



The Safe Use of Natural Desiccated Thyroid Extract for the Treatment of Hypothyroidism in Pregnancy

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Abstract: - This article discusses the use of natural desiccated thyroid extract in pregnancy, which is a treatment option for hypothyroidism. Current guidelines recommend using only Levothyroxine during pregnancy, causing concern for some physicians about using Natural Desiccated Thyroid (NDT). However, many patients find NDT more effective than Levothyroxine for symptom control and are hesitant to switch to Levothyroxine during pregnancy.

CountryHealth specialises in hypothyroidism treatment and predominantly prescribes NDT, as many patients did not find adequate symptom control from Levothyroxine. CountryHealth's approach is to use both NDT and Levothyroxine to ensure the pregnant woman's symptoms are controlled and the foetus receives sufficient thyroid hormones. Frequent thyroid function testing during pregnancy allows for regimen adjustments to maintain optimal maternal and foetal thyroid status.

Patients who use our service are partners in their own care, empowered to fully understand and take ownership of their condition, monitoring and treatment. This is especially important during pregnancy and patients are encouraged to share their treatment plan with their own GP and specialist physicians who may be involved in their care.

Keywords: Hypothyroidism, Hashimoto's, pregnancy, natural desiccated thyroid extract.

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I. INTRODUCTION

Maternal hypothyroidism is a common endocrine condition, affecting approximately 2-3% of pregnant individuals (Soldin, n.d). Thyroid disorders can have significant implications for conception, and adequate thyroid hormone levels are vital for proper foetal neurodevelopment and physical maturation (Stagnaro-Green & Pearce, 2012). Physiologic changes associated with pregnancy require an increased availability of thyroid hormones by 40% to 100% to meet the needs of mother and foetus during pregnancy and pregnant women must increase their thyroid hormone production to meet the heightened metabolic needs of pregnancy and ensure appropriate foetal growth. Given the foetus's reliance on maternal thyroid hormones, particularly during the first 18-20 weeks of gestation, it is essential to closely monitor and manage maternal thyroid status during this critical period (Leung, 2012).

Because foetal, neonatal and child health are dependent on adequate thyroid hormone supplementation throughout pregnancy, trimester-specific reference intervals for thyroid functions can be crucial for both maternal and foetal health (Soldin et al., 2004).

Maternal hypothyroidism has been shown to be significantly associated with miscarriage, preterm birth, and growth restriction

(Min et al., 2020), (Männistö et al., 2011).

In this article we discuss the safe management of pregnant patients whilst being on Natural Desiccated Thyroid Extract and the outcome of a number of pregnancies.

II. METHODS

A. What and when to test during pregnancy?

During a normal pregnancy the stimulatory effect of hCG on the thyroid induces a partial TSH suppression below the non-pregnant range at the end of the first trimester (mean 0.89 mIU/L compared to 1.06 mIU/L postpartum) (Soldin et al., 2004)

This study from 2006 found that trimester-specific T3, FT4, TSH, and Tg concentrations were significantly different between the first and third trimesters (all $P \leq 0.05$); second and third trimester values were not significantly different for FT4, TSH, and Tg (all $P > 0.25$), although T3 was significantly higher in the third, relative to the second trimester. T4 was not significantly different at any trimester (all $P > 0.8$).

Using immunoassays the reference intervals for TSH in an iodine-sufficient population without any autoimmune-antibodies are 0.24–2.99 mIU/L for the first trimester, 0.46–2.95 mIU/L for the second

trimester, 0.43–2.78 mIU/L for the third trimester, while one year postpartum TSH reference interval for the same population was 0.28–2.94 mIU/L.

The reference intervals for FT4 are 0.26–1.92 ng/dL (3.7–23.4 pmol/L) for the first trimester, 0.59–1.56 ng/dL (7.4–18.9 pmol/L) for the second trimester, 0.65–1.25 ng/dL (8.3–15.6 pmol/L) for the third trimester, while one year postpartum FT4 reference interval for the same population was 0.77–2.26 ng/dL (9.9–28.4 pmol/L).

Serum T3 and T4 concentrations are also impacted by pregnancy related changes in thyroid binding proteins like TBG, transthyretin, and albumin, which may require adjustments of the Levothyroxine dosage.

B. Treatment options

As the foetus is dependent on maternal thyroxine supply, the treatment with levothyroxine has been the standard of care for managing hypothyroidism in pregnancy.

Natural desiccated thyroid extract, also known as desiccated thyroid, is an alternative treatment option for hypothyroidism that contains a combination of thyroid hormones derived from the thyroid glands of animals, typically pigs. This treatment offers several potential advantages over synthetic levothyroxine, including the presence of both T4 and T3 hormones. Whilst there is criticism that NDT has an unphysiological ratio of T4:T3, it provides the patient with an affordable source of T3, as not everyone is able to convert the pre-hormone T4 into the active T3. These individuals often find symptomatic relief with natural desiccated thyroid extract when compared to levothyroxine alone (Heald et al., 2024).

Natural desiccated thyroid extract [NDT] has been utilised for the treatment of hypothyroidism for decades (Escamilla, 1954). In a questionnaire survey of members of the Irish Endocrine Society, 13% regularly used desiccated thyroid extract (Mustafa et al., 2022), but its safety and efficacy in the context of pregnancy have been the subject of ongoing debate. The use of natural desiccated thyroid extract during pregnancy is not recommended, as it contains a smaller amount of thyroxine compared to Levothyroxine. Patients are typically challenged by their obstetrician or endocrinologist to switch back to Levothyroxine during their pregnancy.

While natural desiccated thyroid extract may offer potential benefits, it is important to consider the safety and efficacy of this treatment during pregnancy. The available data on the use of natural desiccated thyroid extract in pregnancy is limited, and there are concerns about the consistency and potency of these products. Additionally, the potential risks of over-replacement or under-replacement of thyroid hormones during critical stages of foetal development must be carefully weighed.

C. Composition and Sources of Natural Desiccated Thyroid Extract

Natural desiccated thyroid extract is derived from the dried thyroid glands of animals, typically pigs. The composition of natural desiccated thyroid extract includes a combination of thyroxine (T4) and triiodothyronine (T3), as well as other thyroid-related substances such as calcitonin and thyroglobulin.

Patients have the choice between supplemental NDT like

Metavive, Thyro-Gold™ etc and branded pharmaceutical NDT like Armour Thyroid and ERFA Thyroid.

The precise composition and potency of the supplemental NDT preparations can vary significantly between manufacturers and even between batches from the same manufacturer. This can make it challenging to ensure consistent and reliable dosing, particularly in the context of pregnancy where precise thyroid hormone levels are crucial for foetal development. We therefore discourage the use of these preparations and only prescribe the commercially produced Armour and ERFA thyroid as well as pharmacy-compounded Thyreogland and Magistrale Rezeptur in our practice.

D. Natural desiccated Thyroid Extract in Pregnancy: Supporting the Pregnant Mother and Foetus

Current guidelines recommend only the use of Levothyroxine during pregnancy, which causes apprehension in the minds of many physicians regarding selection of the natural desiccated thyroid extract preparations for optimal clinical therapy.

This recommendation leads to a dilemma for the patient who has typically been on Levothyroxine before which rendered her symptomatic, whilst NDT led to symptom control. The women are concerned that switching back to Levothyroxine would cause a return of their symptoms.

CountryHealth specialised in the diagnosis and treatment of hypothyroidism since 2016. Our experienced team is dedicated to helping patients achieve optimal thyroid health and wellness. We predominantly use natural desiccated thyroid extract [NDT], as many of our patients did not get symptom control with Levothyroxine. As the majority of our patients are between 25-75 years of age and predominantly female, we have a number of patients who fall pregnant whilst on treatment with NDT.

When patients are switched from Levothyroxine to NDT, their FT4 level often drops below the normal range. This is not a problem for the patient, as long as the FT3 is kept within the optimal or high-normal range.

Once a patient plans a pregnancy or discovers that she is pregnant, it is essential to lift the FT4 into the optimal range to ensure that the foetus receives the optimal amount of thyroxine.

This can be achieved by either increasing the NDT dose, as long as the FT3 stays within the normal range and the patient does not get hyperthyroid symptoms, or by adding Levothyroxine to the treatment regime.

We initially keep the patient on their current treatment regime with NDT and add Levothyroxine, ensuring that the FT4 remains in the optimal range of 14.2-18.0 pmol/L.

To ensure adequate thyroid hormone levels throughout pregnancy, we advise our pregnant patients to monitor their thyroid function tests, including thyroid-stimulating hormone and free thyroxine, at least every 2 months during conception, pregnancy and breastfeeding. This enables us to adjust the NDT and Levothyroxine regimen as needed to maintain optimal maternal and foetal thyroid status.

Whilst we monitor TSH, we do not rely solely on these lab values. It is important to know, that TSH typically drops to low or very low levels once a patient is treated with either NDT or

Liothyronine, an effect that is not common knowledge amongst practitioners and even endocrinologists who are not familiar with this treatment, and often consider a patient overtreated purely by looking at the TSH result.

Instead, we monitor and adjust the FT4 for the benefit of the foetus and FT3 for the pregnant mum and aim to keep both in the optimal range. This helps to ensure the health of both the pregnant woman and the developing foetus.

E. Patient Education and Shared Decision-Making

We strongly believe that a well-educated patient can contribute best to the successful management of hypothyroidism, especially during pregnancy. Therefore we provide a lot of information not only on our website [www.Countryhealth.co.uk] but also in our written thyroid reports. The "Thyroidpreneur Handbook", which is part of the first thyroid report produced for our patients, contains over 200 scientific references and covers not only the pharmaceutical treatment options, but also nutritional and lifestyle interventions as well as potentially useful nutritional supplements.

By involving patients as active partners in their care, we have found they are more likely to adhere to treatment recommendations, monitor their own condition, and achieve better outcomes.

F. Use of supplements in the holistic treatment of hypothyroidism

Many patients with hypothyroidism exhibit nutrient deficiencies and benefit from the use of nutritional supplements. Relevant supplements include:

Selenium

Selenium is an essential trace mineral, and the thyroid has a higher concentration of selenium than most other organs, reflecting the importance of selenium for thyroid metabolism (Duntas & Benvenega, 2014). Adequate selenium levels are necessary for the production of the deiodinase enzymes that regulate thyroid hormone metabolism and for the activity of glutathione peroxidase, which protects the thyroid from oxidative damage.

Selenium deficiency can not only impair thyroid hormone synthesis and metabolism but also lead to an imbalance in the immune system (Avery & Hoffmann, 2018). Several clinical trials 94, 95, 110 have reported the beneficial effects of selenium supplementation in TPOAb-positive pregnant women, demonstrating selenium can improve antibody levels, thyroid function, and pregnancy outcomes

Vitamin D3

Vitamin D has been found to play an increasingly crucial regulatory role in the immune system in the past few decades. More recently, numerous studies have highlighted that an insufficient level of 25-hydroxyvitamin D [25(OH)D] is significantly associated with HT (Štefanić & Tokić, 2020) (Gallo et al., 2019) (Chao et al., 2020)

Some studies (Krysiak et al., 2019), (Krysiak et al., 2017) found that vitamin D3 can significantly reduce the TPOAb levels, and this effect may be related to the suppression of Th1-dominated autoimmunity toward the thyroid gland.

G. Rate of miscarriage in Pregnancy

Miscarriage is the sudden loss of a pregnancy before the 20th week.

Currently, miscarriage occurs in 8-15% of clinically recognized pregnancies and approximately 30% of all pregnancies in recent epidemiological investigations (Campillo et al., 2019) (Linnakaari et al., 2019) and chromosomal abnormalities account for approximately 50% of foetal losses in the first 8-15 weeks of gestation (Daniely et al., 1998). However, while the miscarriage rate has slightly decreased in recent years, unexplained miscarriage and even recurrent miscarriage (RM), which is defined as two consecutive spontaneous losses or three or more spontaneous losses, severely impact the physical and mental health of the female population (Jacob et al., 2019). With a deepening understanding of the maternal and foetal immune response, unexplained miscarriage is closely related to an abnormally activated maternal immune system (Lorenzi et al., 2012).

Hashimoto's thyroiditis (HT) is the most prevalent autoimmune thyroid disease (ATD) worldwide and is strongly associated with miscarriage and even recurrent miscarriage (RM). In a study of over 15,000 women, thyroid autoimmunity was the single most important risk factor for miscarriage, associated with a 2- to 3-fold increased risk. (Stagnaro-Green, 2011)

The risk of miscarriage increases with increasing TSH. Women with a TSH between 4.5-10 mU/L or TSH greater than 10 mU/L had an increased risk of miscarriage of 1.8 or 3.95 times respectively, compared to women who had a normal TSH (0.2-2.5mU/L) during early pregnancy. Women with a TSH between 2.51-4.5mU/L did not appear to have an increased risk of miscarriage (Taylor et al., 2014).

L-T4 supplementation, which is recommended by the American Thyroid Association (ATA) (Alexander & Pearce, 2017) is still the main treatment used to decrease the incidence of overt hypothyroidism during pregnancy among euthyroid women. Immunoregulatory drugs, such as selenium (Duntas, 2015) (Rayman, 2018) and vitamin D3 (Altieri et al., 2017), have been discovered to efficiently alleviate HT progression and regulate the immune system, which may benefit pregnancy outcomes. However, the efficacies of these drug therapies are still controversial in different studies.

L-T4 supplementation (25-50 µg/d as a typical starting dose) before pregnancy can decrease the risk of HT-related miscarriage and premature birth. L-T4 can not only maintain normal thyroid hormone levels but also inhibit the TSH level (below 2.5 mU/L). However, with the exploration of autoimmune thyroiditis, many studies (Wang et al., 2017), (Rima K et al., 2019), (Nazarpour et al., 2016) (Negro et al., 2016) reached the contrary conclusion that regular L-T4 substitution could not decrease the risk of miscarriage in TPOAb-positive women.

H. Postpartum Thyroid Management

Following delivery, the requirements for thyroid hormone support typically drop. Clinicians should carefully monitor thyroid function tests in the postpartum period, and adjust levothyroxine doses as needed to avoid both over- and under-replacement.

After birth, hormones impact postnatal development via absorption from the gastrointestinal tract. Via breast milk the mum

provides her baby with thyroid-stimulating hormone (TSH), thyroxine, and albumin (Vass et al., 2022). It is therefore important to keep the mothers FT4 level in the optimal range. A systematic review and meta-analysis found that postpartum L-T4 treatment reduced the risk of postpartum thyroiditis and hypothyroidism in women with a history of autoimmune thyroiditis, without any safety concerns.(Lee & Pearce, 2022)

III. CASE REPORTS

A. Current evidence

To explore the effects of natural desiccated thyroid extract on pregnancy outcomes, a case series followed 48 pregnant women with diagnosed hypothyroidism who were treated with natural desiccated thyroid extract. The study found that the majority of the women (96%) had a normal pregnancy outcome. Based on these findings, the authors concluded that natural desiccated thyroid extract can be a safe and effective alternative to levothyroxine in the treatment of hypothyroidism during pregnancy. (Bunevičius et al., 1999)

B. Case 1:

The 39-year-old patient joined the practice at 13 weeks of pregnancy while taking 25 mcg of levothyroxine. In addition to Hashimoto's thyroiditis, the patient also had Raynaud's phenomenon, Sjögren's syndrome, dysautonomia, chronic fatigue syndrome, generalised anxiety disorder, depression, psoriasis, mild osteoarthritis, and was positive for the MTHFR mutation. The thyroid-stimulating hormone and free thyroxine levels were within the reference range for the trimester, but free triiodothyronine was low, and both thyroglobulin and thyroid peroxidase antibodies were elevated. Since the FT3 level was well below the optimal range, a quarter grain of Armour thyroid twice daily was added to the levothyroxine.

The additional thyroxine (T4) from the natural desiccated thyroid extract caused ectopic heartbeats, which was attributed to the concurrent use of bisoprolol, a medication that can hinder the conversion of T4 to T3. The patient then stopped the levothyroxine, and the Armour thyroid was increased to half a grain twice daily. At the next follow-up, the FT3 level was now close to the optimal range, and the patient's husband reported that she was "perkier and happier." The NDT was further increased to 1.5 grains, and 25 mcg of levothyroxine was added, as the patient's FT4 level, while still within the trimester reference range, had dropped.

The final review shortly before delivery showed a now suppressed TSH, which is typical when patients are at or near the required dose of NDT, FT4 well within the trimester reference range, and FT3 now in the optimal range. The patient delivered a healthy boy weighing 3.37 kg at 39 weeks gestation via a caesarean section. The baby continued to thrive, and the patient was able to start her own business, which she had previously considered "unthinkable".

Table 1 - Results case 1 - introduction of Armour Thyroid

	2nd Trimester		3rd Trimester	
TSH	2.78	2.04	0.64	0.02
FT4	10.9	9.2	7.69	10.5

FT3	3.7	3.6	4.39	4.8
FT4: FT3	2.95	2.56	1.75	2.19
TG -ABs [IU/ml]	236	206	169	153
TPO-ABs [IU/ml]	94	49.7	25.9	17.9
L-Thyroxin [mcg]	25			25
Armour. [grn]		0.5	1	1.5
Total T4 [mcg]	25	19	38	82
Total T3 [mcg]		4.5	9	13.5

FT4 was kept within the trimester reference range throughout the pregnancy. FT3 was optimised following the introduction of Armour Thyroid.

C. Case 2:

The patient, a 32-year-old gravida 1 para 1, presented to the practice with an elevated thyroid-stimulating hormone despite taking 50 mcg of levothyroxine and difficulties with weight management. The patient also had elevated thyroglobulin antibodies. Her medication was changed to 0.25 grain of Armour Thyroid twice daily, which was gradually increased to 1.5 grains. The patient reported improvements in energy levels and less fatigue, as well as some weight loss, over the following 10 months. Due to financial considerations, she switched to ERFA Thyroid 60 mg in the morning and 30 mg in the evening, which was well-tolerated.

When the patient planned a second pregnancy, we noted the patient's free thyroxine level was within the normal range but below the optimal level and added 25 mcg of levothyroxine to the patient's regimen.

The patient conceived shortly before her 35th birthday, with both FT4 and free triiodothyronine in the optimal range and a suppressed TSH, which is typical for a patient taking NDT at the required dosage.

At the beginning of the second trimester, the patient's FT4 dropped below the optimal range, so we increased the levothyroxine to 50 mcg in addition to 90 mg of ERFA Thyroid. Subsequent tests showed both FT4 and FT3 were in the optimal range, with a suppressed TSH. The patient delivered a healthy baby. After delivery, the patient's hormone support needs decreased as expected, and the clinicians reduced both the ERFA Thyroid and levothyroxine, with the patient experiencing only sleep issues due to caring for the newborn.

Table 2 - Results case 2 - use of ERFA in pregnancy

	1st Trimester	2nd Trimester		3rd Trimester
TSH	0.19	1.03	0.072	0.07
FT4	15.9	13.5	16.2	15.5
FT3	5.22	5.1	5.2	5.7

FT4: FT3	3.05	2.65	3.12	2.72
TG -ABs [IU/ml]	16	15.9	15.4	15.5
TPO-ABs [IU/ml]	9	10.1	<9.0	11.4
L-Thyroxin [mcg]	25	25	50	50
ERFA. [mg]	90	90	90	90
Total T4 [mcg]	77.5	77.5	103	103
Total T3 [mcg]	12	12	13.5	13.5

FT4 and FT3 were kept within the trimester reference range throughout the pregnancy.

D. Case 3:

This 31-year-old patient presented to the practice with elevated thyroid-stimulating hormone and low normal free triiodothyronine levels despite treatment with 75 mcg of levothyroxine for autoimmune thyroiditis. She was switched to Armour thyroid, which optimised her FT3 and alleviated her symptoms of joint pain and fatigue.

One year later, the patient became pregnant while taking one grain of Armour thyroid twice daily. The initial first-trimester lab results showed TSH and free thyroxine within the trimester reference range, but both FT4 and FT3 were low-normal. 25 mcg of levothyroxine was added to her treatment regime, which maintained the FT4 level at the first second-trimester test, but below the optimal range. Levothyroxine was further increased to 50 mcg. The second second-trimester test showed similar results, prompting an increase in the natural desiccated thyroid extract to 2.25 grains and the levothyroxine to 75 mcg.

The first third-trimester test revealed a suppressed TSH, FT4 in the optimal range, but a further drop in FT3. The clinicians increased the NDT by 0.25 grains to 2.5 grains, which marginally improved the FT3 while keeping the FT4 in the optimal range. The patient remained asymptomatic throughout the pregnancy and delivered a healthy baby.

Table 3 - Results case 3 - use of Armour in pregnancy

	1st Trimester	2nd Trimester		3rd Trimester	
TSH	0.35	1.01	0.59	<0.01	<0.01
FT4	12	11.6	11.2	14.2	15
FT3	4.2	4.3	4.2	3.7	4.0
FT4: FT3	2.86	2.7	2.67	3.84	3.75
L-Thyroxin [mcg]		25	50	75	75
Armour. [grn]	2	2	2	2.25	2.5
Total T4 [mcg]	76	76	126	161	170

Total T3 [mcg]	18	18	18	20.3	22.5
Total T3 [mcg]	18	18	18	20.3	22.5

TG and TPO antibody levels were optimal before the pregnancy and not retested. FT4 and FT3 were kept within the trimester reference range throughout the pregnancy.

E. Case 4:

This case study presents a 34-year-old patient, gravida 2 para 1, who joined the practice after her first pregnancy. Initially, she was on 50 mcg of levothyroxine, with a TSH above the optimal range, normal free thyroxine, and low free triiodothyronine. We switched her to natural desiccated thyroid extract and carefully titrated the dose up to 2 grains per day in divided doses.

The patient reported feeling well on this regimen and became pregnant again, but unfortunately experienced a miscarriage at the end of the first trimester during the COVID-19 pandemic. Emotional stress at work may have contributed to the loss.

Fourteen months later, the patient became pregnant once more. Her initial first-trimester testing showed a very high TSH and both low FT4 and FT3, with FT4 within the trimester reference range. We increased her NDT by 1 grain. She continued regular reviews with an obstetrics and gynaecology consultant who did not monitor her FT3. When she came back to us at the beginning of the second trimester, her blood results showed a suppressed TSH, FT4 above the trimester reference range, and a very high FT3.

We reduced her NDT by 1 grain and maintained the levothyroxine at 50 mcg per day. Two months later, the TSH remained below the trimester reference range, the FT4 was back within the trimester reference but not optimal range, and the FT3 was just below the optimal range.

NDT was increased by 0.5 grains to 2.5 grains and levothyroxine kept at 50 mcg per day. One month later, her FT4 was in the optimal range, and her FT3 was just above the optimal range.

The patient delivered a healthy baby boy. During the pregnancy, her thyroid peroxidase antibodies dropped from 265 to 43 IU/ml.

Table 4 - Results case 4 - use of Armour in pregnancy

	1st Trimester	2nd Trimester		3rd Trimester
TSH	8.51	<0.02	0.04	<0.02
FT4	9.6	20.7	13.2	16.3
FT3	4.3	7.0	4.3	5.5
FT4: FT3	2.23	2.96	3.07	2.96
TPO-ABs [IU/ml]	265	116		43
L-Thyroxin [mcg]		50	50	50
Armour [grn]	2	3	2	2.5
Total T4 [mcg]	76	164	126	145
Total T3 [mcg]	18	27	18	22.5

IV. DISCUSSION

Thyroid hormone replacement has been used for more than a century to treat hypothyroidism. Natural thyroid preparations (thyroid extract, desiccated thyroid, or thyroglobulin), which contain both thyroxine (T4) and triiodothyronine (T3), were the first pharmacologic treatments available and dominated the market for the better part of the 20th century. However, in the 1970s, synthetic levothyroxine became the standard of care based on the idea that it would provide a more consistent therapeutic effect and allow for more precise dosing. (McAninch & Bianco, 2016)

While Levothyroxine monotherapy is generally effective for the majority of patients, clinicians have long recognized issues with it, including the potential for suboptimal conversion to the active form triiodothyronine and persistent symptoms in some patients (Okosieme, 2011). This has led to a renewed interest in the use of natural desiccated thyroid extract containing both T4 and T3. The 2017 joint guidelines on the management of hypothyroidism from the American Thyroid Association and American Association of Clinical Endocrinologists acknowledge that alternative thyroid hormone preparations, including natural desiccated thyroid, may be appropriate for some patients.

In our practice, we see predominantly patients who - despite having been on a standard dose of Levothyroxine titrated by their TSH level by their primary care physician or endocrinologist, exhibited symptoms of hypothyroidism and benefited from a switch to natural desiccated thyroid extract. We offer NDT to approximately 90-95% of our patients, aiming for FT3 levels in the optimal range [4.64-5.35 pmol/L]. FT4 levels often drop when patients are converted from Levothyroxine to NDT. As FT4 is considered in most studies as a pure “transporter” with very little function for the patient, this is usually not an issue.

However, the situation changes when patients plan to conceive or fall pregnant, as the foetus relies on the supply of T4 from the mother.

We had several patients who fell pregnant whilst being on NDT. Whilst we do not offer the management of pregnancy per se in our practice, we continue to support our patients for their thyroid needs also during pregnancy.

We strongly recommend to our female patients in the childbearing age to optimise the FT4 level before conception and to keep it within the optimal range throughout pregnancy and breastfeeding with reviews every 1-2 months.

Proper titration and monitoring of both FT4 and FT3 levels are critical when using NDT to ensure the patient's thyroid hormones remain in the optimal range throughout pregnancy. This typically requires the addition of Levothyroxine to the established treatment plan, but sometimes a dose increase of NDT can be sufficient, as long as the FT3 level remains within the normal range [3.1-6.8 pmol/L].

Trimester-specific reference ranges for FT4 have been published (Soldin, 2006), which are wider than the optimal ranges we apply in our practice.

Here we wanted to discuss four cases of patients who were treated with a combination of NDT and Levothyroxine, keeping their FT3 and FT4 levels within the reference range throughout pregnancy.

We re-emphasise in every written report to our pregnant patients

the importance of bimonthly reviews from conception to the end of breastfeeding, however this advice is not universally followed. Financial reasons might play a role in not following the review schedule, despite offering payment plans to spread the cost for reviews and prescriptions.

In our case series, we were able to demonstrate that natural desiccated thyroid extract can be safely used in pregnancy with close monitoring and dose adjustments as needed to maintain optimal thyroid function. All patients delivered healthy babies.

Although our case study is limited in size, it should help address the concerns of patients who are hesitant to switch completely from natural desiccated thyroid extract to levothyroxine during pregnancy. Our findings demonstrate that NDT can be used safely during pregnancy, provided it is closely monitored by an experienced physician.

V. CONCLUSION

This article provides a detailed discussion on the safe use of natural desiccated thyroid extract as an alternative to levothyroxine in the management of maternal hypothyroidism during pregnancy. It presents a series of case studies that demonstrate the effective use of commercially produced NDT preparations, which ensure consistent and reliable dosing, when carefully monitored and titrated by a clinician experienced in the use of NDT for hypothyroidism. The case studies highlight the successful outcomes achieved through the judicious use of NDT, including the maintenance of optimal thyroid hormone levels and the delivery of healthy babies. The article emphasises the importance of close monitoring and titration of thyroid hormone replacement to ensure the safe and effective use of NDT in pregnancy-related scenarios.

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