Conversion to Armour Thyroid from Levothyroxine Improved Patient Satisfaction in the Treatment of Hypothyroidism

Gary M. Pepper* and Paul Y. Casanova-Romero
Gary M. Pepper, Palm Beach Diabetes and Endocrinology Specialists, University of Miami “Leonard M. Miller” School of Medicine, USA

Abstract

The use of Armour Thyroid (desiccated thyroid) in the treatment of hypothyroidism has generated debate among endocrinologists although there is evidence that a significant percentage of patients prefer this medication to T4-only replacement strategies. In this retrospective analysis we investigate the preference for replacement therapy of patients with persistent subjective symptoms of hypothyroidism on T4-only treatment who subsequently switched to Armour Thyroid (AT).

Methods: 450 consecutive patients being treated for hypothyroidism were screened. Of these, 154 had been switched from either generic or brand T4 replacement to AT for treatment of persistent symptoms of hypothyroidism. Patients undergoing treatment for thyroid cancer or on suppression therapy for nodular thyroid disease were excluded. Patients were instructed to have their blood sampled for thyroid function testing in the morning after taking their medication. After a minimum of 4 weeks on medication patients were asked to compare AT treatment versus T4-only treatment using a 5 point satisfaction rating scale. Results are reported as mean ± SD.

Results: On a 5 point Satisfaction Rating Scale with "5" indicative of the highest level of satisfaction, 117 (78.0%) patients gave a score of greater than "3" in preference for AT. Three patients treated with AT and one treated with LT4 reported adverse events, all minor. TSH was 1.30 ± 1.9 mIU/L and T3 1.81 ± 0.78 pmol/L on L-T4 monotherapy while TSH was 1.27 ± 2.2 mIU/L and T3 2.31 ± 1.33 pmol/L on AT (NS for TSH and p<0.003 for T3 ). T4 to T3 ratio on L-T4 monotherapy was 8.45 ± 3.7 while it was 4.70 ± 2.0 (p<0.001) on AT. There was no significant change in weight after switching to AT.

Conclusion: AT treatment was preferred over LT4 replacement therapy by 78% of patients with hypothyroidism in the sub-group with persistent subjective complaints while on T4-only therapy. No serious adverse events were noted while on AT treatment including 30 subjects aged 65 yrs or older. AT could be a reasonable alternative choice for treating this sub-group of patients with hypothyroidism.

ABBREVIATIONS

TSH: Thyroid Stimulating Hormone; L-T4: Levothyroxine; T4: Thyroxine; T3: Triiodothyronine; AT: Armour Thyroid; L-T4: levothyroxine; NT: No Thyroid Disease; SRS: Satisfaction Rating Scale

INTRODUCTION

Armour© Thyroid (Forest Pharmaceuticals, St. Louis, Missouri) also known as desiccated thyroid, is an inexpensive, once daily form of T4 plus T3 hormone replacement. Many practitioners regard Armour© Thyroid (AT) as an inferior product however, to be avoided in clinical practice [1]. This could be in part due to a widely publicized report [2] of inconsistency in the thyroid hormone content of generic forms of desiccated thyroid although, in actuality, AT itself was held as a standard of consistency in that study.

In contrast, treatment of hypothyroidism with levothyroxine (L-T4) monotherapy has been the standard of care in the United States for over 3 decades [3]. This is despite the reported failure of this form of therapy to result in satisfactory resolution of
symptoms in a portion of treated individuals [4]. Several groups have studied the effect of combination L-T4 and T3 as replacement therapy in an attempt to achieve better clinical outcomes. Results have been mixed [5-16] and combination therapy remains controversial.

A recent [17] prospective double blind study compared the clinical and biochemical response of a group of 70 hypothyroid patients to AT versus L-T4 monotherapy. Although ratings of quality of life were comparable between the two therapies, in a sub-group of about 50% of the study cohort AT was associated with improved subjective symptoms as measured by two assessment tools. Additionally 49% of the study group preferred AT therapy to L-T4 monotherapy. Interestingly, others report patient preference for treatment of hypothyroidism with combination L-T4 plus liothyronine compared to L-T4 monotherapy [9,11].

To investigate the observed preference of a subgroup of hypothyroid patients for AT over L-T4 monotherapy, we retrospectively reviewed the biochemical indices of patients who failed to achieve clinical euthyroidism on L-T4 monotherapy and who were switched to AT treatment. These individuals were subsequently queried as to their preference for either of these therapies.

**METHODS**

450 consecutive patients being treated for hypothyroidism within a single endocrinology practice were screened between February 2013 and April 2013. Of these, 154 (34.2%) had been converted to AT after apparent failure of L-T4 therapy to eliminate...
Separately, 51 ambulatory adults without active thyroid disease (NT) undergoing routine health evaluation provided samples for total T4, T3 resin uptake, TSH and total T3 measurement. Written consent for use of clinical data was obtained from all participants. HIPAA compliant protocols for protection of the privacy of health information were employed throughout this project.

Statistical comparisons of data between treatment groups were made using a t-test for paired variables; Non parametric data were analyzed using Kruskal-Wallis one way ANOVA on ranks. Results are expressed as mean ± SD, or mean ± SEM for graphical purposes and median for time; p<0.05 is used as the threshold for statistical significance. Statistical analysis was performed using NCSS 2007 statistical program [18].

RESULTS

Characteristics of the study population are presented in (Table 1). Of 450 patients being treated for hypothyroidism with L-T4, 154 (34.2%) had persistent complaints typical of hypothyroidism despite thyroid hormone levels in the normal or above normal range. The average age of this study group was 53 ± 12.5 years (range 24 to 86 years), 30 of these being 65 yrs of age or older and 139 were female (92.6%). Duration of prior L-T4 treatment was 6 years and 7 months (median 3 years) and for AT treatment at the time of study was 2 years and 9 months (median 2 years). Three adverse events on AT occurred; itchiness of the eyelids in one, scalp hair loss in one and palpitations in the third. Tingling and numbness of the lips while on Synthroid constituted an adverse event during LT4 therapy. AT dose at the time of study was 92.3 ± 28.6 mg.

117 (78%) patients gave a score of greater than “3” (Satisfaction Group A or Responders) vs. 33 patients with a score equal or less than “3” (Satisfaction Group B or Non-Responders) (Figure 1). On a 5 point scale, with “5” corresponding to AT “definitely superior” to prior L-T4 therapy and “1” corresponding to AT “definitely worse” the average mean rank score for Satisfaction Group A was 4.79 ± 0.40, significantly greater than Satisfaction Group B 2.70 ± 0.63, P<0.001. T4 to T3 ratio on L-T4 monotherapy was 8.45 ± 3.7 while it was 4.70 ± 2.0 (p<0.001) on AT, TSH was 1.30 ± 1.7 mIU/L and T3 1.18 ± 0.51 pmol/L on L-T4 monotherapy while TSH was 1.34 ± 2.4 mIU/L and T3 1.50 ± 0.86 pmol/L on AT (NS for TSH and p<0.003 for T3). In both LT4 and AT treatment groups TSH levels were not statistically different compared to those without thyroid disease (NT) while T4/T3 ratio on L-T4 was 5.1± 0.40 and on AT 5.1± 0.40 (NS). Thyroid replacement was started at 50 microg/day and adjusted every 2 to 4 weeks. There is no significant change in weight after switching to AT, 75.9 ± 15.46 kilograms on L-T4 and 74.40 ± 15.4 kilograms on AT.

There was no significant correlation between the satisfaction rating and TSH or between satisfaction rating and change in weight after switching to AT nor was there significant difference between TSH levels between any of the 5 groups by satisfaction score. TSH levels on L-T4 monotherapy and AT were not significantly different from NT (1.57 ± 0.73 mIU/L) (Table 2). There were patients in both treatment groups with TSH levels outside the normal range however; TSH below <0.4, 58 patients on L-T4 monotherapy (Figure 3) and 61 patients on AT (Figure 4)
This retrospective observational study represents the findings of a single outpatient endocrine practice and subjects were not excluded if they had other intercurrent illnesses common in this population such as diabetes, hypertension, and neoplastic disease. These limitations add significantly to the complexity of interpreting our results. The findings however, mirror and substantiate these concerns. In our study 30 individuals over age 65 years were successfully treated with AT without untoward events with a mean treatment duration of 2.87 ± 2.19 yrs in this older population, minimum 0.5 to a maximum of 10 yrs on AT.

DISCUSSION

This retrospective observational study represents the findings of a single out-patient endocrine practice and subjects were not excluded if they had other intercurrent illnesses common in this population such as diabetes, hypertension, and neoplastic disease. These limitations add significantly to the complexity of interpreting our results. The findings however, mirror and substantiate these concerns. In our study 30 individuals over age 65 years were successfully treated with AT without untoward events with a mean treatment duration of 2.87 ± 2.19 yrs in this older population, minimum 0.5 to a maximum of 10 yrs on AT.

and TSH above 4.0 mIU/L, 10 patients on L-T4 monotherapy and 12 patients on AT.

Previous studies have shown a significant placebo effect persisting for up to 12 months, associated with use of combination L-T4 and T3 treatment [10]. Although some patients reported great improvement in well being occurring within a few days to weeks of being switched to AT from L-T4, characteristic of a placebo effect, there was no correlation of duration of treatment with satisfaction rating in the AT group. Perception of the superiority of AT persisted so that patients still reported their perception of the existence of a simple placebo effect as the basis of the results here.

Finally, warnings regarding use of AT in older adults have been issued [1,21] although there is no published data to substantiate these concerns. In our study 30 individuals over age 65 years were successfully treated with AT without untoward events with a mean treatment duration of 2.87 ± 2.19 yrs in this older population, minimum 0.5 to a maximum of 10 yrs on AT.
CONCLUSION

AT treatment produced high satisfaction scores in a group of hypothyroid patients with persistent symptoms on L-T4 therapy. Our findings suggest that AT preference is not due to placebo effect, induction of hyperthyroidism or weight loss. No significant untoward effects of this therapy were noted inclusive of 30 subjects 65 yrs of age and older. As suggested by Hershman [20], AT seems no more dangerous than adding T3 to L-T4 therapy and can be offered to patients who “don’t feel normal” on L-T4 monotherapy. Larger prospective studies would help clarify what role AT plays in replacement therapy of patients dissatisfied with L-T4 monotherapy for hypothyroidism. Our results are encouraging to clinicians that this drug does provide a viable treatment alternative.

DISCLOSURE

Dr. Casanova-Romero is on the speakers’ bureau of Sanofi. Dr. Pepper has no multiplicity of interest to disclose. This research was conducted without funding from any public, commercial, or not-for-profit agencies. This research was presented in part at the 83rd Annual Meeting of the American Thyroid Association; Abstract #25, October 17, 2013.

REFERENCES