British Journal of Psychiatry (1991), **158**, 485–490

A Retrospective Case-Note Study of Bipolar Disorder in Old Age

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In a replication of an earlier published study, case notes of 75 elderly in-patients with bipolar affective disorder were examined. Few of the patients had experienced a manic episode before the age of 40. Mean age of onset of affective disorder was 46 years, and first manic episode at 60 years. Cerebral insults before the first manic attacks were recorded in a substantial number of cases, and a family history of mental illness was less common among this group. Bipolar affective disorder is relatively common as a reason for admission of elderly patients.

There is evidence that the prevalence of bipolar disorder decreases with age. Weissman *et al* (1988) in their Epidemiologic Catchment Area Project reported a one-year prevalence rate of 0.1% among 5507 persons over the age of 65, compared with 0.4% for those aged 45–64 years and 1.4% for the age group 18–44 years. They recorded a mean age of onset of 21 years.

Earlier reports commented that onset of bipolar illness is rare after age 60 (e.g. Loranger & Levine, 1978), although Spar *et al* (1979) suggested that the rarity might be partially accounted for by diagnostic inaccuracy. Spicer *et al* (1973) produced evidence that the incidence of mania does not decline with age, and Goodwin & Jamison (1984) reviewed studies showing that later age of onset is associated with increased frequency of relapse. Shulman & Post (1980) purported to dispel the myth that bipolar disorder is rare in old age, but posed a number of unanswered questions. They wondered why so few of their 67 patients (aged 60 or more when admitted) had developed their bipolar illness early in life. Only 8% of their elderly bipolar patients became manic before the age of 40.

Clayton (1981) commented that the number of unipolar patients who finally develop bipolar disease is uncertain. Shulman & Post (1980) called into question Perris's (1966) criteria for unipolar disorder, pointing out the very late age of onset of mania, as well as the large number of depressive episodes and the long latency period before the first appearance of mania, in many of their cases. Stone (1989) reported similar findings in a retrospective study of 92 elderly patients admitted with mania. Clayton (1981) believed that her data confirmed Lewis' (1936) view that as people grow older the intervals between manic–depressive attacks may grow shorter and the attacks themselves longer, but she commented that the question of chronicity in bipolar affective disorder is still unanswered.

The questions raised by Shulman & Post's (1980) study are important and have not yet been satisfactorily answered. Results of longitudinal studies of those who developed the disorder before the age of 40 will be very helpful. Meanwhile, a replication of Shulman & Post's study could be informative.

Method

The psychiatric units at the Prince Henry and Prince of Wales group of hospitals took on responsibility for a catchment area in 1977. These teaching hospitals have over 1000 adult medical and surgical beds, and 100 psychiatric beds. Since 1977 almost all the psychiatric patients sent into hospital on compulsory orders from the eastern suburbs of Sydney (population about 250 000) and most elderly voluntary patients from that area have been admitted to one of the units (see Snowdon, 1981).

During the ten years after accepting this responsibility (i.e. up to October 1987) there were 1833 admissions to the psychiatric units of 1075 persons aged 60 or more who reside in the catchment area. A far smaller number of elderly people from the area (and presumably few elderly bipolar patients) were admitted to other psychiatric hospitals (private or public) during this time. During the same ten years, there were 489 admissions of persons aged 60 or more (346 people) from outside the area, referred because of the units' recognised interest in affective disorders.

The aim of this study was to review in detail the hospital notes of all patients aged 60 or more who were diagnosed as having manic–depressive or bipolar disorder during this ten years and to extract information that could be compared with Shulman & Post's (1980) findings. Names of all patients aged 60 or more were obtained from the admission books of the psychiatric units, and their notes or summaries were inspected (whatever the recorded diagnosis) to ensure that all relevant cases were included in the review. Some cases were excluded, even though at some time a diagnosis of manic–depressive (bipolar) disorder was recorded: cases were included only if there was a history of clear-cut affective episodes which included at least one well documented manic episode lasting at least two weeks. It was required that the patients had all been admitted to hospital at age 60 or over for an affective episode, manic, depressive

or mixed; manic episodes could have occurred at any time during the person's lifetime.

Age of onset of the affective illness was determined by the first episode of prominent and persistent mood disturbance, requiring active treatment or intervention. DSM-III criteria (American Psychiatric Association, 1980) were used for diagnosing mania and depression, except that as in Shulman & Post's (1980) study, cerebral organic impairment was not an exclusion criterion. Hypomania and mania are both included under the term 'mania'.

Notes (mainly those kept by registrars in training, but also those of consultants, nurses and other staff and including out-patient and previous in-patient visits) were of a high standard. In occasional cases, relevant data were missing, particularly where patients were admitted for very short periods of time.

Results

A total of 75 cases (52 women, 23 men) were identified as definitely fulfilling the criteria. About 12% of admissions of persons aged 60 or more were because of bipolar affective disorder.

Fifty-four of the 75 cases were resident in the recognised catchment area of the psychiatric units, whereas 21 lived further away. One local resident was admitted 23 times. The mean number of admissions in the ten years of the other 53 area residents was 3.65 (range 1 to 13; 28 were admitted only once or twice). None was in hospital for more than a few months. At a rough estimate, 0.03% of area residents over age 60 (and a similar percentage of those over 65 years) were admitted to the units once or more per year because of bipolar affective disorder.

A further 15 cases (11 from the area, four from outside) were not included even though a diagnosis of bipolar affective disorder had been recorded in their notes. In seven of these cases there was insufficient information in the notes, especially in relation to the history of mania; in five cases the evidence in the notes did not clearly support a diagnosis of mania; in three cases schizophrenia had been diagnosed on all or most other admissions; and in one case dementia was diagnosed at the prior and succeeding admissions.

The following results are for all 75 patients, since no discrepancies were detected between area and non-area patients.

The type of first affective episode was recorded as depression in 46 patients (61%), mania in 13 (17%), mixed in six (8%) and undetermined in 10 (13%). A 'mixed' episode was defined as one where significant depressive and manic signs and/or symptoms were recorded together or alternating during a single affective episode. Of the mixed cases, four out of six were described in the notes as mania *or* mixed.

The mean age at which their first affective episode developed was 46.5 years ($n=74$), the range being 17 to 73 years; for men the mean was 52.7 years ($n=23$), while for women it was 43.7 years ($n=51$ (uncertain in one case)). The exact age of the first manic episode was uncertain in 17 cases (for example, in cases where it was stated that there had been elevation of mood or erratic behaviour for a few days at some time, but the first admission for mania was later), but in ten of these the age of the first such episode could be estimated to within three years with reasonable confidence. Thus the mean age at which the first manic or mixed episode occurred (excluding the seven uncertain cases) was about 58 years (men 62.5 years, $n=19$; women 56.5 years, $n=49$). Distributions of age of onset and age of first manic episode appeared unimodal (Table 1). In 45% of cases the first recorded affective episode was at age 50 or later. Figures for area and non-area patients were similar. Furthermore, the sex difference in age of first affective episode and of first manic episode was the reverse of Shulman & Post's (1980) finding, since both occurred earlier among women.

Among those whose first affective episode was a depression ($n=46$), the mean latency period before the first manic episode was 16.4 years for 32 women (data for three unknown) and 12.0 years for 11 men. The mean age of onset of mania in these cases was about 60 years. Among the 34 cases where the interval between first depression and first (subsequent) manic episode was known accurately, the lapse was 15 years or more in 44% and 25 years or more in 26%, ranging up to 36 years. Of 39 subjects whose first episode was depressive, 54% ($n=21$) had at least three depressive episodes before their first manic attack, 38% had at least four, and 28% had at least five (in seven cases the number of depressive episodes before becoming manic could not be determined). Moreover, similarly to Shulman & Post (1980), it was found that no elderly bipolar patient whose first attack was purely depressive became manic before the age of 40.

Only three of the area patients and one from outside the area had their first manic attack (none had mixed states) before the age of 40 (at ages 19, 27, 35 and 39), all of these attacks being their first affective episodes. Two of these patients had only manic attacks, but two (those starting at age 19 and 39) had depressions as well. In six of the 75 cases it is not known for certain that they did not have a manic episode before age 40, three being cases where the type of affective swing in their first attacks could not be determined, and the other three starting with depression at ages 21, 27 and 34 with first *definite* manic episodes occurring at 47, unrecorded age, and 42 years.

Table 2 shows that 13 patients were known to have cerebral or neurological abnormalities before the onset of mania. The location of brain damage was not known with certainty in most. One of the 13 had pre-senile dementia. In three additional male cases, abnormalities were recorded (two cerebrovascular accidents, one head injury) but the date of the first manic episode was uncertain; one of the three had a family history of affective disorder. In another male case there was a lengthy history of alcohol abuse and hypoxia, before the onset of mania. Six patients were recorded as developing dementia after onset of mania, four being diagnosed at least 10 years after their first manic episode. Only one had a family history of mental illness. Mean age of onset of their first affective episodes was 53 years, the earliest being at age 41.

Only two of the 13 with a history of cerebral or neurological abnormality before onset of mania had a

Table 1
Frequency distribution of the ages of first affective episodes and of first definite manic or mixed episodes among elderly patients with bipolar disorder

	Age group: years													
	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75+	Total
Onset of affective disorder (no. of cases):														
male	–	1	–	1	3	2	1	4	4	2	1	3	1	23
female	3	2	3	5	4	7	9	7	4	3	2	2		51
total	3	3	3	6	7	9	10	11	8	5	3	5	1	74[1]
Onset of mania (no. of cases):														
male	–	–	–	–	1		2	1	2	3	3	3	3	18
female	1	–	1	–	1	4	6	9	5	9	8	6		50
total	1	0	1	0	2	4	8	10	7	12	11	9	3	68[1]

1. Cases omitted if age of onset uncertain.

Table 2
Bipolar patients ($n = 13$) with known cerebral or neurological abnormality (HI = head injury, CVA = cerebrovascular accident, SAH = subarachnoid haemorrhage, RTA = road traffic accident, TIA = transient ischaemic attack) before first manic episode[1]

Sex	Family history of affective disorder	Age of onset of affective disorder: years	Age of onset of mania: years	Age of occurrence of organic condition: years	Comment
M	Yes	60	62	46 & 61	HI at 46, CVA at 61
M	-	70	75	75	CVA
M	-	57	57	54	Alcoholic, pre-senile dementia
M	-	39	66	65	HI
M	-	55	55	54	SAH
M	-	68	68	61	HI
F	Yes	33	62	62	Cardiac arrest
F	-	50	68	60	CVA
F	-	31	50	45	HI
F	-	34	69	58	RTA (unconscious)
F	-	66	66	60	TIAs
F	-	Years ago	63	62	TIA
F	-	17	66	64	Fits after drug withdrawal

1. In 3 other male cases it was uncertain whether their cerebral abnormality preceded the first manic episode.

recorded family history of affective disorder. In contrast, there was a positive family history in 27 out of 56 cases where no cerebral or neurological insult had occurred before onset of mania ($\chi^2 = 3.41$, $P > 0.05$). Information about family history was lacking in three cases.

Of 73 patients (no relevant data on two), 26 had a recorded history of mental illness and/or suicide among first-degree relatives. Of those nine with a first-degree relative (four fathers, one mother, three children and one brother) who had committed suicide, eight had an onset of affective disorder after age 40; the ninth had depression at age 34.

The vast majority of the patients ($n = 69$) had been treated with lithium, although three had to stop because of side-effects. One did not receive it because of heart trouble. Many were still taking it (in 1987), but several others were taking clonazepam or carbamazepine instead.

Of the total 75 patients, 34 were married when first admitted, 21 were widowed, 10 were divorced or separated, and 9 were single (no relevant data in one case). Hysterectomy was performed on 17 of the women (33%) and oophorectomy on a further two, out of 51 (no data on one).

Discussion

This study confirms many of the findings of Shulman & Post (1980). In both these studies of elderly persons with bipolar disorder, the late ages at which the first affective and first manic episodes occurred are remarkable, although in this study the earlier onset among females is the reverse of the 1980 finding. Among those who had depression first, a large proportion had several depressive episodes and many had a long latency period (over 25 years in a quarter of the cases) before the appearance of mania. This supports Shulman & Post's (1980) recommendation for caution before making confident statements that an affective disorder is unipolar.

Paucity of early-onset cases

The mean age of onset of bipolar affective disorder has been reported as about 32 years (Goodwin & Jamison, 1984). Joyce (1984) pointed out that the median age of onset is younger (23 years). Why then was there such a paucity of early-onset cases in the present study and in that of Shulman & Post (1980)? Possible explanations include: (a) premature death of early-onset patients; (b) reduced frequency of episodes requiring hospital admission; (c) admission to other facilities; (d) changed diagnosis; (e) organic cases inappropriately included; and (f) inaccurate recall of age of onset. These explanations are expanded below.

First, premature death may be part of the answer. The mortality rate among manic–depressive patients is two to two and a half times that of the general population although earlier studies found it to be higher (Goodwin & Jamison, 1984); nearly half of them die before the age of 70 years. Weeke & Vaeth (1986) demonstrated the excess mortality among bipolar patients. Tsuang (1978) showed that 6.5% of 92 manic patients died by suicide during a follow-up period of 30–40 years. Angst (1980) followed up 95 bipolar patients for over 25 years, until their average age was just over 60 years; ten had died, but only three by suicide.

Second, Angst (1980) showed no reduction in frequency of affective episodes with age among his series; the majority of cases had not 'burnt themselves out'. However, this contrasts with Grof *et al*'s (1979) view that affective illness sometimes becomes inactive after a number of episodes. Late age of onset appears to be associated with a higher relapse rate (Zis *et al*, 1979), which might account for a higher proportion of such cases among those admitted to hospital. Angst (1980) did not comment on rates of admission to hospital. It would be relevant to know whether, even though his patients continued to have episodes of affective disorder, fewer required admission during such episodes. Maybe after years of experience of a particular patient, doctors can control their affective swings more effectively. It is possible that most such patients only require admission to a psychiatric unit in old age if they have a superimposed organic condition; others have suggested that age-associated changes in the brain may reduce the capacity for manifesting certain signs and symptoms of manic illness (Young & Falk, 1989).

Third, the possibility that early-onset cases were being confined in or referred to other institutions was investigated during the present study. A review in psychogeriatric wards at the nearest mental hospital revealed only seven patients with bipolar disorder who had been in hospital more than a year; none came from the units' catchment area. Involvement by the author in local nursing homes and hostels shows that patients who develop marked mood swings are referred into hospital for treatment. Confinement in such institutions cannot explain the findings.

Fourth, there was no evidence in this study that elderly patients with a history of bipolar disorder were now being diagnosed as having a different condition (e.g. dementia or paranoid state). Notes and/or summaries of all elderly persons admitted to the units were carefully perused with this possibility in mind.

Fifth, some might question whether cases where organic brain changes were noted should have been included among the bipolar cases in both Shulman

& Post's and the present study. However, excluding them makes the paucity of female early-onset cases in the present series even more striking.

The sixth possibility is that the age of onset of affective disorder was incorrectly recorded in the notes. It may be that patients and their relatives were inaccurate in their recall of previous episodes of admissions, or that doctors did not seek or record appropriate information. Joyce (1984) interviewed 66 bipolar patients and found that six had depressive episodes before the first affective episode recorded in their case notes, although only one had received earlier out-patient treatment; another had an unrecorded earlier hospital admission. It is known that case notes at the hospitals and units where Shulman & Post (1980) and the present author carried out their studies were of a high standard. It seems likely that relevant available information concerning prior affective episodes was recorded in most cases. However, in a number of cases in the present study, patients and informants were recorded as being uncertain or vague in their recollection of early affective symptoms. Goodwin & Jamison (1984) point out that manic–depressive patients not uncommonly have histories of labile mood for several years before the onset of a definitive episode. Where information was uncertain in the present study, analyses were made with the data excluded and then included.

Further longitudinal studies of middle-aged patients with early-onset bipolar disorder are desirable to try to better elucidate the reasons for the paucity of early onset cases among elderly bipolar patients in hospital.

Organic conditions before mania

Shulman & Post (1980) reported that a considerable proportion of their bipolar patients had cerebral organic disorders before the onset of their mania. The proportion in the present study was similar, but without the male preponderance. It could be appropriate to consider some of these to be cases of secondary mania; this term was used by Krauthammer & Klerman (1978) to describe manic syndromes associated with antecedent physical illness or drugs. They found their patients had a later age of onset and (where known) no family history of bipolar disorder. In the present study, those with cerebral organic impairment before the onset of mania were less likely to have a family history of mental illness. Stone (1989) found persisting clinical evidence of cerebral organic impairment in 22 of 92 elderly patients admitted with mania, but only two had a family history of affective illness. By contrast, Starkstein & Robinson (1989) reported that four of nine cases of post-stroke mania had a family history of affective disorder.

In four of the 13 cases detailed in Table 2 a diagnosis of organic affective syndrome (called organic mood disorder in DSM–III–R) might have been considered, since they had no history of affective disorder themselves or among family members before the organic disorder. Three of these had recurrent manic episodes, with long intervening periods of euthymia. The fourth (case 11) had a single depressive episode and then a manic episode, some years after first developing cerebrovascular disease. In the other nine cases the pattern of depressive swings before their organic disorder makes it appropriate to record a change of diagnosis from unipolar to bipolar disorder, rather than from unipolar to organic mood disorder.

In one case, cardiac arrest (and consequent cerebral anoxia) preceded first onset of mania (Table 2). Several further depressive episodes and another manic episode occurred during the next five years. Kumar & Agarwal (1988) reported a 32-year-old man who developed affective disorder, initially manic, six months after cardiac arrest.

Epidemiology of bipolar disorder in old age

A majority of the present sample were resident in a recognised catchment area, and the sample included those admitted compulsorily and those initially admitted to medical and other wards. A number of bipolar cases were included in the study even though the type of the first affective episode was uncertain. It is likely that most elderly residents of the catchment area who were admitted to hospital during the ten years because of bipolar disorder have been included in the study. The composition of Shulman & Post's (1980) sample may have been more subject to selection factors, although the findings in theirs and the present study were remarkably similar.

The hysterectomy rate in the present sample (33%) was somewhat higher than age-specific hysterectomy rates in New South Wales (25% at age 70, 28% at age 80) (Dickinson & Hill, 1988); examination of the influence of sociodemographic factors has not been possible.

From the present study it is estimated that at least 0.03% of area residents over the age of 65 are admitted to hospital once or more per year because of bipolar affective disorder. In this part of Sydney, 12% of elderly admissions to psychiatric units are for treatment of bipolar disorder. The percentage treated as out-patients or in the community or by general practitioners, the percentage admitted to

private or non-area hospitals, and the percentage untreated, have not been estimated. The evidence is that bipolar affective disorder is a common problem among elderly people referred for psychiatric treatment.

Acknowledgements

Many thanks are due to Drs Ken Shulman and Henry Brodaty for comments on an earlier draft of this paper. Discussions with Dr Brian Gutkin (who conducted a similar but unpublished study) were also helpful. Financial support from the Prince Henry Hospital Centenary Research Fund is gratefully acknowledged.

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