First presentation psychosis among the elderly in Singapore

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INTRODUCTION In tandem with our ageing population, it is observed there is a growing trend of elderly patients presenting for the first time with psychotic symptoms. Clinical experience suggests differences in the phenomenology of late-onset psychosis in our Asian context compared to studies done in the West. This study aimed to analyse the characteristics and psychopathology of first presentation psychosis in our local elderly and to determine the treatment outcome over a 12-month period.

METHODS A total of 64 subjects with first presentation psychosis were consecutively recruited. Those with a non-affective, non-organic psychotic disorder were evaluated using the Positive and Negative Symptoms Scale, the Clinical Global Impression Scale, Mini-Mental State Examination and the Beck's Depression Inventory.

RESULTS Of the 64 subjects recruited, 55 were enrolled in the study. 59.3% (n = 32) of the subjects were diagnosed to be suffering from very-late-onset schizophrenia-like psychosis, followed by delusional disorder in 31.5% (n = 17). The remaining 11.1% (n = 6) were diagnosed to have late-onset schizophrenia. The sample showed a high preponderance of women, with 88.9% reporting persecutory-type delusions. The majority of them were married and 80% of the subjects were living with relatives. Treatment was effective in ameliorating symptoms, but there was a high loss to follow-up of male subjects (81.8%).

CONCLUSION This descriptive study found sociodemographic and phenomenological similarities to other studies of late-onset psychosis in the West, except that social isolation and partition delusions were not prominent.

Keywords: late onset, psychopathology, schizophrenia
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INTRODUCTION

There has been a growing trend of the elderly presenting with psychotic symptoms for the first time. In many of such cases, the onset of psychotic symptoms may have been many years prior to their first consultation with mental health service. A significant number of patients need to be escorted by the police in view of their aggressive and dangerous behaviour. Even if their loved ones manage to persuade them to seek treatment eventually, they frequently default follow-up and treatment after their discharge, particularly those who are diagnosed with late-onset delusional disorder or late-onset schizophrenia-like psychosis. We tend to view schizophrenia as a mental illness characterised by onset in late adolescence or early adult life. However, a significant minority of patients who are diagnosed with schizophrenia or a schizophrenia-like disorder develop their first psychotic symptoms in middle or old age, particularly female patients.[1-3] Besides Western studies, there have been no studies done locally to investigate the characteristics and psychopathology of late-onset psychosis.

This descriptive study presents the sociodemographic and clinical findings of a cohort of first presentation psychosis among elderly subjects. It further analyses the psychopathology of those diagnosed to be suffering from late-onset delusional disorder, late-onset schizophrenia and very-late-onset schizophrenia-like psychosis. It is hoped that this study will improve our knowledge and understanding of psychosis in late life as well as the planning of our psychogeriatric services.

METHODS

A total of 64 subjects with first presentation psychosis were consecutively recruited from the inpatient and outpatient units of the Department of Geriatric Psychiatry, Woodbridge Hospital, Singapore, over a period of two years. Being the only psycho-geriatric department in Singapore, the Hospital manages a large number of elderly subjects with mental disorders, particularly those with disruptive and potentially violent and aggressive behaviour. Patients with psychotic symptoms were asked for their consent to participate in the study. In cases where a patient was unable to provide consent due to suspected cognitive impairment, the next-of-kin was asked to give consent on behalf of the patient. The research protocol was approved by the Institution's Research Ethics Committee.

For all subjects, this was their first presentation of a psychiatric disorder. A diagnostic screening interview was conducted and sociodemographic information was obtained via a questionnaire. Subjects with psychotic symptoms secondary to neurocognitive or mood disorders were excluded from the study. The inclusion criteria for selection of patients for diagnostic assessment were age ≥ 65 years, the presence of delusions or hallucinations, disorganised speech or behaviour

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and no prior hospitalisation or treatment for a psychiatric disorder.

Assessments to determine potential subjects' psychiatric diagnoses were conducted by two consultant psycho-geriatricians in the department. Psychiatric diagnoses were obtained for patients based on the Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM-IV)[4] (using the Structured Clinical Interview For DSM-IV Axis 1 Disorders) and all available sources of information, including patient interviews, collateral reports from family or significant other, medical charts and evaluations conducted over the course of hospitalisation. In addition to the diagnostic assessment, all subjects were evaluated with a battery of clinical and behavioural assessments within the first 72 hours of admission. This was to avoid attenuation of psychotic symptoms with antipsychotic treatment. Late-onset schizophrenia was defined as the onset of psychotic symptoms at 40–60 years of age and very-late-onset schizophrenia-like psychosis was defined as the onset of psychotic symptoms beyond 60 years of age.

Findings from computed tomography (CT) imaging of the head were graded as follows: (a) normal, if no abnormality was present, except for mild changes consistent with current age; (b) mild changes, if one or two areas of abnormality, not identified clinically, were present; and (c) moderate to severe changes, if multiple areas of abnormality were present, which may or may not have been clinically identified.[5] Hearing impairment was assessed on a three-point scale, ranging from normal to severe.[6] For subjects diagnosed to have a non-affective, non-organic psychotic disorder (schizophrenia or delusional disorder), the Positive and Negative Symptoms Scale (PANSS) was used to evaluate the general psychopathology and symptom severity. There was an excellent inter-reliability score (r = 0.89) between the two raters.

The Mini-Mental State Examination (MMSE) was used for the assessment of cognitive impairment. The Beck's Depression Index (BDI) was also administered to assess for depressive symptoms. The subjects were rated on the PANSS again 12 months after the initiation of treatment. This was a naturalistic study and treatment was not controlled. Data were collected for subjects treated for a non-organic, non-affective psychotic disorder in order to evaluate the relationship between treatment and outcome. The time from the onset of the first psychotic symptoms to first presentation would be the difference between the age of onset of first psychotic symptoms and the age of first presentation. Age of onset of first psychotic symptoms was ascertained using a best estimate approach based on all the available information, including patient report, chart history data, and when available, the report of a family member. Patients were evaluated on their psychopathology 12 months after the initiation of treatment, where the PANSS was again administered. Syndromic recovery was determined by an achievement of at least 20% reduction of the total PANSS score.[7,8] Patients were considered to have a relapse if they showed evidence of re-emergence of psychiatric symptoms that required some form of intervention. This was determined by the review of case notes and information gleaned from the subjects and their caregivers.

All statistical analyses were carried out using the Statistical Package for the Social Sciences version 16 (SPSS Inc, Chicago, IL, USA). Descriptive statistics were computed for the basic demographic and clinical variables. Means and standard deviations were calculated for continuous variables, and frequencies and percentages for categorical variables. Associations with categorical variables were assessed using chi-square or Fisher's exact test. A normality test was carried out for the continuous variables. Two-sample *t*-test was performed if the normal distribution assumption was satisfied; otherwise, Mann-Whitney *U* test was used. Differences in PANSS total scores between baseline and last visit (12-month) were tested by paired *t*-test and Wilcoxon signed-rank test for normal and non-normal continuous variables, whenever appropriate. Statistical significance was set at $p < 0.05$.

RESULTS

A total of 64 subjects were recruited; however, only 55 subjects were eventually enrolled into the study, since nine were diagnosed to have dementia (n = 7) and psychotic depression (n = 2), and were thus excluded from the study. Table I illustrates the sociodemographic characteristics of the subjects recruited. The mean age of the subjects was 72.0 ± 6.3 (range 65–93) years. There was a high preponderance of women with Chinese origin. A majority of them were married and living with relatives, with a mean of 3.2 children. Table II captures the subjects' recognition for help. A large majority of the subjects did not have insight with regard to the need for treatment and their children were usually the ones who prompted the referrals.

Table III summarises the clinical characteristics of the subjects. There was no significant difference in the age of onset of psychotic symptoms between male and female subjects (68.3 ± 7.8 years vs. 70.0 ± 8.1 years, p = 0.675), although female subjects reported a later age of onset. 58.2% of subjects met the DSM-IV criteria for very-late-onset schizophrenia and 30.9% were diagnosed with delusional disorders. A comparison of the demographic characteristics between these two groups did not reveal any statistical significance. However, subjects with very-late-onset schizophrenia had a significantly higher baseline PANNS total score (67.1 vs. 75.8, p = 0.05), were more likely to have hallucinations (5 vs. 35, $p < 0.001$) and had a lower MMSE total score (23.1 vs. 18.9, p = 0.015). CT images of the head were obtained in 43 out of the 55 subjects. A third of the cohort reported hearing or visual impairment.

Table IV details the various types of hallucinations and delusions reported by the subjects. In terms of psychopathology, 92.7% of the cohort presented with delusional thinking. Persecutory delusions were the most commonly reported type of delusions, and the subjects' neighbours appeared to be the most targeted group, with 36.4% of the persecutory delusions being directed at them. Five (9.1%) subjects reported partition

Table I. Sociodemographic characteristics of the subjects (n = 55).

Variable	No. (%)
Mean age ± SD (yrs)	72.0 ± 6.3
Gender	
Male	11 (20.0)
Female	44 (80.0)
Ethnicity	
Chinese	50 (90.9)
Malay	3 (5.5)
Indian	1 (1.8)
Others	1 (1.8)
Marital status	
Single	3 (5.5)
Married	27 (49.1)
Divorced	3 (5.5)
Separated	2 (3.6)
Widowed	20 (36.4)
Mean no. of children ± SD	3.2 ± 2.3
Employment status	
Employed	1 (1.8)
Unemployed	31 (56.4)
Housewife	23 (41.8)
Education	
Nil	28 (50.9)
Primary	16 (29.1)
Secondary	11 (20.0)
Accommodation	
Alone	8 (14.5)
With relatives	44 (80.0)
Nursing home	3 (5.5)

SD: standard deviation

Table II. Pathway to care.

Variable	No. (%)
Patient recognised need for help	
Yes	4 (7.3)
No	51 (92.7)
Persons who prompted referral* (n = 51)	
Spouse	3 (5.9)
Children	32 (62.7)
Grandchildren	1 (2.0)
Distant relative	2 (3.9)
Friends	1 (2.0)
Nursing home staff	5 (9.8)
Police	6 (11.8)
Volunteer	1 (2.0)

*These are subjects who did not recognise their need for help.

Table III. Clinical characteristics of the subjects (n = 55).

Variable	No. (%)
Diagnosis	
Very-late-onset schizophrenia-like psychosis	32 (58.2)
Late-onset schizophrenia	6 (10.9)
Late-onset delusional disorder	17 (30.9)
Age of onset of psychotic symptoms* (yrs)	69.7 ± 8.0
Duration of illness* (mths)	31.5 ± 62.6
CT head/MRI findings (n = 43)	
Normal	16 (37.2)
Mild changes	19 (44.2)
Moderate to severe changes	8 (18.6)
White matter disease or vascular lesions†	18 (41.9)
Hearing impairment	
Mild	5 (9.1)
Moderate	7 (12.7)
Severe	4 (7.3)
None	39 (70.9)
Visual impairment	
Mild	6 (10.9)
Moderate	1 (1.8)
None	48 (87.3)

*Data is expressed as mean ± standard deviation.
† These subjects were part of the 27 subjects with mild and moderate to severe changes.
CT: computed tomography; MRI: magnetic resonance imaging

Table IV. Hallucinations and delusions of subjects (n = 55).

Variable	No. (%)
Hallucinations	35 (63.6)
Running commentary	4 (7.3)
Second person	24 (43.6)
Third person	9 (16.4)
Auditory - others	7 (12.7)
Visual	16 (29.1)
Tactile	6 (10.9)
Gustatory	1 (1.8)
Olfactory	4 (7.3)
Delusions	
Persecution against spouse	51 (92.7)
Persecution against children	4 (7.3)
Persecution against sons-in-law	6 (10.9)
Persecution against daughters-in-law	5 (9.1)
Persecution against neighbours	20 (36.4)
Persecution - others	13 (23.6)
Jealousy	4 (7.3)
Somatic	5 (9.1)
Grandiosity	2 (3.6)
Partition	5 (9.1)
Religious	7 (12.7)
Reference	5 (9.1)

delusions. 63.6% of the subjects reported hallucinations, with auditory hallucinations, mainly of the second person type, being the most common form (43.6%), followed by visual hallucinations (29.1%). More than half of the subjects (n = 30) reported some form of aggression prior to their admission. Table V outlines the pre-existing medical conditions in our cohort. A majority of subjects had more than one vascular risk factor.

The mean PANSS score was 73.7 ± 7.5. Formal thought disorder and negative symptoms were rare. The mean of the negative symptom item was 1.9 and the lack of judgement and insight item of the general psychopathology subscale was 5.4 ± 1.5. There was no significant correlation between the PANSS score and the duration of untreated psychosis ($r = 0.111$, $p > 0.05$) or the MMSE ($r = -0.210$, $p > 0.05$). The mean MMSE score was 18.5 and 73.8% of the subjects scored below 24.0 on the MMSE. 54.8% of the subjects reported a normal range of moods in the BDI, and the mean score was 10.1 ± 5.9.

Over the 12-month period, there was a significant reduction in the total PANSS score (75.8 vs. 54.0, $p < 0.001$) in subjects who continued with the treatment. 29 (52.7%) subjects did not continue with their psychiatric reviews at the end of the 12-month period. Analysis of the drop-outs revealed that the majority were male. Nine out of the 11 male subjects (81.8%) defaulted

Table V. Pre-existing medical conditions of subjects (n = 55).

Medical condition	No. (%)
No. of medical conditions*	1.7 ± 1.5; 2
At least one pre-existing medical condition	42 (76.4)
≥ 3 medical conditions	14 (25.5)
Associated medical condition	
Hypertension	33 (60.0)
Hyperlipidaemia	14 (25.5)
Diabetes mellitus	8 (14.5)
Ischaemic heart disease	8 (14.5)
Cerebrovascular disease	5 (9.1)
Anaemia	5 (9.1)
Others	16 (29.1)

*Data is expressed as mean ± standard deviation; median

treatment after 12 months, as opposed to 45.5% of the female subjects (20 out of 44). For those who remained in treatment, only one subject relapsed within the follow-up period of 12 months. The mean daily dose of antipsychotic medications was at 99.9 chlorpromazine (CPZ) mg equivalents (range 0–500 mg) for those who achieved syndromic recovery at 12 months.

DISCUSSION

Western studies have supported a preponderance of female gender,[3,9] social isolation,[1,9] neurosensory impairment[10,11] and early cognitive deficits in subjects with first episode psychosis in old age.[12] In our study, we found a similar trend for females to be over-represented, accounting for 80% of the sample. Pearlson et al[9] as well as Marneros and Deister[13] have reported that females constitute about 80% of their study population. Female preponderance is even greater in studies of subjects with an onset of illness at ≥ 60 years of age.[1,3] Several factors have been suggested as possible explanations for the higher prevalence of late-onset schizophrenia in women. They include neuroendocrine changes, greater longevity, psychosocial stressors and role expectations.[14] This study showed that a great majority of the subjects, including females, did not seek treatment on their own due to a lack of insight, thus suggesting that care-seeking is an unlikely explanation for the higher prevalence of late-onset schizophrenia in women.

Sensory deficit exacerbates social isolation and predisposes individuals to misinterpret their environment. However, its potential role as a specific risk factor for developing psychosis in old age must be considered in the context of its high prevalence in old age. Deafness has been clinically associated with paranoid symptoms, since it can reinforce the pre-existing tendency for social isolation, withdrawal and suspiciousness,[15,16] and may reflect the paranoid patient's reluctance to seek corrective measures.[17] 29.1% of the subjects in our study had some degree of hearing or visual impairment, which is consistent with the figures of 25%–42% reported in the literature.[3,6] Visual impairments, such as cataracts or macular degeneration, have also been associated with paranoid psychosis and visual hallucinations.[18,19] However, the association between late-onset paranoid psychosis and visual impairment has not been convincingly demonstrated.[20] Only 12.7% (n = 7) of subjects in our study were found to have visual impairment. There was no association between the presence of auditory and visual impairments with auditory and visual hallucinations (p = 0.379 and p = 0.185, respectively).

Kay and Roth reported that about 40% of patients with late paraphrenia lived alone,[1] whereas Almeida et al cited that 79% of patients with late paraphrenia were socially isolated as compared with 18% the of age- and gender-matched controls in their study.[21] However, the role of social isolation in late-onset psychosis is yet uncertain, but there have been suggestions that deafness, deviant personality and few surviving relatives may be the contributing factors.[1,2] Howard et al's observation that sensory impairment and social isolation may arise in the context of very late-onset cases (onset of illness beyond 60 years of age)[17] is not supported in our study. Despite the fact that the mean age of onset of illness for our study was 69.7 years, social isolation was not prominent in our cohort. A majority of the subjects (80%) lived with their relatives, and only 14.5% lived alone. This could be attributed to the traditional Asian culture, in which family members continue to live together and care for their loved ones in their old age.

Cognitive impairment not amounting to a clinical diagnosis of dementia was found in a majority of the subjects; 73.8% scored less than 24 on the MMSE. This could be explained by the lack of formal education among 50.9% of the cohort. Moreover, the presence of neurosensory deficits in this cohort should be taken into account when interpreting the MMSE scores. In our study, the majority of subjects (58.2%) suffered from very-late-onset schizophrenia-like psychosis, and pre-existing medical problems were common. Abnormal CT head findings were found in 27 of the 43 available images (62.8%), and of these 27, 41.9% (n = 18) were found to have white matter disease or vascular lesions. In view of the high prevalence of vascular risk factors in our cohort, such as hypertension (60.0%), hyperlipidaemia (25.5%), ischaemic heart disease (14.5%) and diabetes mellitus (14.5%), this finding would not be surprising. There have been suggestions of the possibility of subclinical degenerative processes due to vascular pathology in late-onset schizophrenia.[12,22,23]

Partition delusions were reported only in 11% of our subjects, in contrast to the high frequencies described in some Western studies.[2,9,24] Partition delusion is the belief that people, animals, materials or radiation can pass through a structure that would normally constitute a barrier to such a passage. This barrier is generally the door, ceiling, walls or floor of a patient's home, and the source of intrusion is frequently a neighbouring residence. It had been postulated that this unique type of delusion may reflect a perception of breakdown in the barriers between their abode and a hostile outside environment. These elderly may also have a limited capacity for interpersonal relationships, and may have isolated and eccentric lifestyles. Our study did not support a high prevalence of social isolation, and this could explain the difference in this particular psychopathology among our subjects. Persecutory delusions were the most common psychotic symptoms and were primarily directed against neighbours.

This is in keeping with Almeida et al's study,[21] where 90% of patients reported persecutory delusions. Based on the nation's census conducted by the Department of Statistics, Singapore in 2010, about 82.4% of our population live in Housing Development Board flats in fairly close proximity to one another. Thus, it is not surprising that neighbours were the main targets of delusional thinking.

Auditory hallucinations were the most common type of hallucination, followed by visual hallucinations, a finding that is consistent with most Western studies.[1,2,9] In late-onset cases, Schneiderian first-rank symptoms have been found to be less common, and formal thought disorder and negative symptoms rare.[9,10] Likewise, the results of this study indicate that formal thought disorder and negative symptoms were extremely uncommon symptoms of late-onset psychosis. More than half of the cohort reported some form of aggression prior to their admission. Notably, those with both verbal and physical aggressions had the shortest duration of symptoms (mean 4.1 ± 5.1 months), a higher mean PANSS score (mean 84.6 ± 14.8) and a greater number of medical conditions (mean 2.5 ± 2.4). However, tests of significance were unremarkable, likely due to the small sample size.

In our sample, treatment was effective in ameliorating symptoms, with a fairly low dose of antipsychotic medications at 99.9 CPZ mg equivalents (range 0–500 mg). Open studies have reported response rates of 48%–61% on low doses of typical drugs.[25] It was noted that about half of our subjects defaulted treatment toward the end of the 12-month period. A high proportion of male defaulters has previously been reported in early-onset psychosis.[26] A trend for males with late-onset schizophrenia to be less responsive to medications has also been reported.[27] A high loss to follow-up among male patients in a sample of very-late-onset schizophrenia-like psychosis has been reported by Reeves et al.[28] Similarly, our study found a majority of males among the defaulters. This raised particular concerns regarding service delivery and assessment of risk in male patients, as they may constitute a poor prognostic group.

Our study was, however, not without its limitations. Firstly, our subjects were patients with very-late-onset psychosis recruited from referrals to a specialised psychogeriatric unit, and there was a preponderance of Chinese subjects. Thus, the findings may not be generalisable to the elderly in the community. Moreover, our sample was small, and hence, real differences may have been missed.

Nevertheless, this study increased our understanding of the profile and risk factors of elderly patients presenting with psychotic symptoms for the first time. The study found similarities in sociodemographic and phenomenological features compared to other studies of late-onset psychosis in the West, except that social isolation and partition delusions were not prominent in this cohort. In view of the high drop-out rates, future efforts should be directed at improving service provision and treatment compliance in the community.

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