S-NU-3

Subthalamic Nucleus Deep Brain Stimulation Improves Motor Function in Idiopathic Parkinson's Disease

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Background: Motor fluctuations are common in long-standing idiopathic Parkinson's disease (PD) and patients are often disabled by insufficient 'ON' period, sudden ON-OFF phenomenon and/or dyskinesias. The pathophysiology is due to overactivity of the subthalamic nucleus (STN), which, by a cascade of excitatory/inhibitory pathways, resulted in reduced excitatory thalamic input to cerebral cortical targets. Deep brain stimulation (DBS) to the STN, which acts paradoxically by inhibition, has been shown to improve all cardinal features of PD.

Patients and Method: Four patients (2 male and 2 female, mean age: 55) with long-standing and advanced PD were selected. Six STN DBS were performed (2 patients had unilateral and 2 patients had bilateral procedures). Electrodes were implanted in the subthalamic nucleus under stereotactic guidance with MRI and final positions were judged by clinical response intra-operatively. Clinical evaluations included the Unified Parkinson's Disease Rating Scale (UPDRS), a dyskinesia scale, levo-dopa dosage, mobility diary and quality of life scores conducted before and after surgery, when patients were off and on medications.

Results: After 3 months of electrical stimulation to the STN, significant improvement occurred in the off-medication motor scores (40% decrease), on-medication ADL scores (43% decrease), objective dyskinesias scores (42% decrease), percentage of ON time without dyskinesias (50% increase) and quality of life index scores. Levo-dopa requirement was decreased by 40%. Except for the occurrence of transient psychosis post-operatively in one patient, there was no major complication.

Conclusion: Electrical stimulation is an effective treatment for advanced Parkinson's disease but further refinement is needed for patient selection and operative techniques.

S-RM-1

OverExpression of Matrix Metalloproteinase-8 (MMP-8) and -9 (MMP-9) in Bronchiectatic Airways *In Vivo*

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Bronchiectasis is characterized by the occurrence of permanent bronchial dilatation, which is possibly the result of continued airway matrix destruction. Although neutrophil elastase has been strongly implicated, little is known the role of MMP-8 and MMP-9 in the pathogenesis of bronchiectasis. We have, therefore, employed immunohistochemical technique to investigate the expression and cellular localization of MMP-8 and -9 in bronchiectatic airways *in Vivo*. Endobronchial biopsies were taken from the affected airways in 25 bronchiectatic patients, and from the right lower lobe in 14 control subjects. MMP-8, -9, neutrophils and macrophages were stained with monoclonal antibodies by using ABC method on sequential 3-μm paraffin sections. The positive staining cells in the airway lamina propria were counted by using a computer image analyzer at a final magnification of × 400, and expressed as positive cells/mm^2 of lamina propria. There were significantly higher densities of MMP-8 and MMP-9 positive cells in bronchiectatic than in control airways (data are showed in the table, *$p<0.05$ vs controls).

	MMP-8	MMP-9	Neutrophils	Macrophages
Bronchiectasis	275 (39-816)*	291 (68-837)*	539 (101-1493)*	736 (145-1602)*
Controls	66 (12-163)	67 (23-202)	115 (24-316)	339 (129-856)

In bronchiectatic airways, the densities of MMP-8 and -9 positive cells correlated with each other ($r=0.74$, $p<0.001$), and with neutrophil density ($r=0.69$, $p<0.001$; $r=0.66$ $p<0.001$), but not with macrophage density. In addition, sequential section staining showed that most MMP-8 and MMP-9 positive cells co-localized with that of neutrophil elastase in bronchiectatic airways. In control airways, a significant correlation was found between MMP-8 with neutrophil ($r=0.75$ $p=0.002$), and MMP-9 with macrophages ($r=0.63$ $p=0.017$) densities. Our original findings suggest an overexpression of MMPs produced by neutrophils in bronchiectatic airways, which could help explain the development of continued airway destruction in bronchiectasis.

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