Re-evaluation of Diabetes Clinical Practice for the Aging Society  
-Aiming at Enrichment of Medical Team Approach and Collaboration-

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In recent years, the number of elderly diabetic patients have been increasing. Elderly diabetic patients share many characteristics in terms of glycemic and insulin responses and clinical conditions such as complications. Additionally, decreased cognitive functions are more pronounced among elderly patients with poorly-controlled hyperglycemia. In elderly patients on insulin therapy, subjective symptoms including decreased cognitive functions caused by elevated blood glucose levels are more likely to disappear than when they are on oral hypoglycemic medications. To achieve successful outcomes with the treatment, it is important that medical professionals closely collaborate with each other to provide “medical team approach” that enables all participants to make the best use of their specialized skills.

Key words: elderly diabetic patients, cognitive impairment, insulin–treatment, medical team approach, Certified Diabetes Educators of Japan (CDEJ)

Specificity of the clinical conditions in elderly diabetic patients

In recent years, the number of elderly diabetic patients and its proportion to the total number of diabetic patients have been increasing. Elderly diabetic patients share many characteristics in terms of glycemic and insulin responses and clinical conditions such as complications. Specifically, increased insulin resistance coupled with decreased early–phase insulin secretion increases postprandial hyperglycemia. In elderly diabetic patients, the later the onset, the slower the progression of microangiopathy, such as retinopathy and nephropathy. However, combined with retinopathy and neurological disorders, the abilities of these patients to understand and perform activities of daily living deteriorate. Furthermore, due to advanced age, many of them develop complications, such as ischemic heart diseases, cerebrovascular disorders, arteriosclerosis obliterans and other atherosclerotic diseases, which greatly affect their prognoses. Additionally, in connection with cerebrovascular disorders, many elderly diabetic patients develop dementia and are also at increased risk of developing Alzheimer–type dementia. We recently investigated that the frequency of mild cognitive impairment (MCI, 24≤MMSE; Mini–Mental State Examination<27) in 214 elderly diabetic patients aged more than 65 years of Juntendo Tokyo Koto Geriatric Medical Center is 24%, which is extremely high as compared with the frequency of MCI (13%) estimated from the population of Japan in 2010.

Elderly diabetic patients are more likely to have sick days and their conditions tend to become progressively more severe. They often do not have subjective symptoms such as the thirst when blood glucose levels are significantly elevated, making them more prone to dehydration resulting from hyperglycemia. In addition, such symptoms as
palpitations, heaviness of the head and cold sweats are less likely to emerge during a hypoglycemic episode.

Another characteristic of elderly diabetic patients is higher brain dysfunction. Impairment in cognitive functions, such as memory retention, learning capacity, ability to concentrate, attentiveness and ability to think, often leads to a state of depression. Decreased cognitive functions are more pronounced among cases with poorly-controlled hyperglycemia\(^2\), but can also be seen in those experiencing frequent hypoglycemia caused by taking medications\(^3\). Decreased cognitive functions or depression may appear due to hypoglycemia occurring at night and then show worsening.

Useful treatment by insulin for elderly diabetic patients

Elderly diabetic patients share these clinical characteristics, but they vary greatly among patients. Psychological backgrounds and social conditions, including family relationships, also differ considerably. Therefore, it is desirable to determine the most appropriate diet, medication(s), dosage(s), medication administration times and hypoglycemic therapy for each patient. Elderly diabetic patients often lack the self-management skills required for insulin therapy, and this is also due to insufficient support systems, such that it is not rare for their elevated blood glucose levels to be left untreated. Elderly patients are more likely to have sick days, and the use of insulin is effective in preventing progression to ketoacidosis-coma. Moreover, in patients on insulin therapy, subjective symptoms caused by elevated blood glucose levels (decreased cognitive functions, depression, fatigability and polyuria) are more likely to disappear than when they are on oral hypoglycemic medications. For elderly diabetic patients, particularly those who are underweight, it is recommended that insulin therapy be initiated at a relatively early stage.

We previously investigated that in nine of 25 elderly diabetic patients with poorly hyperglycemic control and dementia, cognitive functions were markedly improved by insulin-treatment for several weeks, when the level of hemoglobin (Hb) A1c was 8.4% which was not so good (Figure-1). The duration of dementia in the nine improved patients was shorter than that in the other patients not improved. It is indicated that insulin–treatment should be easily used to the elderly diabetic patients with short duration of dementia and poorly hyperglycemic control. Insulin is effectively injected once a day for the patients, which is more convenient as compared with multiple injection\(^4\).

Necessity of medical team approach by Certified Diabetes Educators of Japan

To achieve successful outcomes with these therapies, it is important that medical professionals closely collaborate with each other to provide “medical team approach” that enables all participants to make the best use of their specialized skills, while at the same time aiming to improve the quality of diabetes education\(^5\). For this goal to be achieved, essential roles are played by Certified Diabetes Educators (CDE), including nurses, managerial dieticians, pharmacists, medical technologists and physiotherapists. Certified Diabetes Educators of Japan (CDEJ) especially, are authorized under the Certification Board for Diabetes Educators in Japan (established by three academic societies, the Japan Diabetes Society, Japan Academy of Diabetes Education and Nursing, and Japan Society of Metabolism and Clinical Nutrition, and served by me, Prof. Tomio Onuma of Juntendo University as the administrative director from 2008 to 2012). It has been reported by the Certification

\[\text{Figure-1} \quad \text{Change of cognitive functions after the treatment with insulin in elderly diabetic patients with poorly hyperglycemic control and dementia} \]

HDS-R: Revised version of Hasegawa’s Dementia Scale
Board for Diabetes Educators in Japan that the numbers of CDEJ were 17,651 at the point of this year\(^6\). The detail of the numbers was shown in Figure-2. For CDEJ, it is important to provide guidance for paramedics in the key hospitals where they work (including the fostering of in-hospital CDE) and cooperate with specialists in further enriching the “facility-based total” medical team approach for elderly diabetic patients. That is to say, if support systems for “elderly patients with diabetes” are established in key hospitals with the focus on comprehensive management including care for diabetes and diabetes education, this will inevitably draw attention from collaborating physicians, governmental organizations and nursing care-related fields. This will lead to improvement of “community-based total” medical team approach and collaboration between medical and nursing care services, in which CDEJ will also play a vital role as a bridge to communities.

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References