

Clinical Characteristics of People with Newly Diagnosed Type 2 Diabetes between 2015 and 2016: Difference by Age and Body Mass Index (*Diabetes Metab J* 2018;42:137-46)

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The prevalence of type 2 diabetes mellitus is increasing dramatically across most regions of the world in children, adolescents, and young adults. The overall prevalence of type 2 diabetes mellitus increased by 30.5% from 2001 to 2009 among youth aged 10 to 19 years in the United States [1]. In the United Kingdom, there was a significant increase in the percentage of patients that were newly diagnosed with diabetes at the age of ≤ 40 years with each subsequent 5-year calendar period between 1991 and 2010. The standardized incidence ratio (per 100,000 population) of young-onset diabetes increased substantially from 217 in 1996–2000 to 598 in 2006–2010 [2]. The prevalence of diabetes is also gradually increasing in a younger and more obese population in South Korea [3].

Accumulating evidence suggests that aggressive disease phenotype is more frequently observed in young-onset type 2 diabetes mellitus, which leads to early development of chronic complications with increased comorbidity burden, serious adverse effects on quality of life, and, consequently, reduced life expectancy. Compared with late-onset type 2 diabetes mellitus, young-onset patients have a higher prevalence of a family history of diabetes and tend to have worse glycemic control [4]. Early onset of type 2 diabetes mellitus in young adults has been associated with a higher glycosylated hemoglobin (HbA1c) level than those who develop diabetes at an older age [5–7]. Ac-

ordingly, young-onset type 2 diabetes mellitus responds poorly to treatments and is associated with a shorter time to initiation of insulin treatment compared with type 2 diabetes mellitus in older adults [8]. Furthermore, young adults with type 2 diabetes mellitus develop adverse metabolic and cardiovascular events much sooner after diagnosis than those who develop type 2 diabetes mellitus at older age [9,10].

In this issue, Ha et al. [11] report the prevalence and characteristics of newly diagnosed diabetes mellitus patients by age group, with the younger age group (< 40 years old, mean 33.6 ± 4.9 years) accounting for 81 of the 912 participants (8.9%). They report that the proportion of participants with both insulin resistance and β -cell dysfunction was increased from 5.7% among those over 65 years of age to 16.1% among those younger than 40 years of age. Young-onset diabetic participants had significantly higher fasting and 30-minute glucose, homeostatic model assessment (HOMA) of insulin resistance, and HbA1c levels than the older participants. The median HOMA- β , insulinogenic index, and disposition index values were significantly lower in the younger people than in the older people. These results demonstrate that there is a distinct pathophysiological difference in type 2 diabetes mellitus between younger and older people. In addition, patients with young-onset diabetes had a higher body mass index, cholesterol-

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ol level, and diastolic blood pressure and engaged in less physical activity; consequently, metabolic syndrome was more prevalent among younger people. These findings are valuable and meaningful with respect to evaluating the differences between young and old age at initial diagnosis of diabetes. Younger people with diabetes already have more severe metabolic disturbances including obesity and dyslipidemia, which is worsened by a more sedentary lifestyle compared with older participants.

Although type 2 diabetes mellitus develops in young people via similar mechanisms as in older people, its pathogenic entity is characterized by a more aggressive pattern compared with type 2 diabetes mellitus in older people. Younger people with diabetes also had more risk factors known to induce metabolic disturbances, especially a “bad lifestyle.” This bad lifestyle, longer lifetime exposure to hyperglycemia, and more aggressive phenotype in young-onset diabetes will impose a more severe medical and economic burden in the near future. We need to recognize patients with young-onset type 2 diabetes mellitus as a high-risk group and be more aware of this population. Further research to elucidate the risk factors and education to eliminate these risk factors in adolescents and young adults would enable the prevention of young-onset type 2 diabetes mellitus. Moreover, it remains a matter of debate which sort of treatment is most effective and safe for these younger people. There is still a lack of evidence regarding long-term treatment and outcomes of young-onset type 2 diabetes mellitus. It seems important to prospectively follow-up on patients with young-onset type 2 diabetes mellitus and to try to define its natural disease course. A multidisciplinary team approach to improve long-term consequences (e.g., cardiovascular disease and life expectancy) is needed, including interventions to educate patients regarding lifestyle modification, choose proper treatment, and encourage adherence to medication.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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