Unexpected decline in glycated hemoglobin level after emergency COVID-19 measures in three robust older Japanese women with prediabetes/mild type-2 diabetes

Dear Editor,

Japan experienced the first sporadic case of SARS-Cov-2 infection on January 16, 2020, and the first large spike of infection late in March 2020. The government declared a state of COVID-19 emergency from April 16 to May 25, 2020 all over Japan to prevent an explosion of infections, asking the public to remain home and refrain from non-essential going out to reduce contact with others by at least 70% and by as much as 80%.[1]

Here, we experienced three older female outpatients regularly attending our clinic with prediabetes (Case 1 and 2) or mild type 2 diabetes (Case 3) who showed an unexpected decline in glycated hemoglobin (HbA1c) levels after the first emergency measures.

Case 1. A 76-year-old woman had hypertension and prediabetes and was prescribed an angiotensin II receptor antagonist. Before the emergency measures, her body weight was 36.7 kg, height 1.52 m, body mass index (BMI) 15.9 kg/m^2, mini-mental state examination (MMSE) 30/30, Barthel Index for Activities of Daily Living (ADL) 100/100, Lawton instrumental ADL (IADL) 8/8 and blood hemoglobin level 12.4 g/dL. Her HbA1c level decreased from 6.3% just before the declaration to 6.0%, with body weight of 36.6 kg in May 2020 (green line in Fig. 1).

Case 2. A 79-year-old woman had hypertension, hypothyroidism and prediabetes, and was prescribed an angiotensin II receptor antagonist and thyroxine. Before the emergency measures, her body weight was 56.9 kg, height 1.45 m, BMI 27.1 kg/m^2, MMSE 30/30, Barthel ADL 100/100, Lawton IADL 8/8 and blood hemoglobin level 12.3 g/dL. Her HbA1c level decreased from 6.1% just before the declaration to 5.8% with body weight of 57.6 kg in June 2020 (blue line in Fig. 1).

Case 3. A 92-year-old woman had hypertension, dyslipidemia and mild type 2 diabetes, and was prescribed an angiotensin II receptor antagonist, calcium channel blocker, statin and dipeptidyl peptidase-4 inhibitor. Before the emergency measures, her body weight was 51.0 kg, height 1.44 m, BMI 24.6 kg/m^2, MMSE 25/30, Barthel ADL 95/100, Lawton IADL 7/8 and blood hemoglobin level 10.4 g/dL. Her HbA1c level decreased from 6.6% just before the declaration to 6.3% with body weight of 51.5 kg in Jun 2020 (purple line in Fig. 1).

Conversely, worsening of HbA1c levels was reported in outpatients with type 2 diabetes, particularly in those aged ≥65 years, after the first emergency COVID-19 measures,[2] which was probably due to a decrease in physical activity in older subjects during the pandemic in Japan.[3] Worsening of glycemic control (HbA1c ≥0.5%) was also observed more frequently in patients with type 2 diabetes aged >80 years compared with those aged <60 years during home confinement related to COVID-19 lockdown in Italy.[4]

All our cases were robust older women, going out freely without any help before the pandemic. The HbA1c levels decreased by 0.3% in each case after the first emergency measures, without a significant decline in body weight. The clinic doctor asked them "How did you change your life-style to improve your HbA1c level during the emergency measures?" Their answers were quite similar, such as, "After the emergency declaration, I stopped visiting friends' houses, which had been held about three times a week and we had brought sweets, snacks, and sugary drinks."

The unexpected decline of HbA1c level after the first emergency COVID-19 measures in these cases reveals the way

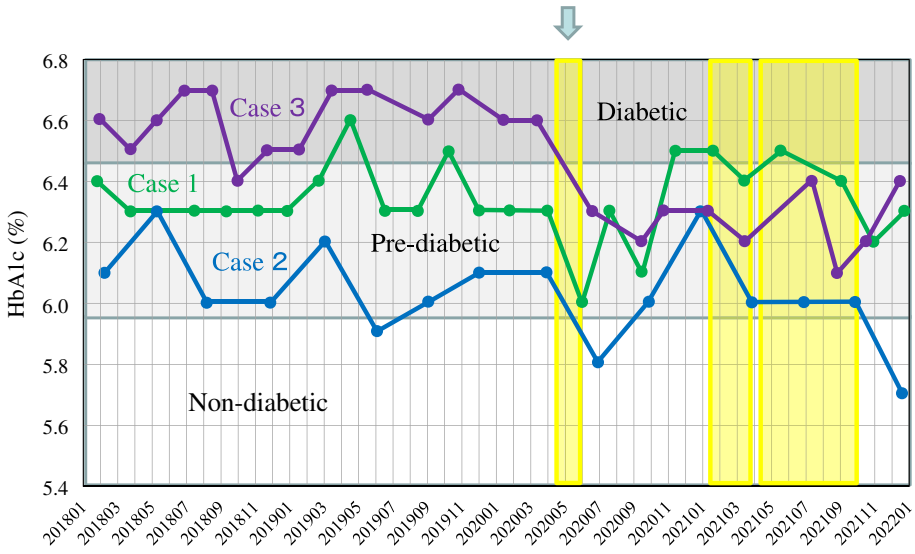

Figure 1 Chronological changes in glycated hemoglobin (HbA1c) in three cases with prediabetes (Case 1 and 2) or mild type-2 diabetes (Case 3). Yellow rectangular zones indicate periods of emergency and semi-emergency COVID-19 measures, and blue arrow the first emergency measures in Japan.

community-dwelling robust older women live in Japan today. In fact, 46.8% of community-dwelling Japanese women aged ≥60 years eat sweets almost every day, with the belief that sweets are important for reducing stress, uplifting their feelings and enriching good communication with friends.[5] A study using data from older subjects aged ≥60 years from a cross-lagged panel survey in the United States revealed that greater social engagement was associated with lower levels of subsequent physical and cognitive limitations in women, whereas greater physical and cognitive limitations resulted in lower levels of subsequent social engagement in men.[6] Thus, social engagement is pivotal for older women, as participation in social and cultural events, but is associated with an increased intake of sweets in the senior population.[7] Rather than sweets and sugary drinks, culturally relevant health promotion programs recommend fruits[8] and green tea[9] for social gatherings, as diabetes is a clear risk factor for cognitive decline in community-dwelling older subjects.[10]

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Consent to publish

All patients provided informed consent for publication.

Data availability statement

Data available on request due to privacy/ethical restrictions

Tazuo Okuno, Osamu Iritani, Kumie Kodera, Daisuke Hama, Asami Kane, Kozue Morigaki, Toshio Terai, Norie Maeno and Shigeto Morimoto

Center for Comprehensive Care on Memory Disorders, Kanazawa Medical University, Ishikawa, Japan

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COMMENTS

Spectrum bias in derivations of cut-offs for five-repetition sit-to-stand test: A proposal for alternative analysis

Dear Editor,

We read with interest the study by Yamada *et al*., which compared the cut-off values of stand-stop versus sit-stop protocols for the five-repetition sit-to-stand test (5CS).[1] Using receiver operating characteristic (ROC) curves to analyse pooled data of 9383 individuals from nine Asian cohorts, the corresponding cut-offs for gait speed <1.0 m/s were 10.0 and 10.9 s for standing and sitting stop positions, respectively. The authors concluded that there might be a need to modify the 5CS cut-offs to 10 and 11 s for stand- and sit-stop protocols when referring to a gait speed <1.0 m/s.

We applaud this multi-country collaborative effort, which integrates data from multiple cohorts to answer a clinically important question. Nonetheless, the study raised two important issues. Firstly, the results call into question the 12-s cut-off that is currently recommended by the Asian Working Group for Sarcopenia (AWGS) 2019 consensus.[2] The reported cut-offs are also much lower than the 15-s cut-off of the European Working Group on Sarcopenia in Older People 2 (EWGSOP2) consensus,[3] or the 14-s cut-off to screen for losses in mobility within the Integrated Care for Older People (ICOPE) assessment of the World Health Organization (WHO).[4] Secondly, the results suggest the need for