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PostScript

CORRESPONDENCE

Deep brain stimulation for cervical dystonia

I read with interest the recent case report by Chang and colleagues on unilateral deep brain stimulation (DBS) of the globus pallidus internus (GPi) in a patient with delayed-onset posttraumatic cervical dystonia.[1] I congratulate the authors reporting another patient with cervical dystonia responding to GPi DBS. The unique feature in their case is that unilateral stimulation only was used. They report on a 23 year old man who developed cervical dystonia with head turning to the left three years after he sustained a severe closed head injury. Magnetic resonance (MR) studies five days after the injury demonstrated focal lesions of the left pallidum, but also of the right thalamus. Six years later only the left pallidal lesion could be appreciated by MR studies. The authors chose to implant a quadripolar DBS electrode in the left GPi for chronic stimulation. They further report that during chronic stimulation the patient's cervical dystonia improved, and that he could turn his head to the midline easier than preoperatively. The improvement was not assessed by standard rating scales for cervical dystonia, and it is said that the dystonia was stable three months after electrode implantation. The authors conclude that the cervical dystonia in their patient was secondary to the GPi lesion, and that unilateral DBS of the GPi contralateral to the dystonic sternocleidomastoid muscle is the treatment option of choice. I wonder whether the thalamic lesion shown in the early MR scans could also have been relevant in the development of this patient's dystonia. It has been demonstrated previously that posttraumatic cervical dystonia may be associated with subthalamic and upper brainstem lesions.[2]

Interestingly, Chang and colleagues conclusions on the side to be choosen for unilateral DBS are at odds with another recent case report. Escamilla-Sevilla and colleagues observed improvement of segmental cervical and truncal dystonia in a 24 year old man with idiopathic dystonia during unilateral stimulation of the GPi ipsilateral to the dystonic sternocleidomastoid muscle.[3] In that case no notable change of cervical dystonia was observed with bilateral stimulation for six months. When it then was decided to switch to unilateral stimulation of the right GPi there was progressive improvement over the next three months. Unfortunately, chronic stimulation of the left GPi was not performed in that case. These authors concluded that stimulation should be started on the side ipsilateral to the dystonic sternocleidomastoid muscle.

The discrepancy between these two reports reveals the problems inherent in conclusions made from single case reports. It also reminds of the historic discussions decades ago, when Cooper thought that thalamotomies should be performed on the side contralateral to the dystonic sternocleidomastoid while Hassler stated that ipsilateral lesioning would be more beneficial.[4] When we introduced the concept of GPi DBS for cervical dystonia in 1997 we discussed several alternatives regarding the choice of the target and also whether unilateral or bilateral DBS should be used.[5] We then decided to go ahead with bilateral stimulation for several reasons, based on contemporary imaging studies and also accumulating knowledge on the innervation of neck muscles. Magyar-Lehmann and colleagues, for example, showed that patients with cervical dystonia had higher glucose metabolism bilaterally in the lentiform nucleus in a PET study without significant differences regarding the laterality, the specific pattern, or the severity of cervical dystonia in individual cases.[6] Naumann and colleagues also demonstrated bilateral basal ganglia involvement in cervical dystonia patients by striatal D2-receptor binding studies.[7] In that study, there was no significant difference by intraindividual comparison of contralateral versus ipsilateral striatal epipride binding with regard to the direction of head rotation. In a recent transcranial magnetic stimulation study in normal subjects, ipsilateral as well as contralateral sternocleidomastoid responses were evoked by stimulation of an area of cortex near the representation of the trunk.[8] With that regard, however, it is also important to consider that head rotation in patients with cervical dystonia is not only due to contraction of the sternocleidomastoid, but also of the posterior neck muscles. In our series of patients who underwent bilateral pallidal DBS for treatment of cervical dystonia we have repeatedly observed clinical deterioration with dysfunction of stimulation on one side or when the battery on one side was depleted. It is unclear, therefore, whether or not additional benefit would have been achieved with stimulation also of the right GPi in the patient reported by Chang *et al.*

By the way, in the Discussion the authors cite data on the frequency of posttraumatic movement disorders secondary to severe head injury. I was surprised to see that these data were attributed to the study on posttraumatic hemidystonia by Lee and colleagues.[9] These data, however, were reported in a later study where we investigated the frequency of posttraumatic movement disorders in the survivors of head injury who were admitted to a multidisciplinary trauma unit during a five year period.[10]

In conclusion, for the moment I think it is advisable to continue with bilateral DBS in the treatment of cervical dystonia until solid evidence should become available that unilateral stimulation is sufficient. It would be most interesting to evaluate the different profiles of bilateral and alternating unilateral stimulation in patients who have bilateral electrodes. Whether such a study is feasible and practical, however, is open to debate.

J K Krauss

Department of Neurosurgery, University Hospital, Klinikum Mannheim, Theodor-Kutzer-Ufer 1-3, 68167 Mannheim, Germany

Correspondence to: Professor Dr J K Krauss, Department of Neurosurgery, University Hospital, Klinikum Mannheim, Theodor-Kutzer-Ufer 1-3, 68167 Mannheim, Germany; joachim.krauss@nch.ma.uni-heidelberg.de

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Failure of regular external ventricular drain exchange to reduce CSF infection

Dr Wong and colleagues undertook quite a careful prospective randomised trial aiming to determine whether routine changing of external ventricular drainage catheters reduces the risk of CSF infection.[1] Patients were randomised into two groups: group 1 (n = 51) had routine changes of the external ventricular drain at five day intervals; in group 2 (n = 52) the ventricular drain was not changed. There was no difference with respect to the basic demographic data and the incidence of CSF infection. The authors observed four CSF infections in group 1 (7.8%) and two in group 2 (3.8%). Despite the higher CSF infection rate in group 1, this difference was not statistically significant. Based on their results, the authors concluded that "routinely changing external ventricular drainage catheters at five day intervals did not reduce the risk of CSF infection".

The topic of ventricular catheters and the risk of CSF infection has been dealt with in numerous reports. The continuing interest for neurosurgeons is largely based on the fact that quite controversial recommendations