The Benefits of Group Occupational Therapy for Patients With Parkinson’s Disease

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The current medical treatment of anticholinergic drugs and dopamine agonists has improved the quality of life of patients and increased the life expectancy of patients with idiopathic Parkinson’s disease (IPD) (Hoehn, 1983). In the pre-L-dopa era, the mortality rate was three times that of the general population (Hoehn & Yahr, 1967), and it decreased to one-and-a-half times the general rate after the introduction of L-dopa (Yahr, 1976). The duration of the illness is now extended to beyond 10 years, on the average, and it is estimated that the prevalence of the disease will double in forthcoming years (Marttila & Rinne, 1979). Problems have emerged from the L-dopa treatment itself (Marsden & Parkes, 1977; Lesser et al., 1979), because the medical introduction of L-dopa or other dopamine agonists, as well as the ideal dosage, are still matters of controversy. Some of the parkinsonian symptoms, such as akinesia and rigidity, have been responsive to the medication. On the other hand, postural instability and tremor at rest have been rather resistant to the medical treatment.

Previously we had studied, by formal interview, the relationship between physical symptoms and activities of daily living (ADL) in patients with Parkinson’s disease. Our work showed that tremor at rest had negligible effects on ADL, but that postural instability was the major element in disability at home and at work, leading to premature retirement in many young patients (Gauthier & Gauthier, 1982, 1983). The impairments in functional activities intensified with the severity of the disease; in the early stages, difficulties with activities requiring trunk mobility and postural reflexes were encountered. Later on, manipulation and dexterity problems appeared, creating dependence for eating, dressing, washing, and so on. The rehabilitation of patients with Parkinson’s disease seems indicated to promote a better quality of life, to increase productivity in society, and to improve the overall prognosis. Rehabilitation group programs with specific goals have been suggested (Davis, 1977; Szekely, Kosanovich, & Sheppard, 1982; Minnigh, 1971; Chafetz, Bernstein, Sharpe, & Schwab, 1955).

The aim of the present study was to establish whether a group rehabilitation program using an occupational therapy approach specifically designed for IPD patients, in association with optimal pharmacologic management, could maintain the functional status of these patients. If so, the work would suggest (a) that outpatient rehabilitation is a useful adjunct to current medical therapy and (b) that functional rehabilitation is required to decrease the debilitating effects of this degenerative, neurological disease.

To test this hypothesis, a two-group experimental design was used. Patients with Parkinson’s disease, after having signed an informed consent form, were randomly assigned to either a control group or to an

experimental group receiving group occupational therapy. In this single-blind study, both groups were evaluated pre- and postintervention, at 6 months and at 1 year.

Methods
Subjects
The target population was patients with IPD. To be included, patients must have (a) had IPD for at least 1 year; (b) had parkinsonism staging of 2, 3, or 4 (i.e., ambulatory with bilateral involvement) (Hoehn & Yahr, 1967); (c) been living at home; (d) been able to attend follow-up assessments; (e) and been willing to sign an informed consent form. To facilitate attendance at the group therapy sessions, all volunteers had to reside within the city limits or surrounding suburbs.

Design
Sixteen volunteers with IPD were evaluated neurologically and functionally. After this pretesting, the volunteers were randomly assigned to a “rehabilitation” group (n = 8) or a “control” group (n = 8). Immediately after randomization, the rehabilitation group received 10 sessions of group occupational therapy. Both groups were followed medically, and both were reevaluated after the therapy sessions, at 6 months and then at 1 year posttreatment. A total of 4 such matched groups were cumulated over 2 years. The size of the rehabilitation group was kept small to promote efficacious group therapy and motivation of the patients with Parkinson’s disease.

Instruments
All testing took place at the Montreal Neurological Institute and Hospital before noon. Evaluators were blind to the results of randomization. The Barthel Index (Mahoney & Barthel, 1965) was used to evaluate the functional autonomy in ADL. The Purdue Pegboard Test (Tiffin, 1968) assessed the dexterity of fingers, hands, and arms. The Extrapyramidal Symptom Rating Scale (Chouinard, Ross-Chouinard, Anna­ble, & Jones, 1980) quantified the physical and motor signs. To determine whether the group therapy sessions had an impact on the emotional health of the patients, the rehabilitation group was given the Brad­burn Index of Psychological Well-Being (Bradburn, 1969) before and after therapy.

Group Therapy Sessions
All therapy sessions were conducted at the School of Physical and Occupational Therapy, McGill University, by the principal investigator as group leader, and an occupational therapist as a professional assistant. An audiovisual assistant was also present in order to videotape the 5th and 10th group sessions. Family members were welcome and often participated in all activities.

For each experimental group there were 10 sessions, on a schedule of 2 meetings a week for 5 weeks. Each session was held in the morning and lasted approximately 2 hours. The content of each session followed the pattern of (a) arrival (welcome and socialization), (b) general mobility activities, (c) rest period and socialization, (d) dexterity activities, (e) functional activities, (f) educational activities, and (g) departure (informal exchange and socialization). During each session, four main components were touched upon: general mobility, dexterity, ADL, and education. Activities and tasks were chosen to address specific problems of patients with Parkinson’s disease. According to Marsden (1984), patients with Parkinson’s disease maintain simple motor programs, but the automatic execution of learned motor plans is disturbed. Therefore, these patients exhibit delay in the initiation of movement, slowness in the execution, and inability to “engage into” sequential motor actions.

To facilitate initiation and speed of movement, most activities employed visual and auditory cues as triggers. Visual cues were looking at and following the therapist’s or another group member’s movements. A mirror was also used. Auditory cues were music with regular rhythm, a metronome, verbal suggestions, and reinforcement from the therapist.

The general mobility activities addressed the following problems: balance, posture, walking, range of motion, and facial mobility. These activities used rhythm, music, singing, and dancing to initiate movement and to increase postural stability. The dexterity tasks aimed at better finger manipulation, accuracy, and speed by the use of games, writing exercises, and crafts. During the functional activities period, we discussed, demonstrated, and practiced all indoor and outdoor activities of daily living presenting difficulties for the group. Finally, the educational activities which sought to provide a better understanding of Parkinson’s disease were presented by the two therapists or by invited guests (e.g., a physical therapist, speech pathologist, dietician, social worker, nurse). Each patient had a therapy book with lists of activities to do at home, summaries of guests’ lectures, and literature on Parkinson’s disease.

Results
Population
Of the 64 original volunteers, only 5 did not complete the study. Three members of the experimental group dropped out: One refused the therapy because she felt too weak to attend 5 weeks of sessions; one was hospitalized for gastrointestinal surgery during the therapy period; and one fell and broke a hip just
before starting the group sessions. Two control subjects did not complete all the follow-up assessments: One was stranded in Lebanon, and one withdrew for personal reasons just after randomization. Data indicate that the preevaluation scores of these 5 subjects were comparable to those of the other subjects; it is therefore unlikely that the benefits of randomization were lost.

At the end of the study, a total of 59 patients with Parkinson's disease had been able to complete the 1-year follow-up: The experimental rehabilitation group had 30 patients, and the control group, 29. At pre-evaluation, there was no significant difference between the two groups for staging of IPD, sex, duration of disease, and pharmacological treatment (chi-square). The mean age for the experimental group was 60.9 ± 6.9 years, and for the control group, 65.3 ± 7.5 years. The distribution for parkinsonism staging (Hoehn & Yahr, 1967) describing the severity of the disease was equivalent for each group (see Table 1).

Functional Autonomy

The Barthel Index scores of the pretreatment evaluation were compared with the scores obtained at 1 year. The Wilcoxon Matched-Pairs Signed Ranks Tests (2-tailed) showed us that the treated rehabilitation group maintained their functional status over 1 year. However, the control group demonstrated a significant deterioration in their autonomy (see Table 2).

Dexterity

As for finger manipulation and dexterity, unilateral and bilateral scores on the Purdue Pegboard Test did not show any changes in either group from pretreatment assessment to 6-month and 1-year follow-up evaluations.

Patients' Impressions

We also inquired about the subjects' perceptions of their disease. The Bradburn Index of psychological well-being, which was administered to the treated group just before and after therapy, showed that the patients perceived greater psychological well-being after the therapy ($p < .03$, $t$ test). Moreover, the first part of the Extrapyramidal Symptoms Rating Scale, whereby a neurologist records the patient's impression of his or her symptoms and rates the responses, showed that the experimental group perceived a regression of the severity of their symptoms at 6 months posttreatment, there were no changes in the control group ($p < .03$, $t$ test).

Physical and Motor Signs

As previously mentioned, the Extrapyramidal Symptoms Rating Scale was used to quantify physical and motor signs. In the control group, there were no significant changes for any physical signs at the post-treatment evaluations at 6 months and at 1 year. The treated rehabilitation group demonstrated numerous changes at the posttreatment evaluations, including a significant diminution of bradykinesia and akathisia at 6 months, and of bradykinesia at 1 year. Table 3 summarizes the physical and motor signs in which changes were discerned.

The stage of parkinsonism denotes the degree to which the patient is affected by the disease. There were no significant changes in the staging of the control group at any time. However, 10 patients in the rehabilitation group showed a significant decrease in their staging ranking at 6 months ($p < .01$, Sign Test).

Behavioral Changes

A number of unassessed or unassessable changes were also observed in the rehabilitation group. First, there was a marked amelioration of physical appearance (grooming, choice of clothes, etc.). Appraising remarks of group members confirmed the therapists' observations.

The treated patients also demonstrated a clear understanding of Parkinson's disease. This knowledge has helped to decrease their fear and to increase their self-assurance. From the 1st to the 10th session, we noted significant changes in attitudes, from egocentricity at the beginning to interested and concerned involvement with others at the end. The group situation furnished for all patients an opportunity for greater socialization and communication. Also, an important factor was the presence of family members because they too learned about IPD and witnessed the residual potential of their affected relative.

Summary of Results

In summary, after 20 hours of group occupational therapy as an adjunct to medical therapy, patients with Parkinson's disease maintained their functional status over 1 year, whereas the control patients exhibited a
decrease of their independence with progression of this degenerative disease. The rehabilitation group itself perceived this progression as being less severe than that of the control group.

At 6 months, there was a diminution of bradykinesia and akathisia in the rehabilitation group. Even at 1 year, bradykinesia had regressed in the treated group. Nevertheless, the results showed a decrease in severity of IPD staging. Finally, a number of changes, both observed by the therapists and reported by the treated patients, have led to a better quality of life, socialization, and family interaction.

Discussion

 Patients with Parkinson's disease are infrequently hospitalized and seldom referred to rehabilitation professionals. Generally, they are referred to physical therapy when their gait becomes unstable. However, Beattie and Cadet (1980) and Gauthier and Gauthier (1982) have detected the presence of numerous functional problems. A review of the rehabilitation literature reveals that motor symptoms (rigidity, akinesia, tremor) receive the most attention from researchers. On the basis of practical experience, techniques from Bobath to Rood are proposed for patients with Parkinson's disease. Few controlled clinical trials have been reported. Gibberd, Page, Spencer, Kinnear, and Hawksworth (1981) conducted a controlled crossover trial of physiotherapy and occupational therapy. Unfortunately, their trial had many flaws: The treatment methods (Bobath, Peto, PNF) varied with patients; the control group received "inactive" treatment that could affect the outcome; and the number of patients was small ($N = 16$). The authors concluded that remedial therapy for outpatients with Parkinson's disease was valueless. Considering the methodology of this trial, we believe the results are unacceptable and prejudicial to the welfare of the patients with Parkinson's disease. Another study by Franklyn, Kohout, Stern, and Dunning (1981) tried to evaluate the efficacy of physiotherapeutic techniques; this trial showed modest improvement at the end of treatment in 10 of 21 patients. However, the authors themselves feel their study was inconclusive since the benefits were not sustained and they could not identify the reasons for these improvements. They expressed the need for other trials. In 1982, Szekely et al. (1982) conducted a pilot project of physical therapy and group therapy which included the family to improve functioning of patients with Parkinson's disease. This study, however, included only 7 volunteers and no control group. Nevertheless, the results showed a significant improvement in gait measures, and the group approach seemed to have enhanced motivation.

The present study seemed necessary to demonstrate the value of functional rehabilitation for this population. Based on previous reports (Davis, 1977; Szekely et al., 1982; Minnigh, 1971), we chose a group approach to facilitate the participation and the motivation of the patients with Parkinson's disease because this group is distinguished by its social isolation, sedentary habits (Manson & Caird, 1985), and depression (Todes, 1984; Serby, 1980).

The group approach achieved more behavioral changes than an individual, more dependent, client-therapist relationship would have achieved. This experience has shown that the group therapy is well suited for patients with chronic degenerative diseases who are easily drawn into depression and social isolation. The group provides a supportive environment and facilitates interactions among peers. The group approach is also very cost-effective; only one or two therapists are needed for 8 to 10 patients for a period of 20 hours. This therapy format is almost a necessity, since the number of patients with Parkinson's disease will likely double in the near future.

Certainly, any type of experimental study involving patients with a degenerative, neurological disease and sometimes fluctuating symptoms has its limitations. However, our study was conducted with scientific rigor such that inferences can be made. All subjects were volunteers who had been tested before

### Table 3

<table>
<thead>
<tr>
<th>Sign</th>
<th>Groups (EN = 30; CN = 29)</th>
<th>Posttreatment</th>
<th>6 Months</th>
<th>1 Year</th>
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<tbody>
<tr>
<td></td>
<td>E</td>
<td>+ $p &lt; $</td>
<td>+ $p &lt; $</td>
<td>+ $p &lt; $</td>
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<tr>
<td>1. Expressive automatic movements</td>
<td>E 12</td>
<td>2 .01</td>
<td>12</td>
<td>4 .07</td>
</tr>
<tr>
<td></td>
<td>C 10</td>
<td>5 .3</td>
<td>8</td>
<td>6 .79</td>
</tr>
<tr>
<td>2. Bradykinesia</td>
<td>E 18</td>
<td>4 .004</td>
<td>18</td>
<td>5 .01</td>
</tr>
<tr>
<td></td>
<td>C 9</td>
<td>9</td>
<td></td>
<td>6 .5</td>
</tr>
<tr>
<td>3. Gait and posture</td>
<td>E 18</td>
<td>6 .02</td>
<td>15</td>
<td>6 .07</td>
</tr>
<tr>
<td></td>
<td>C 9</td>
<td>6</td>
<td>14</td>
<td>5 .06</td>
</tr>
<tr>
<td>4. Tremor</td>
<td>E 16</td>
<td>5</td>
<td>6</td>
<td>10 .06</td>
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<tr>
<td></td>
<td>C 11</td>
<td>4</td>
<td>.04</td>
<td>11 .01</td>
</tr>
<tr>
<td>5. Akathasia</td>
<td>E 15</td>
<td>4</td>
<td>.01</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>C 9</td>
<td>5</td>
<td>.42</td>
<td>10</td>
</tr>
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Note: E = experimental group; C = control group. * Sign test.
their random assignment to the groups. Both experimental and control groups were equivalent for the crucial variables of sex, severity of the disease, duration of the disease, and pharmacological treatment. Results from any subject who underwent an uncontrolled event (such as another illness) between measurements were not considered in the results. Only results from patients who completed all the evaluations, including the 1-year evaluation, were taken into account in the analysis.

The learning effects on tests and the Hawthorne/placebo effect (special attention) were minimized or nonexistent since the significant end result is achieved at 1 year. None of the measurements were used during the therapy sessions. The blind evaluators had no contact with or feedback from the intervention processes. All testing sessions were done between 9 and 12 o’clock in the morning to decrease variations in performance due to the time of day. We have enough confidence in the experimental design to generalize the data and affirm that functional rehabilitation through occupational therapy is of benefit to the outpatients with Parkinson’s disease. Previously, it was a matter of controversy whether patients would be better assessed and treated at home or in hospital outpatient departments (Beattie & Caird, 1980; Gibberd et al., 1981). We suggest that referral to rehabilitation therapy should be considered every 6 months to maintain the functional status and autonomy of the patients as long as possible. After the completion of our study, 13 control subjects asked to enter the group rehabilitation program. Because project results indicated that the program did indeed benefit the patients with Parkinson’s disease, we complied with their requests for ethical reasons.

The main goals of the group therapy sessions have been described: general mobility, dexterity, ADL, and education. The treatment goals and the activities for each of these goals can be varied according to the population and to the environment, but it is important to keep in mind that interventions addressing motor and functional problems should be coupled with interventions aimed at improving socialization, motivation, interpersonal and family relationships, self-esteem, and knowledge of the disease.

Summary

The results of this experimental study of patients with Parkinson’s disease demonstrate the benefits of occupational therapy for chronically ill, noninstitutionalized patients. In this particular case, a group therapy program aimed at the biopsychosocial aspects of the disease maintained the functional status of the patients in the experimental group, improved their psychological well-being, decreased the severity of one of the major motor symptoms (bradykinesia), and facilitated several positive behavioral changes.

Acknowledgments

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References


