



Neurosurgery in Parkinson's Disease: Levodopa Treatment

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Despite the overall excellent outcome of neurosurgery in patients with Parkinson's disease, there is often a contrast between the improvement in motor disability and the difficulties of patients to reintegrate a normal life. In this study, the personal, familial and professional difficulties experienced by patients two years after bilateral high frequency stimulation of the subthalamic nucleus were carefully analyzed. To avoid such socio-familial maladjustment, we strongly suggest taking into consideration the patients' psychological and social context before the operation and during the post-operative follow-up. Despite levodopa treatment, parkinsonian motor disability worsens during the course of the disease, due to the appearance of levodopa-induced adverse reactions and symptoms unresponsive to levodopa treatment. In severe levodopa-responsive forms of the disease, bilateral high-frequency stimulation of the subthalamic nucleus (STN) can be envisaged, which results in a marked reduction of motor disability and levodopa-related complications in most patients. No significant changes in cognitive function are observed provided strict inclusion criteria are used. Although psychic disturbances can occur shortly after the operation (confusion, mania), or later as a relapse of a pre-existing disorder (major depression, personality disorders), depression and anxiety are improved. The overall outcome of neurosurgery is therefore an improvement in activities of daily living and quality of life. Nevertheless, those of us who take care of the operated patients are struck by the contrast between the dramatic improvement in parkinsonian motor disability and the inability of certain patients to reintegrate into a normal familial and social life. Some are unexpectedly dissatisfied, while others become apathetic and are therefore confronted with familial conflicts and maladjustment at work. The patients (n ¼ 29) were selected for treatment by continuous bilateral high frequency stimulation of the subthalamic nucleus (STN). The Social Adjustment Scale (SAS), a semi-structured interview exploring six dimensions (work, social life, family life, marital relations, interaction with children and a general score) was used to evaluate the patients' psycho-social condition. Repeated in-depth open interviews, aimed at obtaining qualitative psychological observations were backed up by a semi-structured psychiatric interview (MINI 500: mini international neuropsychiatric inventory). The patients underwent neurosurgery for bilateral placement of stimulating

leads within the STN in a single operative session, as previously described. A comparison of the patients' state 24 months after neurosurgery with their preoperative state showed a dramatic improvement in parkinsonian motor disability, as expected in such carefully selected patients (mean reduction of 67%, in UPDRS-III score, 67% in UPDRS-IV score and 64% in levodopa-equivalent dosage). The patients' neuropsychological status was unchanged (Mattis score: 140); there was a significant improvement in mood and anxiety (p35%, p6%) as well as in the quality of life score (PDQ 39: p24%). Despite this general improvement in motor disability and mental functions, there was no significant improvement in the global and sub-dimensional SAS scores. This result was unexpected, but should be seen in the light of the following two points: a) before surgery, only 21% of the patients had a normal global social adjustment score; b) changes in social adjustment score varied from patient to patient (8=29 improved, 11=29 worsened, 10=29 were unchanged). The only two sub-dimensions of the SAS that tended to be worse were 'work' and 'marital relations'. These results thus confirm our impression – also shared by other international teams used to treating these particular forms of PD by bilateral stimulation of the STN – that there is a striking contrast between the often spectacular improvement in patients' motor disability and quality of life and the absence of mean improvement in social adjustment, whether at a personal, familial or professional level. Any conclusion that neurosurgical treatment for PD does not have a beneficial effect on social adjustment must, be qualified. The small number of patients in this preliminary study means that the overall conclusions do not necessarily apply to each individual patient. Thus, while some patients experienced a complete lack of social integration, others enjoyed a total reintegration into their social environment. 2) At the time of surgery, our population of patients had problems of socio-familial adjustment that were intentionally not taken into account, and the outcome of our study might well have been different had the patients and their families benefited from psychological management. One cannot implicate the patients' intellectual state, since it remained normal after the operation, nor was there any development of anxio-depressive symptoms, since the patients' state in this respect was rather improved.

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