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From Insulin Dependence to Cardiometabolic Harmony: GLP-1 RA Therapy in a Complex Multisystem Case

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Introduction:

People living with overweight or obesity (PLWO) frequently present with overlapping cardiometabolic and respiratory conditions, including type 2 diabetes mellitus (T2DM), heart failure with preserved ejection fraction (HFpEF), and obstructive sleep apnoea (OSA). Emerging evidence suggests that glucagon-like peptide-1 receptor agonists (GLP-1 RA) offer benefits beyond weight and glycaemic control, contributing to multisystem improvement.

Case Presentation:

A 41-year-old man living with obesity (BMI 33 kg/m²; weight 100 kg) and employed in the public sector presented with uncontrolled T2DM (HbA1c 12%), stage 3B chronic kidney disease secondary to diabetic nephropathy, dyslipidaemia, hypertension, HFpEF (NYHA II–III), and severe OSA requiring continuous positive airway pressure (CPAP). Following structured counselling in an obesity clinic, titrated oral semaglutide was initiated in addition to metformin and baseline insulin therapy, alongside optimized guideline-directed medical therapy (GDMT) for HFpEF, CKD, hypertension, and dyslipidaemia.

Results:

After five months, the patient achieved an 8 kg weight reduction (BMI 33.5 → 30.0). Importantly, significant cardiometabolic and respiratory improvements were observed: HbA1c decreased from 12% → 6.9% without significant episode of hypoglycemia, lipid parameters improved, and albumin–creatinine ratio declined from 329 → 295 mg/g, indicating renal stabilization. Oxygen saturation on room air improved from 85–88% → 94–96%, enabling CPAP weaning. The patient reported improved functional capacity, daily activity, and quality of life.

Conclusion:

In this complex case involving PLWO with T2DM, HFpEF, and OSA, oral semaglutide combined with close physician follow-up and optimized GDMT resulted in holistic cardiometabolic and respiratory recovery. This supports the role of GLP-1 RA as part of comprehensive, person-centred obesity management.