

PNAUK WCC2020

Thyroxine absorption test protocol for hypothyroid patients on high dose thyroxine replacement

A. Chua, S. Ahmed, U. Dashora, P. Sathiskumar, M. Ravelo & G. Lawson

ESHT East Sussex Healthcare NHS Trust

Aldonscarlo.chua@nhs.net

Article Information

DOI:

<https://doi.org/10.38192/1.6.3.pnauk.wcc20.ab4>

Epub: 11.10.2020

Abstract presented at Philippine Nurses UK World Café Convention 24 October 2020

Keywords: Thyroxine absorption test

Background: Levothyroxine absorption test is a very useful tool in evaluating pseudo malabsorption from true malabsorption and non-compliance however, there is no standard protocol to date yet [2]. In our institution, we based our protocol from the study by Walker, JN., et.al in 2013 [1].

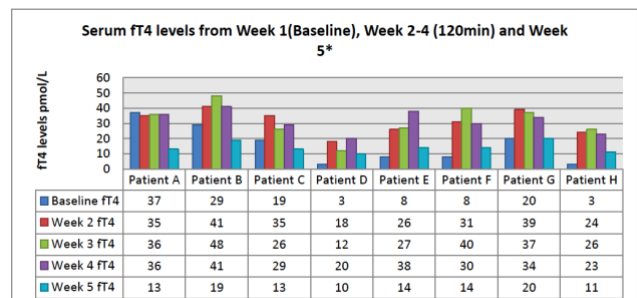
Aim: The aim of this review is to determine whether we can reduce the duration of the test or not, in a safe manner, without losing the results. By continuing the 5 week course of the test, do we get additional information to aid the appropriate treatment regime of hypothyroid patients?

Methods: We collated all patients who were referred for thyroxine absorption test in the past 4 years at 2 district hospitals (Conquest and Eastbourne DGH) in East Sussex. Patients were pre-assessed prior to the test. A commitment between the patient and the performing ESN (endocrine specialist nurse) has been agreed for the completion and reliability of the test results. An oral weight related L-t4 bolus (calculation formula: $1.69 + 0.2\text{mcg/kg per day} \times 7 \text{ days}$), crushed tablets, administered with jam and sips of water once every week for a total of 4 weeks.

Results: Out of 12 patients enlisted, 1 patient was deferred due to abnormal ECG on pre-assessment. A total of 7 patients completed the 5 week test. 9 patients showed > 50% increase of their ft4 levels at 120min (same percent at 180 and 240min). Significant changes in TSH was noted on week 5 with a suppression of >50% on 2/8 patients.

Conclusions: A STAT (Short Thyroxine Absorption Test) may be performed to rule out non-compliance and PTAT (Prolonged Thyroxine Absorption Test) is needed if STAT is inconclusive. This approach will not just hasten the treatment but will also save patients time and institutions' resources. A pre-assessment is highly

recommended for patient safety and prevent further unnecessary investigation.



*On week 5, only baseline (0min) ft4 was measured no T=120min; normal values = ft4 12-22pmol/L

Acknowledgements

ESHT Endocrine team, ESHT Endocrine Biochemistry team, ESHT Endocrine Pharmacy Team

Declaration of Interest

We declare that there is no conflict of interest reported that may cause impartiality of the outcome of this study.

Funding

This quality improvement project report does not receive any grant or funds from any agencies which includes public, commercial or non-profit organization.

References:

- Walker, J.N., Shillo, P., Ibbotson, V., Vincent, A., Karavitaki, N., Weetman, A.P., Wass, J.A.H. and Allahabadia, A. (2013). A thyroxine absorption test followed by weekly thyroxine administration: a method to assess non-adherence to treatment. *European Journal of Endocrinology*, 168(6), pp.913– 917.
- Ghosh, S., Pramanik, S., Biswas, K., Bhattacharjee, K., Sarkar, R., Chowdhury, S. and Mukhopadhyay, P. (2019). Levothyroxine

- Absorption Test to Differentiate Pseudomalabsorption from True Malabsorption. *European Thyroid Journal*, 9(1), pp.19–24.
3. Ruchała M, Szczepanek-Parulska E, Zybek A. The influence of lactose intolerance and other gastro-intestinal tract disorders on L-thyroxine absorption. *Endokrynol Pol.* 2012;63(4):318-323.
 4. Lips, Daniel & Reisen, M & Voigt, V & Venekamp, W. (2004). Diagnosis and treatment of levothyroxine Pseudomalabsorption. *The Netherlands journal of medicine.* 62. 114-8.
 5. Nalini Singh, Pramil N. Singh, Jerome M. Hershman (2000) 'Effect of Calcium Carbonate on the Absorption of Levothyroxine', *JAMA*, 21(283), pp. 2822-2825.
 6. Isabelle Zamfirescu and Harold E. Carlson (2011) 'Absorption of Levothyroxine When Coadministered with Various Calcium Formulations', *Thyroid*, 21(5), pp. 483–486.
 7. Alexander Werhun and William Hamilton (2013) 'Are we overusing thyroid function tests?', *BJGP*, 63(613), pp. 404.
 8. Elizabeth A. McAninch, MD and Antonio C. Bianco, MD, PhD (2016) 'The History and Future of Treatment of Hypothyroidism', *Ann Intern Med*, 164(1), pp. 50-56.
 9. Ana Lopes, Maria Teresa Pereira, Pedro Lito, Cláudia Freitas, Sofia Teixeira & Helena Cardoso (2018) Barcelona, Spain. *Endocrine abstract*, 56 edn., Bioscientifica, p1112.