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Case Report
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Improvement of Glucose Variability and Weight Management with Administration of Tirzepatide (Mounjaro)

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Abstract

The patient was a 71-year-old female. She was diagnosed with type 2 diabetes (T2D) in July 2024, followed by hypertension and gastroesophageal reflux disease (GERD). Her physique was 155 cm in height and 86.4 kg in weight, with a BMI of 36.0 kg/m^2. Pulse wave velocity (PWV) showed brachial-ankle PWV (baPWV) values of 2139/2277 and ankle-brachial index (ABI) values of 1.12/1.09. She was treated with tirzepatide (Mounjaro) from October 2025. Changes in HbA1c and body weight were from 7.1% to 6.6% and from 86.4 kg to 82.6 kg over 5 months, respectively. She reported a decreased appetite compared to before, with no gastrointestinal adverse effects (GI-AEs). Consequently, tirzepatide showed a satisfactory clinical effect in this case.

Keywords

Tirzepatide, Type 2 Diabetes, Pulse Wave Velocity, Gastroesophageal Reflux Disease, Dual GIP/GLP-1 Receptor Agonists, SURMOUNT Trials

Abbreviations

ABI: Ankle-Brachial Index; baPWV: Brachial-Ankle Pulse Wave Velocity; BMI: Body Mass Index; GERD: Gastroesophageal Reflux Disease; GI-AE: Gastrointestinal Adverse Effect; GIP: Glucose-Dependent Insulinotropic Polypeptide; GLP-1: Glucagon-Like Peptide-1; HbA1c: Hemoglobin A1c; PWV: Pulse Wave Velocity; SURMOUNT: Study of Tirzepatide in Participants with Obesity or Overweight; T2D: Type 2 Diabetes.

Introduction

Diabetes has been a crucial health problem from both medical and social points of view worldwide [1]. In clinical practice, the management of type 2 diabetes (T2D) includes various evaluations of microangiopathy and macroangiopathy, such as comorbidities, atherosclerotic cardiovascular disease (ASCVD), and arteriosclerosis [2,3]. For adequate nutritional treatment, diet therapy has changed from calorie restriction (CR) to a low-carbohydrate diet (LCD) [4,5].

Concerning oral hypoglycemic agents (OHAs), several novel agents have been introduced with beneficial effects [6]. Among them, dual GIP/GLP-1 receptor agonists have attracted attention for their clinical efficacy in weight reduction and improvement of glucose variability [7]. To compare once-weekly tirzepatide 10 mg or 15 mg with placebo, 6 RCTs (n=4531) were investigated, along with lifestyle questionnaires [8]. Tirzepatide significantly improved physical function in both the Short Form-36 (SF-36) and the Impact of Weight on Quality of Life-Lite (IWQOL-Lite) clinical trials (CTs). From these findings, tirzepatide enhances perceived physical capacity and QOL.

For improving the health status of patients with both T2D and obesity, effective weight management plays a crucial role [9]. Japanese clinical practice guidelines for T2D and obese patients recommend lifestyle modifications such as nutritional therapy, exercise, and stress management for weight loss. Large studies of patients with T2D and obesity have shown that lifestyle interventions alone are often insufficient. In overweight or obese adult T2D patients, OHA administration in addition to lifestyle intervention resulted in clinically significant weight loss [10]. Therefore, pharmacotherapy should be considered for T2D patients whose blood glucose control is insufficient despite implementing and maintaining lifestyle modifications. In the case of tirzepatide, large studies include the SURMOUNT-1, SURMOUNT-3, and SURMOUNT-4 trials, which were derived from three randomized clinical trials (RCTs) [11].

Case Presentation

History and Physicals:

The patient was a 71-year-old female. Her medical history included facial nerve paralysis at age 60, ascending colectomy for colon cancer at age 62, and lumbar spinal stenosis (LSS) at age 68. In July 2024, she was diagnosed with T2D. Subsequently, she was diagnosed with hypertension and gastroesophageal reflux disease (GERD), and has been receiving treatment for these diseases to date. Physical examination revealed normal speech and consciousness, and vital signs were blood pressure 136/76 mmHg, pulse 76 beats/min, and SpO_2 99%. No significant changes were observed in the examination of the head, lungs, heart, abdomen, or neurological system. Her physique revealed a height of 155 cm, weight of 86.4 kg, and BMI of 36.0 kg/m^2.

Table-1: Changes in blood chemistry

Parameter	Units	2024		2025	
		Jul	Dec	Jun	Nov
Liver Function					
AST	U/L	20	21	21	22
ALT	U/L	13	16	13	16
GGT	U/L	15	19	14	14
Lipid Profile					
HDL	mg/dL	66	60	59	61
LDL	mg/dL	101	105	91	93
TG	mg/dL	162	143	181	131
Renal Function					
UA	mg/dL	4	4.3	4.2	4.4
BUN	mg/dL	13	11	12	13
Cre	mg/dL	0.66	0.61	0.6	0.7
eGFR	mL/min/1.73 m^2	67	72	74	62
Complete Blood Count					
WBC	×10^2/μL	48	54	85	69
RBC	×10^4/μL	500	491	491	459
Hb	g/dL	14.3	14.8	14.6	14.1
Ht	%	47.0	46.4	46.4	43.9
Plt	×10^4/μL	20.4	26.6	20.0	24.0

Case Report

Several Exams:

Chest X-ray was negative, and electrocardiogram (ECG) showed ordinary sinus rhythm (OSR) with no specific ST-T changes. The progress in blood chemistry is summarized in (**Table-1**). Pulse wave velocity (PWV) testing was conducted with an unremarkable wave shape (**Fig-1**). The brachial-ankle PWV (baPWV) showed values of 2139/2277 (R/L) (1400-1800), respectively, which were significantly higher than the values expected for her actual age [12] (**Fig-2**). The changes in ankle-brachial index (ABI) between November 2024 and February 2026 are shown in (**Fig-3**). With weight reduction over 15 months, ABI revealed a decreased value of 1.12/1.09.

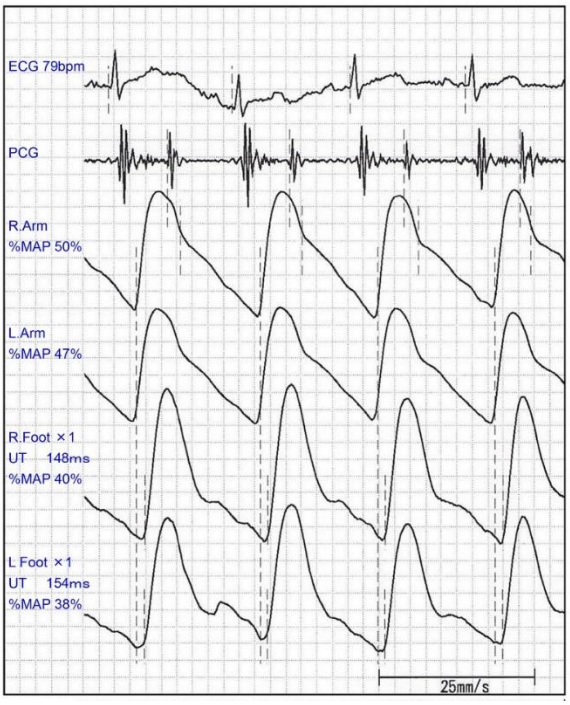

Fig-1: Pulse wave velocity (PWV) exam

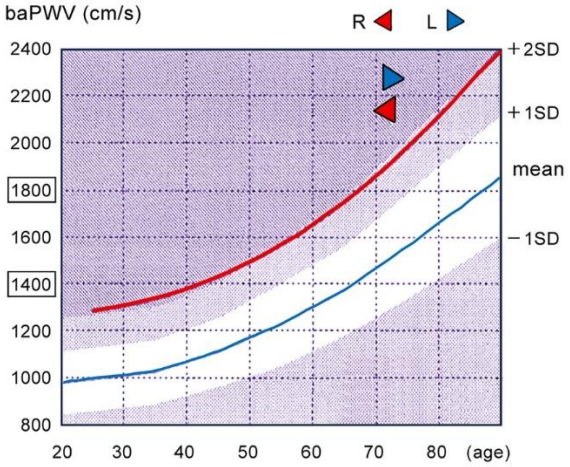

Fig-2: Result of brachial-ankle PWV (baPWV)

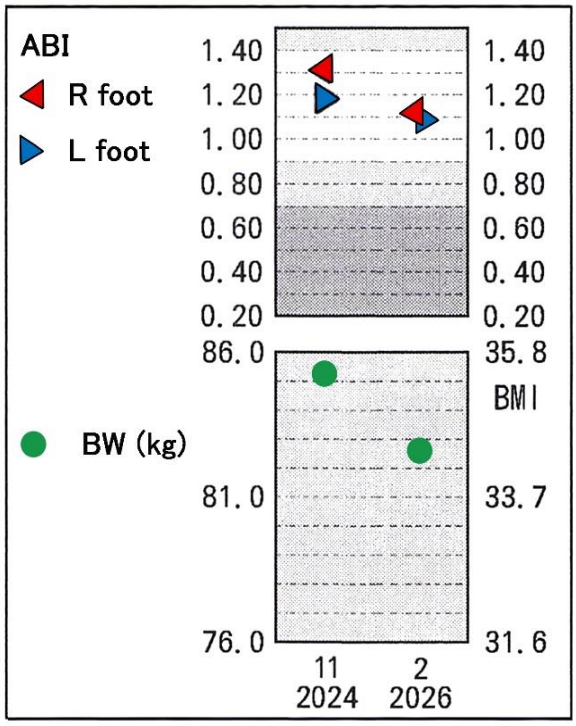

Fig-3: Changes in ankle brachial index (ABI)

Clinical Progress:

She had been treated with metformin and vildagliptin and started tirzepatide (Mounjaro) in October 2025 (**Fig-4**). HbA1c value decreased from 7.1% to 6.6% over 5 months. Her weight also decreased from 86.4 kg to 82.6 kg. She reported a decreased appetite compared with before and did not experience gastrointestinal adverse effects (GI-AEs) such as nausea, vomiting, or abdominal pain.

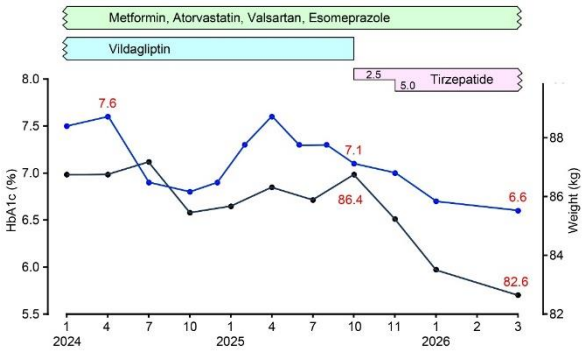

Fig-4: Clinical progress of the case

Ethical Standards

This case complied with the principles of the Declaration of Helsinki. Furthermore, commentaries exist regarding personal information protection and ethical principles. Related guidelines were presented by the Ministry of Health, Labour and Welfare and the

Ministry of Education, Culture, Sports, Science and Technology. The authors established an ethical committee at Kanaiso Hospital, Tokushima, Japan. It included medical staff members consisting of the president, physician, nurse, pharmacist, dietitian, and legal professional. We discussed the case in a satisfactory manner and obtained informed consent from the patient.

Discussion

The current report describes a 71-year-old female with T2D, obesity, hypertension, dyslipidemia, and GERD. The characteristic aspects are summarized as follows: #1 obesity with a BMI of 34.4 kg/m^2, #2 T2D with HbA1c >7%, #3 moderate arteriosclerosis, #4 clinical effect of tirzepatide over a short period, #5 beneficial appetite reduction, #6 unremarkable GI-AEs of tirzepatide, and #7 overall satisfactory clinical progress.

This case showed a 0.5% improvement in HbA1c during the 5 months after initiating Mounjaro. This would be due to the short-term clinical efficacy of tirzepatide. Body weight decreased by 4.4% over 5 months. Compared with the tirzepatide dosages used in standard research studies, a smaller dose was sufficient to achieve a clinical effect in this case [13]. Concerning the clinical studies STEP-2 for semaglutide and SURMOUNT-2 for tirzepatide, the degrees of weight reduction and HbA1c reduction were compared [14]. Tirzepatide showed greater weight reduction of 2.57% for 10 mg and 4.79% for 15 mg. Similarly, tirzepatide showed greater HbA1c reduction of 0.47% for 10 mg and 0.56% for 15 mg. Consequently, the clinical efficacy was greater with tirzepatide 10 mg and 15 mg than with semaglutide.

In this case, PWV, an indicator of arteriosclerosis, was compared at a 15-month interval. ABI changes may have been due to body weight reduction or related to tirzepatide. Previous reports suggest that the clinical efficacy of tirzepatide has been demonstrated through improved glycemic variability, weight reduction, reduced overall appetite, and decreased food intake [15]. From several studies of tirzepatide, the vasculoprotective effects and anti-atherosclerotic potential may extend far beyond glycemic control.

A retrospective cohort study was conducted to determine whether tirzepatide showed greater benefits for T2D and PAD than other GLP-1RAs [16]. A total of 3,018 patients were included in each group, namely the tirzepatide group and the other GLP-1RAs group. Over a 1-year follow-up period, the tirzepatide group exhibited significantly lower adverse outcomes. These included all-cause mortality with a hazard ratio (HR) of 0.58, major adverse cardiovascular events (MACE) with an HR of 0.769, major adverse limb events (MALE) with an HR of 0.742, amputation with an HR of 0.558, and vascular intervention with an HR of 0.784. On the other hand, no significant difference was found in the risk of ischemic stroke (HR 1.025).

A few limitations may be present in the current report. This case showed elevated HbA1c levels with obesity for years. Tirzepatide contributed to the clinical efficacy in HbA1c and weight reduction, and other subclinical factors may have been involved in the successful results. These include LCD, psychological factors, social cooperation, and so on. Her clinical progress should be followed up with careful attention.

In summary, this 71-year-old diabetic female showed satisfactory reductions in HbA1c and body weight with tirzepatide over a short period. The current report is expected to be a useful reference for future practice and research in diabetology.

Conflict of Interest

The authors have read and approved the final version of the manuscript and declares no conflicts of interest.

References

[1] American Diabetes Association Professional Practice Committee for Diabetes*. 1. Improving Care and Promoting Health in Populations: Standards of Care in Diabetes-2026. Diabetes Care. 2026 Jan 1;49(Supplement_1):S13-26. [**PMID**: 41358887]

[2] Bando H, Okada M, Ogawa T, Iwatsuki N, Sakamoto K. Multiple Arteriosclerosis with Type 2 Diabetes (T2D) Treated By Imeglimin (Twymeeg). Int J Endocrinol Diabetes. 2026;9(1):200.

[3] Lim LL, Khunti K. Global inequality in target attainment among people with diabetes. Lancet Glob

Health. 2026 Jan;14(1):e2-e3. [**PMID**: 41386243]

[4] Wood M, Ebe K, Bando H. A Tribute to Dr. Richard K. Bernstein: Pioneering Normal Blood Sugars through Low-Carbohydrate Diabetes Management. SunText Rev Endocrine Care. 2025;5(1):127.

[5] Kusayev J, Weininger D, Frishman WH, Aronow WS. Low-Carbohydrate/Ketogenic Diet and Coronary Artery Disease: A Brief Review of the Limited Evidence Between Them. Cardiol Rev. 2026 Jan-Feb 01;34(1):53-56. [**PMID**: 38299850]

[6] Bando H. Current Situation and Problems for Weight Reduction Using GLP-1 Receptor Agonists. J Med Clin Stud. 2025;8(2):224.

[7] Abdul-Hafez HA, Awashra A, Bdir S, Saife S, Salah Q, Barbarawi M, Swaileh T, Emara A, Elgendy MS, Shubietah A. Tirzepatide and Cardiovascular Outcomes: A Narrative Review of Mechanisms, Efficacy and Implications for Heart Failure Management. Endocrinol Diabetes Metab. 2026 Jan;9(1):e70152. [**PMID**: 41566974]

[8] Schmidt PHS, de Souza VSN, Machado LG, Rodrigues JVA, da Cruz JVR, de Souza LSN, Dos Santos BE, Hohl A, Ronsoni MF, van de Sande-Lee S. Tirzepatide on physical function in adults with overweight or obesity: A systematic review and meta-analysis. Diabetes Obes Metab. 2026 Apr;28(4):3335-43. [**PMID**: 41705736]

[9] American Diabetes Association Professional Practice Committee for Diabetes*. 8. Obesity and Weight Management for the Prevention and Treatment of Diabetes: Standards of Care in Diabetes-2026. Diabetes Care. 2026 Jan 1;49(Supplement_1):S166-82. [**PMID**: 41358882]

[10] Yamauchi T, Asakura T, Shingaki T, Oura T, Katagiri H. Efficacy and safety of once-weekly tirzepatide in Japanese participants with type 2 diabetes who have obesity or overweight: Subpopulation analysis of the SURMOUNT-2 trial. Diabetes Obes Metab. 2025 Aug;27(8):4557-66. [**PMID**: 40490415]

[11] Galindo RJ, Gudzune KA, Look M, Lee CJ, Benabbad I, Cao D, Meng Q, Mojdami D. Weight Changes With Tirzepatide and Concomitant Weight-Inducing Medications: Post Hoc Analysis of Randomized Clinical Trials. JAMA Netw Open. 2026 Mar 2;9(3):e263274. [**PMID**: 41885866]

[12] Dong T, Fan F, Chen H, Dong Z, Yang L, Luo Y, Qiu Z, Fang R, Zheng Q, Zhang X, Li J, Huo Y, Zhang Y. Comparison between vascular age based on brachial-ankle pulse wave velocity or carotid-femoral pulse wave velocity. Hypertens Res. 2025 Sep;48(9):2315-25. [**PMID**: 40681731]

[13] Kadowaki T, Kiyosue A, Shingaki T, Oura T, Yokote K. Efficacy and safety of once-weekly tirzepatide in Japanese patients with obesity disease (SURMOUNT-J): a multicentre, randomised, double-blind, placebo-controlled phase 3 trial. Lancet Diabetes Endocrinol. 2025 May;13(5):384-96. [**PMID**: 40031941]

[14] Hankosky ER, He X, Malik R, Fraseur Brumm J, Wang F, Niemeyer A, Zhang XM, Garvey WT. Tirzepatide 10 and 15 mg versus semaglutide 2.4 mg in people with obesity or overweight with type 2 diabetes: An indirect treatment comparison. Diabetes Obes Metab. 2025 Jul;27(7):3757-65. [**PMID**: 40321113]

[15] Rzepiński Ł, Tywoniuk A, Jaraczewska J, Al-Shaer A, Wiciński M. Beyond Diabetes: The Vasculoprotective Effects and Anti-Atherosclerotic Potential of Tirzepatide. Int J Mol Sci. 2025 Dec 14;26(24):12028. [**PMID**: 41465455]

[16] Srikulmontri T, Pantarote S, Kulthamrongsri NK, Puchongmart C, Yanpiset P, Wattanachayakul P, Amanullah A.Real-World Outcomes of Tirzepatide Versus GLP-1 Receptor Agonists in Patients with Type 2 Diabetes and Peripheral Arterial Disease. Circulation. 2025;152(Suppl_3):4364028.

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