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PROTEINURIA AND HYPOTHYROIDISM: TWO CASES ILLUSTRATING A BIDIRECTIONAL THYROID-KIDNEY RELATIONSHIP

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INTRODUCTION

The thyroid-kidney axis represents a clinically significant bidirectional relationship. Nephrotic syndrome (NS) may induce hypothyroidism via urinary hormonal and binding protein losses, while severe hypothyroidism may mimic NS and contribute to renal dysfunction.

CASES

A 64-year-old male with gout, presented with facial puffiness, pedal edema, weight gain and frothy urine. Investigations revealed severe hypothyroidism FT4 <0.5 pmol/L (12–22 pmol/L) TSH 314 mIU/L (0.27–4.2 mIU/L) with NS – UPCR 7.7 g/L (0.04–0.15 g/L), albumin 22 g/L, total cholesterol 15.9 mmol/L – and renal impairment (eGFR 58 mL/min/1.73 m²). Positive anti-TPO antibodies suggested Hashimoto's thyroiditis. He was initiated on liothyronine, hydrocortisone, levothyroxine and diuretics. Although FT4 normalized (14.4 pmol/L) a month later, renal function worsened requiring dialysis. Further evaluation including renal biopsy demonstrated IgA nephropathy as the underlying cause of NS and renal failure. Treatment with prednisolone led to gradual improvement in renal function and proteinuria (UPCR 0.21 g/L).

A 73-year-old male with hypothyroidism diagnosed 6 months prior (FT4 11.9 pmol/L, TSH 7.23 mIU/L) for thyroxine replacement, diabetes, hypertension, dyslipidemia and CKD presented with anasarca, decompensated heart failure, pleural and pericardial effusions requiring ventilatory and inotropic support. On admission, he had marked hypothyroidism (FT4 2.9 pmol/L and TSH 97.2 mIU/L) and moderate proteinuria (UPCR 0.81 g/L). He was similarly treated with liothyronine, hydrocortisone and levothyroxine. Renal function initially deteriorated (creatinine 439 µmol/L, eGFR 11 mL/min/1.73 m²) but later returned to baseline with clinical recovery. Despite normalization of FT4 months later, proteinuria persisted; but renal function remained stable.

CONCLUSION

These cases highlight the overlapping manifestations of severe hypothyroidism and renal dysfunction with proteinuria. Each may mimic or exacerbate the other. NS may unmask underlying hypothyroidism. While inadequately treated hypothyroidism can worsen proteinuric CKD exacerbating hypothyroidism. Concurrent evaluation of both systems is essential to prevent misdiagnosis and guide timely management.