Status of glycemic control in elderly patients with cognitive impairment treated by general practitioners relative to the glycemic targets recommended for elderly patients by the Japan Diabetes Society/Japan Geriatrics Society Joint Committee: A retrospective analysis

In recent years, several studies have reported a decreasing incidence of dementia in Western countries. However, its incidence is increasing and is expected to increase further in Japan with the increasing population of elderly patients with diabetes, thus making the prevention of dementia an urgent priority. The 'Glycemic Targets for Elderly Patients with Diabetes' put forth last year by the Japan Diabetes Society/Japan Geriatrics Society Joint Committee[1] recommends that patients be classified into three categories depending on the patient's background characteristics and health status, such as age, cognitive function and basic/instrumental activities of daily living, and that patients in each category be further divided into those receiving and not receiving drugs potentially associated with severe hypoglycemia, such as insulin, sulfonylureas and glinides. Furthermore, the guidelines have also specified the upper and lower limits of the glycemic target (glycated hemoglobin [HbA1c]) to prevent diabetic complications and severe hypoglycemia.

Given that no survey data are available on glycemic control in diabetes patients with cognitive impairment in each category in the guidelines, we investigated the status of HbA1c in diabetes patients first presenting to the Memory Clinic at National Center for Geriatrics and Gerontology of Japan (Obu, Japan) between October 2010 and April 2016.

This study enrolled a total of 468 diabetes patients (63.3% women; age 65–89 years, 78.1 ± 5.5 years). Of these, 49, 119 and 300 patients were diagnosed as having normal cognitive function, mild cognitive impairment and Alzheimer's disease, respectively. Diabetes was defined as a self-reported history of diabetes, use of antidiabetic medications or HbA1c ≥ 6.5%. All patients were assessed for cognitive function, basic activities of daily living and instrumental activities of daily living using the Mini-Mental State Examination, Barthel Index and Lawton Index. Of these, 37, 175 and 256 patients were classified into category I (normal cognitive function and intact activities of daily living), category II (mild cognitive impairment to mild Alzheimer's disease [Mini-Mental State Examination ≥21] or instrumental activities of daily living impairment) and category III (moderate or severe Alzheimer's disease [Mini-Mental State Examination <21] or basic activities of daily living impairment), respectively.

Figure 1 shows the density distributions of HbA1c as smoothed by a Gaussian kernel function. Of the 308 patients not receiving insulin, sulfonylureas and/or glinides, 5 out of 24, 31 out of 122 and 18 out of 162 had higher HbA1c than the upper limit in category I, II and III, respectively (6.9 ± 1.1%; minimum–maximum 4.9–15.4%; Figure 1a). Of note, most of the patients receiving insulin, sulfonylureas and/or glinides (total, $n = 160$; insulin, $n = 19$; sulfonylureas, $n = 113$; glinides, $n = 21$; insulin with sulfonylureas, $n = 7$) had higher or lower HbA1c than the upper or lower limit (category I, 7/13; category II, 34/53; and category III, 78/94; mean 7.7 ± 1.7%; minimum–maximum 5.6–14.7%; Figure 1b). Furthermore, the higher the category, the greater the number of patients who had lower HbA1c than the lower limit (category I, 4/13; category II, 17/53; and category III, 56/94).

The present results show that the use of drugs associated with severe hypoglycemia led to excessively lower HbA1c in those in categories II and III. Because the participants of the present study had been referred by their general practitioners or family members to our Memory Clinic, our results seemed to show the status of glycemic control in diabetes

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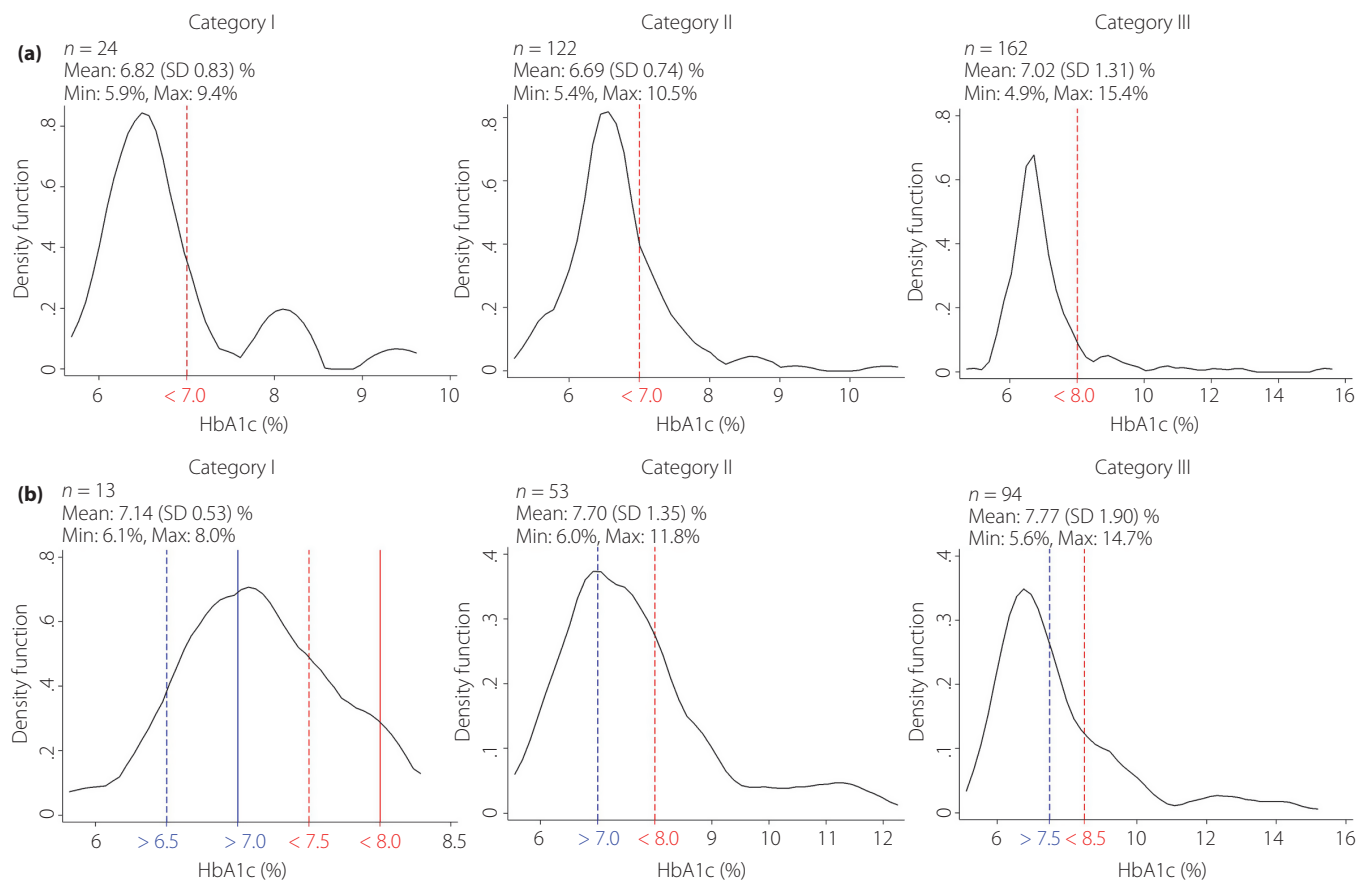E-mail address: tsakurai@ncgg.go.jp

Figure 1 | Glycemic targets and density distributions of glycated hemoglobin (HbA1c). (a) Density distributions of HbA1c as smoothed by a Gaussian kernel function for patients not receiving drugs potentially associated with severe hypoglycemia in each category. Red dashed lines indicate upper limits of HbA1c. (b) Density distributions of HbA1c as smoothed by a Gaussian kernel function for those receiving drugs potentially associated with severe hypoglycemia in each category. Red and blue dashed lines indicate upper limits and lower limits of HbA1c, respectively. In category I, dashed and solid lines indicate those aged 65–74 years and those aged ≥75 years, respectively. Category I, intact cognitive function and activities of daily living; category II, mild cognitive impairment to mild dementia or impairment of instrumental activities of daily living; category III, moderate or severe dementia, or impairment of basic activities of daily living, or the presence of multiple comorbidities. Max, maximum glycated hemoglobin value; Min, minimum glycated hemoglobin value; SD, standard deviation.

patients with cognitive impairment, as they had been treated by their general practitioners. Given that the occurrence of hypoglycemia dramatically increases in elderly patients with HbA1c < 7.5% and cognitive impairment[2,3], and that hypoglycemia further worsens cognitive impairment and increases the risk of cardiovascular events and mortality[1,4], care should be exercised to avoid severe hypoglycemia in these patients. It is hoped that the Joint Committee's guidelines will prove helpful in achieving appropriate glycemic control and avoiding untoward consequences in elderly diabetes patients with cognitive impairment.

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DISCLOSURE

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