

the general population. Another possible weakness in our study is the use of retrospective self-report, possibly decreasing the report of lifetime depression prevalence.

In conclusion, we found a significant difference of incidence and lifetime prevalence of depression in autopsy-diagnosed LBD and AD patients and a preponderance of men in the LBD group. Thus, a history of past depressive episodes and the development of depression after the initial visit in a male should raise the suspicion of LBD alone or as a co-morbidity.

Conflict of interest

None.

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JED FALKOWSKI,¹ LINDA S. HYNAN,^{1,2,3}
KYLE B. WOMACK,^{3,4}
KIMMO J. HATANPAA,^{3,5}
CHARLES L. WHITE III^{3,5}
AND MYRON F. WEINER¹

¹Department of Psychiatry, University of Texas Southwestern Medical Center, Dallas, Texas, USA
Email: JAF14@alumni.utsw.edu

²Department of Clinical Sciences, Division of Biostatistics, University of Texas Southwestern Medical Center, Dallas, Texas, USA

³Alzheimer's Disease Center, University of Texas Southwestern Medical Center, Dallas, Texas, USA

⁴Department of Neurology and Neurotherapeutics, University of Texas Southwestern Medical Center, Dallas, Texas, USA

⁵Department of Pathology, University of Texas Southwestern Medical Center, Dallas, Texas, USA

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Late-onset psychosis in older outpatients: a retrospective chart review

Late-onset psychosis (LOP) has become increasingly prevalent in the clinical setting, especially in the highly aged society, due to the increasing numbers of older people and its disruptive impact on the lives of patients and caregivers. Although previous studies have identified some of the features of LOP (Webster and Grossberg, 1998; Mitford *et al.*, 2010; Tan and Seng, 2012), some of the previous studies did not include patients with dementia and mood disorders. This study addresses the features of LOP in consecutive outpatients to provide information that supports the differential diagnosis.

We enrolled 1,024 consecutive outpatients over the age of 60 years who were seen at the department of Psychiatry, Kyoto Prefectural University of Medicine, between April 2009 and March 2013. A retrospective chart review of 1,024 outpatients was conducted. The outpatients with LOP were defined

as the outpatients who had first manifestations of psychosis, including delusions and hallucinations, at the age of 60 years or older. The early-onset psychosis (EOP) was defined as the first psychosis manifestation below the age of 60 years. The diagnosis was made by psychiatrists, according to the ICD-10. We defined hearing or visual impairment as poor hearing or visual capacity in the clinical examination and daily life. Thought disorder included thought broadcasting, loosening of associations, and blocking of thought, which was usually found in schizophrenia. Negative symptoms included affective flattening and impoverishment of speech. All data were coded and registered anonymously. We used the χ^2 test for the statistical analyses. In post hoc analyses, we used the χ^2 test with pairwise comparison. Differences in age were compared using one-way ANOVA with Bonferroni post hoc test. For the logistic regression analysis, a forward selection method (likelihood ratio) was used to determine the predictors of LOP. Variables, including age, gender, living alone, hearing impairment, visual impairment, and family

history, were entered into the logistic regression analysis. Living alone, hearing impairment, visual impairment, and family history were converted into dichotomous variables (0: absence, 1: presence). A p value < 0.05 was used to enter and eliminate variables. Data were analyzed using SPSS Statistics 22 (IBM Corp., USA.). $P < 0.05$ was considered statistically significant. The study was approved by the Ethics Committee of Kyoto Prefectural University of Medicine.

In the 1,024 outpatients, the numbers of outpatients with LOP, EOP, and those without psychosis were 157, 45, and 822, respectively. The mean age (77.8 ± 7.8 years) and the prevalence of hearing impairment (18.5%) in patients with LOP were the highest in three groups ($P < 0.001$). The prevalences of female gender (73.2%) and visual impairment (7.6%) in patients with LOP were significantly higher than in patients without psychosis ($P = 0.008$ and $P < 0.001$, respectively). The prevalences of thought disorder (4.5%) and negative symptoms (0%) in LOP group were significantly lower than in EOP group ($P < 0.001$). These differences were significant even using a Bonferroni–Holm correction. The prevalences of living alone (28.7%) and family history of psychiatric disorders (14.0%) in LOP group were not significantly different between three groups (Table S1, available as supplementary material attached to the electronic version of this paper at www.journals.cambridge.org/jid_IPG).

Multiple logistic analysis identified four independent predictors of LOP: visual impairment (odds ratio (OR): 13.19; 95% confidence interval (CI): 4.05–43.00; $P < 0.001$), hearing impairment (OR: 3.95; 95% CI: 2.21–7.07; $P < 0.001$), gender (OR: 1.55; 95% CI: 1.03–2.33; $P = 0.035$), and age (OR: 1.08; 95% CI: 1.06–1.11; $P < 0.001$).

In the etiology of LOP ($n = 157$), dementia ($n = 84$) was the most common, followed by delusional disorder ($n = 22$), schizophrenia ($n = 12$), depression ($n = 12$). When the three groups (F0 ($n = 94$), F2 ($n = 46$), and F3 categories ($n = 13$)) were compared, the type of delusion was different for each group. In the F0 category, the delusions of theft (35.1%), misidentification (28.7%), and persecution (24.5%) were common. In the F2 category, the majority of patients had delusions of persecution (63.0%). In the F3 category, the main types of delusions were of guilt (46.2%), persecution (46.2%), and observation (38.5%). In the F0 category, the family (41.5%) was the main subject of delusions. The neighbor (52.2%) was common in the F2 category, and the strangers (38.5%) and neighbor (30.8%) were common in F3 category. In 157 patients with LOP, 37 patients exhibited the first manifestations of both delusions and hallucinations after the age of 60 years. Among the causes of the

first manifestations of both delusions and hallucinations, dementia ($n = 19$) was the most common, followed by schizophrenia ($n = 12$), and depression ($n = 4$), respectively. Delusion of persecution and auditory hallucination ($n = 9$), and delusion of misidentification and visual hallucination ($n = 6$) were common combination in dementia.

In summary, the present study identified 157 patients with LOP among the consecutive outpatients and found that the most common etiology of LOP was dementia, followed by delusional disorder, schizophrenia, and depression. In addition, we found that LOP was associated with a predominance of females, relatively high prevalence of hearing and visual impairment, and a relative lack of thought disorder and negative symptoms. These results were consistent with previous studies (Webster and Grossberg, 1998; Mitford *et al.*, 2010; Tan and Seng, 2012). The combination of persecutory delusion and auditory hallucination was commonly observed, even in patients with dementia. This finding suggests that this combination is present in both schizophrenia and dementia patients; although it is usually regarded as one of the important suggestive features of schizophrenia. Our previous studies have indicated that it is difficult to diagnose when patients with AD exhibit psychosis similar to schizophrenia (Matsuoka *et al.*, 2010; 2011). We should consider the possibility of dementia when older patients exhibit psychosis. Our study has some limitations. First, our study was retrospective in nature, and the information could be insufficient especially about hearing and visual impairment. Second, there might be selection bias because this study was conducted only in a university hospital setting. These limitations should be considered in the interpretation. Further prospective investigations are needed in the community.

Conflict of interest

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Supplementary material

To view supplementary material for this article, please visit <http://dx.doi.org/10.1017/S1041610214002518>

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TERUYUKI MATSUOKA, HIROSHI FUJIMOTO,
YUKA KATO, KENJI FUKUI
AND JIN NARUMOTO

Department of Psychiatry, Graduate School of Medical
Science, Kyoto Prefectural University of Medicine,
465 Kajii-cho, Kawaramachi-Hirokoji, Kamigyo-ku,
Kyoto 602-8566, Japan
Email: tmms2004@koto.kpu-m.ac.jp