British Journal of Psychiatry (1986), **149**, 621–623

The Nithsdale Schizophrenia Survey
V. Follow-up of Tardive Dyskinesia at $3\frac{1}{2}$ years

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The point-prevalence of tardive dyskinesia in schizophrenics from a discrete geographical area (Nithsdale, in Dumfries and Galloway Region) in 1981, 1982, and 1984 was 31%, 27%, and 30% respectively. This suggests that the prevalence of tardive dyskinesia in a community of schizophrenics has reached a plateau. In 12% of patients there was persistent dyskinesia, i.e. abnormal involuntary movements were present at all three assessments. Persistent dyskinesia was more common in older patients. The severity of tardive dyskinesia fluctuated between assessments in 41% of patients, indicating that it is only a transient feature in some cases.

A previous study of tardive dyskinesia (TD) in all known schizophrenics in Nithsdale, a historically ancient and geographically discrete part of Dumfries and Galloway Region, found a point-prevalence of 31% (McCreadie *et al*, 1982); an interim review one year later found a prevalence of 27% (Barron & McCreadie, 1983). It was suggested that as a generation of schizophrenics has now been exposed to neuroleptics, which are thought to be the main aetiological factor in TD (*The Lancet*, 1979), the community prevalence might have reached a plateau. To determine whether this may be so, the present study examined Nithsdale schizophrenics $3\frac{1}{2}$ years after the initial census. It also identified and described patients with persistent dyskinesia.

Method

The 1981 census

The original census, carried out in March 1981, identified all known schizophrenics in Nithsdale. Included in the survey were all in-patients, day-patients, and out-patients of Crichton Royal Hospital who on 1 March 1981 had a firm case-record diagnosis of schizophrenia and whose home address was in Nithsdale. In addition, all the general practitioners in the area replied to our questionnaire and identified schizophrenics known to the practice and receiving treatment. The Feighner criteria for schizophrenia (Feighner *et al*, 1972) were applied to each patient. The census identified 133 schizophrenics, 117 of whom were examined for tardive dyskinesia.

$3\frac{1}{2}$- year follow-up

The repeat census was carried out $3\frac{1}{2}$ years later (20 August 1984) in a similar way to the initial survey. It identified 145 schizophrenics, of whom 70% fulfilled the Feighner criteria for definite or probable schizophrenia, and 88 (61%) were members of the original cohort: 17% were in-patients, 24% day-patients, 39% out-patients or supervised by a community psychiatric nurse (CPN), and 20% were attending only their family doctor.

We examined 130 of the schizophrenics (90%) for evidence of tardive dyskinesia—all the in-patients, all the day-patients except one, all the out-patients except one, all the CPN patients and 57% of the general-practice patients. To assess TD, we used the Abnormal Involuntary Movements Scale (AIMS) (US Department of Health, Education and Welfare, 1976), in which individual areas of the body are examined and then a global assessment is made: this ranges from 0 (no movements) through 1 (minimal), 2 (mild), and 3 (moderate), to 4, 'severe movements'. The assessments exclude tremor, akathisia, and dystonia. Our assessments were made during a 6-week period by two psychiatrists, and 12% of patients were examined independently by both psychiatrists to assess inter-rater reliability.

Of those examined, 16% were not currently receiving neuroleptics, but only 5 patients (4%) had no record of such drugs having been prescribed in the past; 27% were receiving anti-parkinsonian drugs. The length of time for which patients had been receiving neuroleptics since the initial census and the route of drug administration were determined; no attempt was made to estimate the total quantity of medication prescribed, as such information would probably have been inaccurate, especially for out-patients and general-practice patients.

Differences between groups were tested by the chi-squared test.

Results

Inter-rater reliability on the 5-point global AIMS scale was high (Spearman rank correlation coefficient $r = +0.82$, $P < 0.01$).

1984 prevalence of abnormal movements

If patients with a rating of at least 'mild' on the global AIMS

TABLE I
Point prevalence of abnormal involuntary movements among schizophrenics in Nithsdale (1981, 1982, 1984)

Abnormal movements (AIMS score)	*1981*		*1982*		*1984*	
	All patients ($N=117$)	*Subgroup** ($n=88$)	*All patients* ($N=122$)	*Subgroup** ($n=88$)	*All patients* ($N=130$)	*Subgroup** ($n=88$)
Mild/moderate/severe	31%	35%	27%	32%	30%	30%
Nil/minimal	69%	65%	73%	68%	70%	70%

*Subgroup: patients rated on all three occasions

scale are considered to have definite TD, then the prevalence is 30% (Table I): 18% with only oro-facial movements, 3% with trunk and/or limb movements, and 9% with both oro-facial and distal movements.

Persistent dyskinesia

Of the 145 patients, 88 (61%) had been examined on all three occasions. The prevalence figures for definite TD in this subgroup in 1981, 1982, and 1984 were 35%, 32%, and 30% respectively (Table I). Almost half (47%) of the subgroup had never shown signs of dyskinesia; 12% had dyskinesia on all three occasions ('persistent dyskinesia'); and 41% had dyskinesia on at least one but not three occasions ('fluctuating dyskinesia'). In the 'fluctuating' group, the severity of dyskinesia increased over time in 11% of cases, decreased in 17%, and showed no trend in 13%. The details of these changes are presented in Table II.

Patients with persistent dyskinesia were compared with those who had never had abnormal movements, on the basis of sex, age, hospitalisation status. Feighner categorisation, and medication (current and previous, antipsychotic and anti-parkinsonian). There were no statistically significant differences between the two groups, although the trend was that patients in the persistent dyskinesia group were older (mean age 51 years *vs* 45 years) and more often in-patients or day-patients (73% *vs* 44%).

In the group with fluctuating dyskinesia, when those with worsening TD were compared with patients showing decreasing TD, there were no statistically significant differences in the clinical, social, and demographic characteristics outlined above. In particular, there was no clear relationship between the starting or stopping of anti-psychotic or anti-parkinsonian medication and fluctuation in dyskinesia. However, the trend was that patients with worsening TD were younger (mean age 51 years *vs* 61 years).

Of those with persistent dyskinesia, 9% had only oro-facial movements and 91% both oro-facial and distal movements.

TABLE II
Patterns of presence/absence of abnormal involuntary movements in a group of 88 schizophrenics all of whom were assessed in 1981, 1982 and 1984

1981	*1982*	*1984*	*n (%)*
Absent	Absent	Absent	41 (47%)
Absent	Absent	Present	4 (4%)
Absent	Present	Present	6 (7%)
Absent	Present	Absent	6 (7%)
Present	Absent	Present	5 (6%)
Present	Absent	Absent	10 (11%)
Present	Present	Absent	5 (6%)
Present	Present	Present	11 (12%)
			88

Discussion

The point-prevalence of TD in all known schizophrenics from a given geographical area, assessed on three separate occasions spread over $3\frac{1}{2}$ years, has remained fairly constant between 27% and 31%. It is probable, therefore, that the community prevalence has indeed reached a plateau, and is not likely to increase further with time. As new patients develop schizophrenia and are given neuroleptics, some will develop dyskinesia. These will be balanced in numbers by others dying or recovering from the illness; in the latter group, medication will probably be stopped. The plateau in the present series of studies contrasts sharply with the reported increase in prevalence during the 1970s. As anti-psychotic medication was widely prescribed at that time, the supposed increase in prevalence probably reflects clinicians' increasing awareness of the condition: the true prevalence may well have been essentially unchanged throughout.

Interpretation of our results is complicated by the finding that although about a third of the patients

https://doi.org/10.1192/bjp.149.5.621 Published online by Cambridge University Press

had TD at any given time, only 12% of those patients rated on all three occasions had persistent dyskinesia. This latter figure is probably a more accurate assessment of the severity of the problem: point-prevalence figures include mild and reversible TD, and paint too gloomy a picture. Schizophrenics with persistent dyskinesia tended to be older than those with no TD: age is the only factor consistently found to be associated with TD (Smith *et al*, 1979; Seeman, 1981; Kane & Smith, 1982; Barnes *et al*, 1983).

41% of patients examined on all three occasions had TD on one or two, but not all three occasions. There are no doubt several reasons for fluctuating dyskinesia (reviewed by Bergen *et al*, 1984). Deficiencies in assessment, such as within-rater variability (Bergen *et al*, 1984), lack of sensitivity of the rating scale (Barnes, 1984), or lack of standardisation of rating schedules in relation to time of depot neuroleptic administration (Barnes & Wiles, 1983), may be important. It is unlikely, however, that these methodological problems can entirely explain fluctuating dyskinesia: the present findings therefore emphasise the transient nature of TD in some patients. In the present study, worsening dyskinesia over time was more common in young patients. Such patients had probably had a shorter exposure to neuroleptics, which had not yet produced their maximum effect; as the years go by, dyskinesia may be expected to worsen in them.

Acknowledgements

We wish to thank Mrs M. McCormick and Miss P. Cowan for secretarial assistance.

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(*Accepted 30 October 1985*)