Pan Mersey
Area Prescribing Committee

THYROID extracts, desiccated (e.g. Armour Thyroid®) for the management of hypothyroidism

The Pan Mersey Area Prescribing Committee does not recommend the prescribing of Desiccated Thyroid Extracts (e.g. Armour Thyroid®), for the management of hypothyroidism

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National and international guidelines recommend that levothyroxine (T4) is the treatment of choice in the management of hypothyroidism [1-2]. A 2015 review by the British Thyroid Association (BTA) states that levothyroxine is the treatment of choice for hypothyroidism due to its efficacy in resolving the symptoms of hypothyroidism, long-term experience of its benefits, favourable side effect profile, ease of administration, good intestinal absorption, long serum half-life and low cost. [3]

It is acknowledged that a proportion of patients being treated with levothyroxine remain symptomatic, despite achieving TSH suppression, and report poor satisfaction with their treatment. The BTA review recommends that such patients should be thoroughly evaluated for other modifiable conditions and, where appropriate, there should be a retrospective review of the initial diagnosis of hypothyroidism. [3] Current guidelines suggest that some experts may consider a trial of combination therapy of liothyronine (T3) and T4, however not all experts agree on this management strategy. [3]

The NHS England document 'Items which should not be routinely prescribed in primary care' advises against the use of liothyronine (including Armour® Thyroid) except under exceptional circumstances when levothyroxine has failed and the consultation where the patient is deemed to require the drug must be undertaken by an NHS consultant in an NHS funded service. [4] Subsequently the Regional Medicines Optimisation Committee (RMOC) published guidance which advised against the use of combination products containing desiccated thyroid extracts (DTE), e.g. Armour Thyroid®, and gave further guidance to prescribers around exceptional circumstances, criteria and responsibilities for liothyronine prescribing. [5]

There is consensus in national and international guidelines that DTE should not be prescribed for the management of hypothyroidism.

There are limited robust clinical trials assessing the clinical efficacy of DTE in hypothyroidism. Although there is some evidence to suggest that some patients may prefer treatment with DTEs [6], there is no high-quality evidence that DTEs provide additional clinical benefits over T4 therapy or to define a specific population for whom DTE may be appropriate. Additionally, there are safety concerns with the use of DTEs including the presence of supraphysiological T3 levels and limited long-term safety data. [6]

Note: Patients who are not eligible for treatment under this statement may be considered on an individual basis where their GP or consultant believes exceptional circumstances exist that warrant deviation from the rule of this policy. In this situation, follow locally defined processes.

Supporting information

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Effectiveness

There is a lack of high quality evidence supporting the use of DTEs. Most of the published data dates pre-1980s, and derives from open-label, uncontrolled studies. [7]

A single randomised, controlled, crossover trial has been published comparing the efficacy of DTE with T4 (n=70). [7] Patients on a stable dose of T4 were randomised to treatment with either DTE or T4. After six weeks of treatment, TSH levels were checked and the dose of medication adjusted to maintain TSH levels between 0.5-3.0 mU/L. Once in range, study medication was continued for another 12 weeks. Patients were then crossed over into the other arm for another 16-week period with the same design. Primary outcome measures were change from baseline to endpoint in a number of assessments for symptoms and quality of life. No difference in symptom scores, general health questionnaires or neurological testing was observed between the two treatments, although there was a trend towards favouring DTEs and there was an average weight reduction of 2.86lb ($p<0.001$) compared to T4. 49% of patients reported a preference for DTE, 19% for T4 and 33% had no preference. The higher preference for DTE was due to the observed weight loss; however, it is worth noting that these patients were 16lb heavier at baseline than those who preferred T4. [7]

Three retrospective, practice-based reviews have been published:

1. The records of 89 patients with hypothyroidism treated with T4 but still symptomatic were compared with 832 untreated hypothyroid patients. Forty of the 89 patients were followed up after conversion to DTE. The mean symptoms score prior to switching was comparable to untreated patients and fell from 10.7 to 3.6. This study is limited by its retrospective design, lack of a control group and the fact that T4 titration was not tried before switching to DTE. [8]
2. A second retrospective review investigated the observed preference for DTE over levothyroxine. Of 450 patients treated at an endocrinology clinic, 154 self-reported T4 failure despite being biochemically euthyroid. After switching to DTE, TSH levels were unchanged, but T3 levels increased and ratio of T4:T3 decreased. Additionally, there was no significant change in weight after switching. Despite this, 78% of patients reported satisfaction with DTE. Whilst this study suggests a role for DTE, the result could be explained by selection bias (the population expressed dissatisfaction with T4). The reliability of the results is also limited by the fact the investigators did not use a validated scale to assess satisfaction. [9]
3. The third review investigated the effect of addition of T3 therapy to standard T4 therapy. Of 2400 patients treated at an endocrinology clinic, 100 complained of signs and symptoms of hypothyroidism despite optimal TSH levels (and continued to have low T3), and were switched to either DTE (n= 57) or levothyroxine/T3 combination with a ratio of 4:1 (n=37). The average TSH remained normal in 96.5% of patients ($P < 0.05$), and T_4 remained normal in 96.5% of patients ($P=1$). Average T_3 levels remained normal in 93.6% of patients vs. 74.5% prior to the switch in therapy ($P < 0.005$), and 4.3% of patients had T_3 levels below range compared to 21.3% prior to the switch in therapy. There are several limitations to these conclusions, including the retrospective nature and lack of comparison with T_4 monotherapy. [10]

Safety

Limited safety data is available for DTEs. The manufacturer of Armour Thyroid states that adverse effects, other than those indicative of hyperthyroidism because of therapeutic over-dosage, are rare [11].

Treatments with DTEs have been associated with higher T3 levels and lower T4:T3 ratios compared to treatment with levothyroxine. [10] Raised T3 levels may be dangerous in some patients, especially those with cardiac disease, and may be linked to osteoporosis. Levothyroxine therapy is associated with lower T3 and higher T4 levels, more comparable to healthy individuals.

Cost

Armour Thyroid:
(doses range from 15mg-180mg capsules)
[100 pack]: £20.51-£50.97
Cost per patient /per year (using regime of 1 daily):
£74.86 - £186.04

Levothyroxine 100 micrograms tablets:
[28 pack]: £1.03 [12]
Cost per patient /per year (using regime of 1 daily):
£13.43

The above information does not imply therapeutic equivalence of drugs or doses.

Supporting information

References

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