

Directly Observed Therapy for Treatment of Hypothyroidism

Introduction

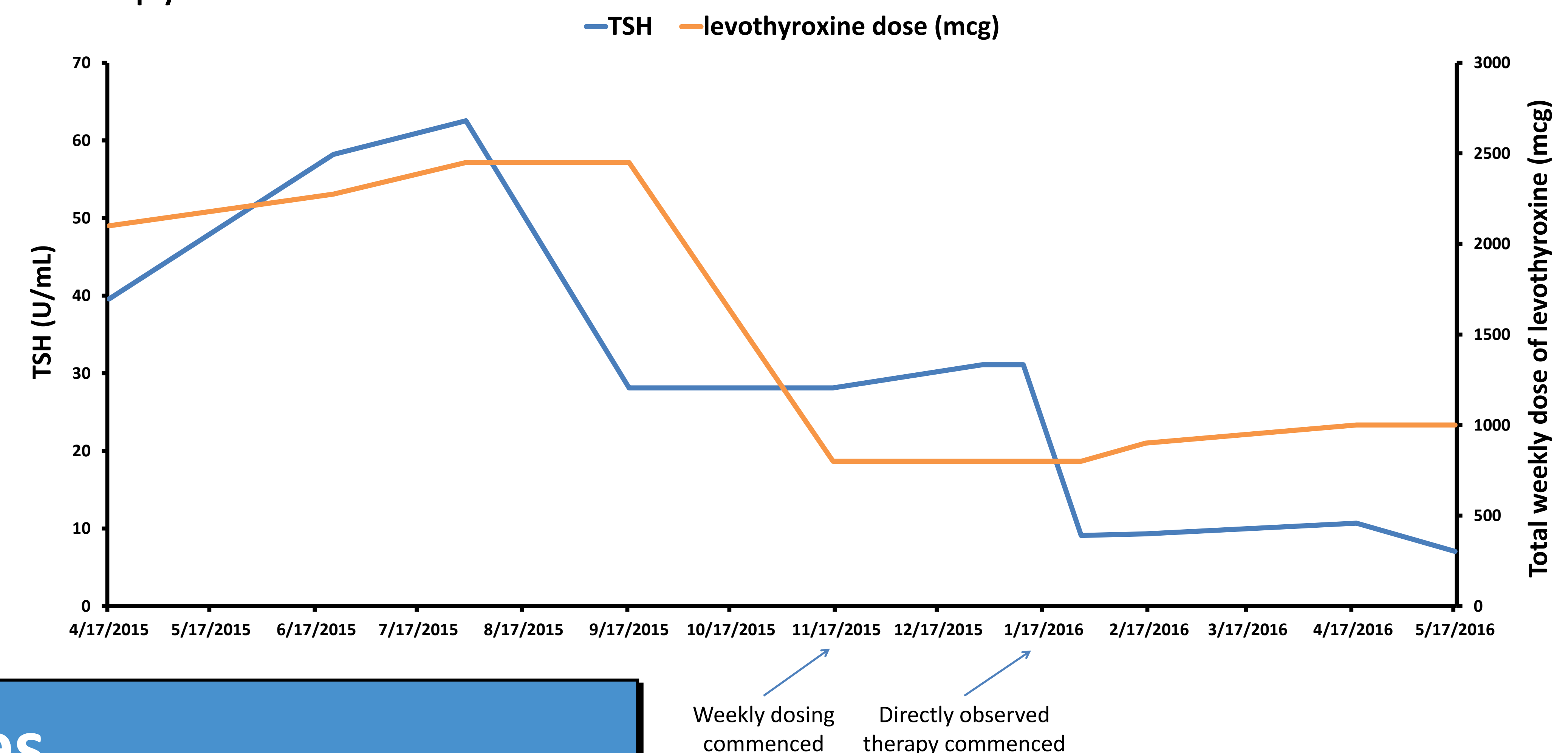
Hashimoto's thyroiditis subjects individuals to lifelong therapy with levothyroxine. Ensuring correct medication administration and compliance provides a challenge to providers.

Case Description

70 yo woman who presented for management of treatment-refractory hypothyroidism. Symptoms included sleepiness. HR and BP were normal. Thyroid was normal in size without nodules, skin was dry without edema, and reflexes were normal. TSH was 62.5 on levothyroxine 350 mcg daily (1.5 mcg/kg dose 150 mcg). The patient reported good compliance with the levothyroxine and review of her medication list did not reveal increased metabolizers of levothyroxine. Urinalysis was negative for proteinuria, tissue transglutaminase panel negative, and reverse T3 was 6 (low). Directly observed therapy in our endocrine clinic of her full weekly 1.5 mcg/kg/day dose of levothyroxine resulted in a quadrupling of the free T4 two hours after administration, thus malabsorption was unlikely, and the likely diagnosis was medication non-compliance. The patient was instructed to take once-weekly levothyroxine at home, but this did not normalize TSH, which was still 31.1. Home visiting nurse services were not covered by insurance and the patient was unable to come to our endocrine office every week, so the patient was arranged for weekly directly observed therapy at her primary care office with subsequent TSH improvement to less than 10.

Discussion

While the differential for treatment-refractory hypothyroidism includes underlying pathology such as nephrotic syndrome, malabsorptive diseases, or consumptive hypothyroidism, it is important to take a thorough medication history, as the most common etiology will involve medication indiscretions. One strategy to address this issue is weekly dosing of levothyroxine, which simplifies the regimen for the patient and has been shown to normalize TFTs and reduce the overall dose (Grebe et al. 1997 JCEM). While caution must be shown with underlying cardiac disease, endogenous autoregulatory mechanisms will prevent marked fluctuations in active thyroid hormone to approximate euthyroidism. This case exemplifies the benefits of once weekly levothyroxine dosing, which allows for more convenient directly observed therapy.



References

Grebe et al. Treatment of hypothyroidism with once weekly thyroxine. *J Clin Endocrinol Metab* 1997; 82:870-875

Walker JN et al. A thyroxine absorption test followed by weekly thyroxine administration: a method to assess non-adherence to treatment. *Eur J Endocrinol* 2013; 168: 913-917