comorbidities and concomitant medications were not reported [1]. Since the use of analgesics can increase the pain threshold and thus influence the stimulation parameters, it would have been important to exclude patients who regularly took analgesics. Some antiepileptic drugs, antidepressants, neuroleptics or sedatives can also increase the pain threshold.

The sixth point refers to the exclusion criterion "physiotherapy within the last three months" [1]. It is difficult to imagine that there are patients with total PFP who have not undergone physiotherapy for three months. All patients with total PFP are interested in achieving reinnervation by all means, including physiotherapy. How many patients were excluded because they had physiotherapy in the last three months? Did all included patients actually have no physiotherapy in the last three months before starting the FES?

One limitation of the study is that it was not possible to ensure that the patients included actually carried out the treatment, used FES twice a day for 20 minutes each time and applied it as they were instructed.

In summary, this interesting study has limitations that put the results and their interpretation into perspective. Addressing these limitations could strengthen the conclusions and corroborate the study's message. To assess the therapeutic effect of FES on complete PFP, it is important that patients with the same etiology and duration of PFP are studied and treated with the same stimulation parameters for FES. An inhomogeneous disease cohort can lead to bias and thus to unreliable results.

Declarations

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