

## LETTER TO THE EDITOR

### HAND DEFORMITIES IN PARKINSONISM

(Received 25 July 1964)

IN HIS original and classic description of the disease that now bears his name, PARKINSON [1] noted the progressive muscular rigidity, the characteristic pill-rolling tremor, the stooping posture, the shuffling gait and the akinesia that characterize this condition. He did not, however, describe the digital deformities that are the subject of this paper.

COGGESHALL [2] states that "Charcot first pointed out the resemblance between Parkinsonism and rheumatoid arthritis, especially the similar deformities of the hands and feet in the two disorders." PENNECHIETTI [3] also has pointed out that Parkinsonism occasionally has been misdiagnosed as rheumatoid arthritis because of "the similar deformities of the hands and feet and the muscular rigidity, tremor and shiny appearance of the face which may occur in both." WECHSLER [4] notes that in Parkinsonism "muscular contractures, especially of the hands and feet, develop on the basis of muscular rigidities." CUTLER [5] writes that "the fingers are partly flexed, as in the resting position, and in the late stages cannot be extended. Hyperextension of the terminal phalanges is occasionally seen." SPILLER [6] states that ulnar deviation of the fingers is common in Parkinsonism.

This report is an analysis of the hand deformities found to exist in a series of 86 patients with Parkinsonism examined in three large midwestern county medical care facilities—Washtenaw County (Mich.) Hospital, Wayne County (Mich.) Hospital and Cook County (Ill.) Hospital. Consistent with current medical thought [7] the patients have been divided into two diagnostic categories, those with a history of encephalitis lethargica and those of idiopathic etiology. The age, race, and sex characteristics of the patients are shown in Table 1.

Because there are some students of Parkinsonism [8] who believe that all cases of the disease are of encephalitic origin, it is worth noting that there are significant age differences in the two groups here described. In race and sex the two groups are comparable. It is notable that all but two of the patients are white, despite the fact that in the county medical care institutions studied, a large proportion of the patients (over 40 per cent) are Negroes.

TABLE 1. AGE, RACE AND SEX CHARACTERISTICS OF 86 PATIENTS WITH PARKINSONISM

	Age (yr)		Race		Sex	
	Mean	Median	White	Negro	Male	Female
Post-encephalitic	58	57	26	2	13	15
Idiopathic	72	73	58	0	28	30
Total	68	69	84	2	41	45

Patients with a history of encephalitis, although as a group younger than those with no such history, tended to have more severe neurological involvement (Table 2).

TABLE 2. SEVERITY OF SYMPTOMS IN POST-ENCEPHALITIC AND IDIOPATHIC PARKINSONISM

	No.	Tremor				Rigidity			
		None	Slight	Mod.	Marked	None	Slight	Mod.	Marked
Post-encephalitic	28	2	3	9	14 (50%)	1	0	9	18 (64%)
Idiopathic	58	3	15	26	14 (24%)	1	19	21	17 (29%)
Total	86	5	18	35	28	1	19	30	35

Deformities of the hands occurred significantly more frequently among the post-encephalitic group, with 71 per cent of the patients showing abnormalities, whereas only 24 per cent of those with idiopathic disease had hand deformities. There was no correlation between the occurrence of deformities and either the degree or duration of the tremor (Table 3).

TABLE 3. DURATION AND SEVERITY OF TREMOR IN PATIENTS WITH AND WITHOUT HAND DEFORMITIES

	Median number years with tremo	Severity of tremor			
		None	Slight	Mod.	Marked
With hand deformities	7.4	3	1	16	12
Without hand deformities	7.2	2	15	19	18
Total	7.3	5	16	35	30

There was, however, a correlation between generalized muscular rigidity and the occurrence of hand deformities, since 72 per cent of those with deformities had marked rigidity, whereas only 30 per cent of those with normal hands had extensive degrees of rigidity.

#### *Hand deformities in Parkinsonism*

The most common hand abnormalities found in this group of patients were ulnar deviation and flexion of the metacarpophalangeal joints.

A variety of other changes also occur. Hyperextension subluxation of the terminal phalanges was found in six patients, and hyperextension at other interphalangeal joints was seen four times. In five cases, the hand was locked in a fist and could not be opened forcibly. A variety of other bizarre abnormalities was found.

The large number of hand deformities in this series of cases probably is a reflection of inadequate medical management over a period of years. It seems quite likely that early diagnosis and proper management (the use of skeletal muscle

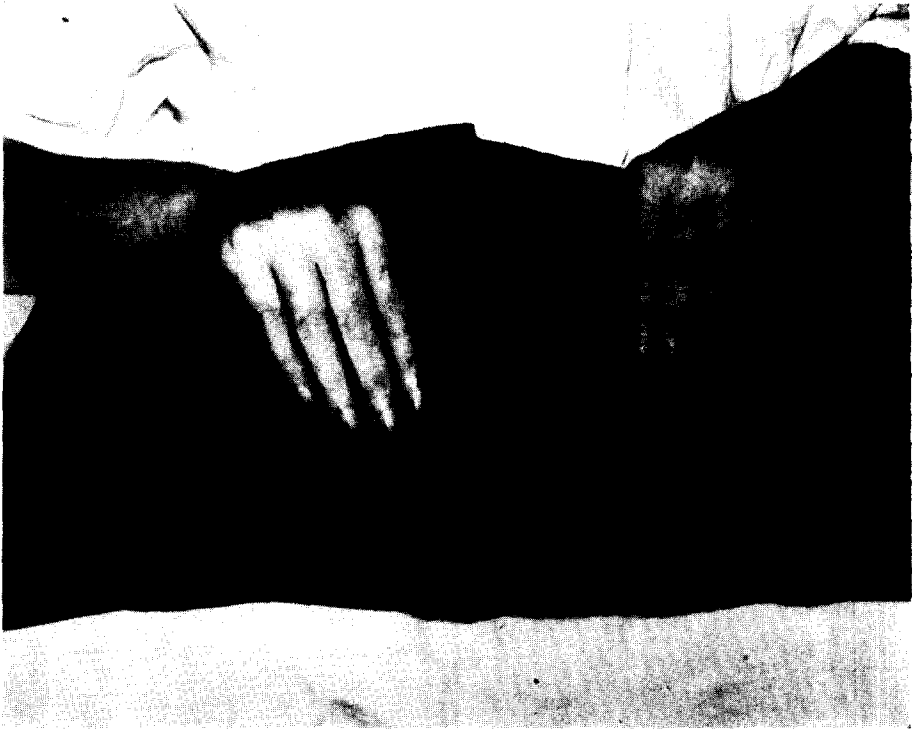


FIG. 1. The most common hand abnormality in Parkinsonism.

FIG. 2(a-d). Illustrative hand abnormalities in Parkinsonism.



FIG. 2(a).



FIG. 2(b).



FIG. 2(c).



FIG. 2(d).

relaxants plus physical and occupational therapy) would do much to prevent, or at least minimize these handicapping deformities.

#### SUMMARY

In a series of 86 patients with Parkinsonism there were 34 (40 per cent) who had some deformity of the hands. These deformities occurred more frequently among those with post-encephalitic Parkinsonism than in those who gave no history of encephalitis.

Hand deformities are associated with muscular rigidity, but not with the extent or duration of tremor. It seems probable that the deformities are due to localized extra-pyramidal muscular rigidity.

FRANK W. REYNOLDS, M.D., M.P.H., F.A.C.P.  
GUST C. PETROPOULOS, M.D., M.P.H.

*Department of Community Health Services,  
The University of Michigan School of Public Health,  
Ann Arbor, Michigan.*

#### REFERENCES

1. PARKINSON, J.: An essay on the shaking palsy, in *James Parkinson, 1755-1824*, p. 147. Ed. by CRITCHLEY, M. Macmillan, New York, 1955.
2. COGGESHALL, H. C.: Rheumatoid arthritis: differential diagnosis, in *Arthritis and Allied Conditions*, Chap. 14. Ed. by COMRAE. Lea & Febiger, Philadelphia, 1953.
3. PENNECHIETTI, M.: Sulla acrodeformazione con artropathie nel Parkinsonismo postencefalitico: Studio clinico ed anatomopatologico, *Minerva med.* **1**, 423, 1936.
4. WECHSLER, I. S.: *A Textbook of Clinical Neurology*, p. 600, 5th edit. Revised. Saunders, Philadelphia, 1943.
5. CUTLER, C. W., Jr.: *The Hand: Its Disabilities and Diseases*, p. 545. Saunders, Philadelphia, 1942.
6. SPILLER, W. G.: Paralysis agitans, in *Geriatric Medicine*, p. 282, 3rd edit. Ed. by STIEGLER. Lippincott, Philadelphia, 1954.
7. DUVOISIN, R. C. *et al.*: Parkinsonism before and since the epidemic of encephalitis lethargica, *Arch. Neurol.* **9**, 232, 1963.
8. POSKANZER, D. C. and SCHWAB, R. S.: Cohort analysis of Parkinson's evidence for a single etiology related to subclinical infection about 1920, *J. chron. Dis.* **16**, 961, 1963.