

EPIDEMIOLOGY OF AGE-RELATED DEMENTIA IN CHINA

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SUMMARY

An epidemiological study of age-related dementia was conducted in a population of 5172 aged 60 and over in an urban community of Beijing. The prevalence rate of moderate and severe dementia was 0.75% (39/5172), and increasing sharply with age. Rate for multi-infarct dementia was higher than those for primary degenerative dementia. In a three years follow-up study, seven new cases were diagnosed as with moderate or severe dementia in 825 re-examined subjects. The average annual incidence rate was 0.3% and the average duration of dementia was 8.0 years.

Keywords: age-related dementia, epidemiology, follow-up study, prevalence, incidence

INTRODUCTION

Since early 1980's, the proportion of elderly people in general population has been increasing rapidly in China, and dementia becomes a major public health problem. However, there are a few prevalence rate reports published, and no incidence rate of dementia in China was available until 1986. An epidemiological program was then initiated in 1986 to investigate age-related dementia in an urban community in Beijing. Three years later, a cohort of aged was followed up to obtain the incidence of age-related dementia and the characteristics of it's distribution. The aim of this study was to describe the prevalence and incidence rates and the clinical characteristics of age-related dementia among elderly people in Beijing, and to explore an epidemiological method that would be appropriate to Chinese culture.

SUBJECTS AND METHODS

The sampling frame was chosen from the West Urban District of Beijing. Twenty one Neighborhood Committees were selected randomly from this District and all households registered in these Neighborhood Committees were included for interview. Elderly people aged 60 and over in each household were sampled out, making a total sample of 6029.

A two-phases procedure was employed: (1) using Mini-mental state examination (MMSE) to screen out the potentially demented cases; (2) then followed by a clinical evaluation examined by psychiatrists with the cognitive part in Geriatric Mental State Examination (GMS) and diagnosed by psychiatrists with DSM-III diagnostic criteria for dementia and Dementia Differential Diagnostic Schedule (DDDS).

In a pre-test of 1072 community sample with Chinese translated version of MMSE, 17 score was identified as the cut-off point for moderate and severe dementia, with a sensitivity of 1.0 and a specificity of 0.89 (1). For those elderly who could not

communicate verbally, Crichton Royal Behavioral Rating Scale (CRBRS) was used for screening with 2 score as the cut-off point. The interclass correlation coefficient was 0.98 for MMSE scores. Since the focus of the study was on moderate and severe dementia, Criterion A of the DSM-III diagnostic criteria was extended to be: loss of intellectual ability to interfere with daily activities and help is needed for daily living, either partial or all of the time. In an evaluation of agreement between psychiatrists for diagnostic criteria, the Kappa was 0.72-1.00.

RESULTS

Out of the total sample of 6029, 5172 elderly completed the examination, with a response rate of 85%. The demographic features of the 5172 were as follows: male: 46.1%; female: 53.9%; the aged <70 years: 59.2%; illiterate: 32.6%; the retired: 58.2%, few females employed; and widowed: 28.9% (41.9% in female and 14.0% in male, respectively)

In the 5172 subjects, 39 patients were diagnosed with moderate or severe dementia, including MID(26), PDD(10), Mixed(2) and others(1). Furthermore, the prevalence rate of moderate and severe dementia of MID (0.50%) was much higher than that of PDD (0.19). (See Table 1)

Table 1. Prevalence rate of dementia by subtype

Subtype	Case	Prevalence (%)
PDD	10	0.19
MID	26	0.50
MD	2	0.04
Others	1	0.02
Total	39	0.75

Table 2. Prevalence rate of dementia by age

Age Groups (years)	Subs	case	Prevalence (%)
60 -	1619	3	0.19
65 -	1445	8	0.55
70 -	108	6	0.55
75 -	624	7	1.12
80 -	397	15	3.78
Total	5172	39	0.75

The prevalence rate of moderate and severe dementia was 0.75% for those aged 60 and over, and 1.03% for those aged 65 and over. But this prevalence rate was sharply increased to 3.78% for those aged 80 and over (See Table 2). By sex, the rate for female(1.01%) was slightly higher than that for male (0.46%)(See Table 3)

Three years later, 1090 subjects aged 60 and over in 4 Neighborhood Committees were followed up by the same psychiatrists with same instruments. 739 (67.8%) survived were re-interviewed, 86 (7.9%) were dead and 265 (24.3%) were lost from this follow-up study. As the informants of deceased elderly were interviewed, so the total followed-up subjects were 825, with an overall respondent rate of 75.7%.

The main causes for the lost subjects were 73.9% for moved out and 25.7% living with their relatives out of this community. The refusal rate among non-respondents was only 0.4% (one person). There was no significant difference in age or sex between the respondents and the non-respondents. Of the 825 re-examined, seven new cases were diagnosed as moderate and severe dementia and 6 mild or possible demented cases were developed during these three years. The average annual incidence rate of moderate and severe dementia for aged 60 and over were 0.3% (95% confidence interval 0.08-0.52%). When the 6 mild or possible cases were included, the corresponding rate was 0.56% (95% CI 0.26-0.86%). The incidence of dementia also found sharply increased with age: in age group 60-69 was 0.07%, while in 80 and over, it was 2.5%. (See Table 4)

The prevalence rate of moderate and severe dementia in this cohort study among aged 65 and over was 1.10%, similar to that (1.03%) in the survey for 5172 population.

Tab.4. Incidence rate of dementia by age

Age group	Moderate+severe			Mild+moderate+severe		
	New case	Sum of risk years	incidence (%)	New Case	Sum of risk years	incidence (%)
60-69	1	1467.0	0.07	5	1462.5	0.34
0-79	3	729.0	0.41	4	727.5	0.55
≥80	3	120.0	2.50	4	118.5	3.38
Total	7	2316.0	0.30	13	2308.5	0.56

Table 3. Prevalence rate of Dementia by sex and subtype

Sex	Number of case (%)				Total
	PDD	MID	MD	OD	
Male	3 (0.13)	6 (0.25)	2 (0.08)	0 (-)	11 (0.46)
Female	7 (0.25)	20 (0.72)	0 (-)	1 (0.04)	28 (1.01)
Total	10(0.19)	26 (0.50)	2 (0.04)	1 (0.02)	39 (0.75)

The results both of the study in 5172 and the follow up study in 1090 shows that multi-infarct dementia was somehow more common than primary degenerative dementia, with the ratio of 2.6:1 and 3:2 respectively.

The average duration of dementia in this study was 8.0 years (SD=3.4). The risk to death of demented patients was 3 times higher than in the whole cohort (standardized mortality rate= 2.95). In addition, our study showed that elderly people with less education, long history of unemployment, limited physical activity and a history of stroke would have a higher risk for dementia.

DISCUSSION

This study was carried out with strict procedure, including a two-steps design, structured instruments (MMSE, CRBRS) and operating diagnostic criteria (DSM-III). A re-interview of 5% negative subjects was performed to make sure for the quality of this study. The training of psychiatrists for well use of the instruments and the reliability exercise for diagnostic criteria, MMSE, CRBRS and GMS were carried out, resulting in a satisfactory reliability. So it could be said that the results of this study were reliable.

It was the first time to use MMSE for screening out suspected dementia patient in Chinese population. Before the field survey, satisfactory figures of sensitivity(1.0) and specificity(0.89) were obtained when 17 scores in MMSE was regarded as the cut-off point. After the screening procedure, 5% of all subjects scored above this cut-off point in MMSE was given a full clinical examination with diagnostic criteria (DSM-III) and GMS, and no dementia case was identified. It shows this cut-off point of MMSE is suitable for Chinese culture.

The results of this epidemiological study also shows that the prevalence rate of age related moderate and severe dementia in urban population aged 60 and over was 0.75%, little lower than that of Chen et al's (1987) and Gou's (1984) reports, but some what higher than the reports of the first national epidemiological survey (Zhao, 1986). However, there would be no significant differences among them if only including moderate and severe dementia. While in those aged 65 and over, the prevalence rate was 1.03%, lower than that reported by the American, European and Japanese authors (Folstein et al, 1991; Kramer et al, 1985; Mölsa et al, 1982; Mortimer et al, 1981; Shibayama et al, 1986). This may be largely explained with different age distributions of the population. For example, when the age-specific rates of 1090 Chinese subjects will be applied to the United States population for 1984, the rate then may increase to 3.2%, closer to that of the United States (Kramer et al, 1985; Schoenberg et al, 1981). Regards to the subtypes of dementia, our data show that the prevalence rate of MID was more higher than that of PDD, just converse to that from American or European countries (Mortimer et al, 1981; Sulkava et al, 1985), but more close to the data from Japan and USSR (Jorm et al, 1987). The data from Chen et al's (1987), Gou's (1984) and the current report, all indicate that the prevalence rate of MID were higher than that of PDD in Beijing population, contrary to that in Shanghai study (Zhang et al, 1990). One possible explanation for this discrepancy may be caused by higher risk of hypertension, atherosclerosis and cerebral vascular disease in North China. The average annual incidence rate of moderate and severe dementia for aged 60 years and over was 0.3% (95% CI: 0.08% - 0.52%). The incidence rate for those 70-79 years old (0.41%) was similar to that reported by the American authors (Kokmen et al, 1989), but lower than that observed by European authors (Hagnell et al, 1983; Nielsen et al, 1984). The different incidence rates are, possibly, partly due to the differences in age structure of sample, instruments used and diagnostic criteria for dementia. The true reason remains to be further clarified. The course and outcome of demented patient found in the current three years follow-up study indicate that the average survival time was 8 years, within the range of 6.5 - 10.5 years reported by Mölsa et al (1988). The mortality risk of demented cases in current study was almost 3 times as high as in the whole cohort (SMR=2.95). No specific risk of death in demented patients was observed. It is obviously that continuous longitudinal follow-up study of this cohort of elderly people may provide more further information for dementia.

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