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PARALLELL ANALYSIS OF HYPOTHYROIDISM WITH SIDDHA DIAGNOSTIC TERMINOLOGY *KANDAKARAPPAAN*

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ABSTRACT
Siddha system of medicine is considered to be the traditional system of medicine evolved since ancient time. In Siddha, the diseased state in a human body is classified based on the *Tridosha* pathology (*Vatham*, *Pitham* and *Kabham*) that seems poles apart from the International Classification of Diseases (ICD). *Kanda karappaan* is a Siddha medical terminology which has been described under diseases pertaining to skin (*Karappaan*). This study is an attempt to have a parallel correlation of the symptoms of hypothyroidism in modern medicine to the terminologies *Kanda karappaan* in *Siddha* text *Yugi vaithya Chinthamani.* The detailed analysis of the symptoms with the traditional terminologies in the *Siddha* literature have paved a way to the understanding that though the disease is referred by different name in traditional and modern medicine the symptoms get well correlated and help in the better understating of the mode of diagnosis and treatment.

KEYWORDS: Siddha, Kanda karappaan, Hypothyroidism, Traditional medicine, Ancient Indian literature.

INTRODUCTION
Hypothyroidism is stated as the failure in the thyroid gland that results in insufficient production of hormone thyroid to meet the metabolic demands of the body. Iodine deficiency is believed to be the most common cause of thyroid disorders worldwide leading to goitre formation and hypothyroidism. Almost one-third of the world's population live in areas of iodine deficiency.[1] In areas where the daily iodine intake is, 50 µg, goitre is usually endemic, and when the daily intake falls, 25 µg, congenital hypothyroidism is seen. The prevalence of spontaneous hypothyroidism is between 1 and 2%, and it is more common in older women and 10 times more common in women than in men.[2] Studies in Northern Europe, Japan and the USA have found the prevalence to range between 0.6 and 12 per 1000 women and between 1.3 and 4.0 per 1000 in men investigated. The prevalence is higher in surveys of the elderly in the community.[3]

India, heard that 42 million people in India have thyroid disorders. The prevalence of hypothyroidism in India is 11%, compared with only 2% in the UK and 4·6% in the USA. It is the second common endocrine disorder worldwide next to Diabetes mellitus.[4,5] Hypothyroidism could result in health issues like hypertension, dyslipidaemia, infertility, cognitive impairment, and neuromuscular dysfunction if left untreated. Hypothyroidism, specifically, is the most common of thyroid disorders in India, affecting one in ten adults. Disorders associated with hypothyroidism include postpartum thyroiditis, subacute thyroiditis, silent thyroiditis, and thyroiditis associated with thyroid-stimulating hormone (TSH) receptor-blocking antibodies.[6]

These include weight gain, fatigue, poor concentration, depression, diffuse muscle pain, and menstrual irregularities. Symptoms with high specificity for hypothyroidism include constipation, cold intolerance, dry skin, proximal muscle weakness, and hair thinning or loss.[7] Women who have hypothyroidism may present with menstrual irregularities and infertility. In older patients, cognitive decline may be the sole manifestation. The best laboratory assessment of thyroid function, and the preferred test for diagnosing primary hypothyroidism, is a serum TSH test.[8]

The normal thyroid gland makes two thyroid hormones: T4 and triiodothyronine (T3). Although T4 is produced in greater amounts, T3 is the biologically active form. Approximately 80% of T3 is derived from the peripheral conversion of T4 by deiodinase enzymes so hypothyroidism patients require lifelong thyroid hormone therapy. There are reports suggesting that hypothyroidism is common in patients who have taken radioiodine treatment or neck radiation or surgery for

cancer therapy.[9,13] In the long term, about 80% of patients with Grave's disease who undergo radioiodine even at a low doses are prone to develop hypothyroidism. The clinical manifestations of hypothyroidism can be from life threatening—in conditions like myxedema coma—to no signs or symptoms. Myxedema coma was first described in the late 1900s as a result of untreated severe hypothyroidism. It is a very rare case with mortality of 40% despite of treatment; early recognition is vital.[14]

In this study a parallel analysis of hypothyroidism was done with a siddha terminology *Kanda karappaan* which have explained the symptoms similar to that of medical terminology hypothyroidism. Though Hypothyroidism is generally termed as *Kurai veedhana Noi* by present day *Siddha* physicians, the signs and symptoms of *'Kanda karappaan'* mentioned in *Siddha* literature *Yugi Vaithya Chinthamani* seem to correlate with that of Hypothyroidism.

MATERIALS AND METHODS

The literature cited in this article was taken from the *Siddha* text *Yugi Vaithya Chinthamani* to understand the scientific correlation of this disease in *Siddha* literature, reputed modern medicine books and databases such as Google scholar, Pubmed, Index Copernicus, Science direct and research articles from various reputed journals like Lancet, New England Journal of Medicine etc were retrieved. The collected information were correlated with the recent scientific findings and leading to a specific conclusion.

Siddha Literature on *Kanda Karappaan*

In Siddha literature *Yugi vaithya sinthaamani*, the signs and symptoms of hypothyroidism are termed as Kanda karappaan.[15]

Thaliraaga siramengum miga kanathu
Thalai kaathu mandai yellaam thadithu nogum
Naliraaga varutha viku naa thadikkum
Nalamaana udambu thanil soriyumaagum
Kuliraaga kulunthumey mayir koochaagum
Koopitaal miga bayakkum koosum kan than
Kaliraaga mutpola kandam thannil
Karalarakkum kandamaang karapaa naamey

Analogy Between Symptoms of Kanda Karappan with Hypothyroidism

	Symptoms of Kanda Karappan	Symptoms of Hypothyroidism
1.	*Thaliraaga siramengum miga kanathu* *Thalai kaathu mandai yellaam thadithu nogum*	Puffy face with edematous eyelids periorbital puffiness.
2.	*Naliraaga varutha viku naa thadikkum*	Macroglossia or enlarged tongue.
3.	*Nalamaana udambu thanil soriyumaagu*	Itchy lesions of body due to dry skin, decreased sweating, thinning of the epidermis and hyperkeratosis of stratumcorneum
4.	*Kuliraaga kulunthumey mayir koochaagum*	Cold intolerance(sensitivity to cold weather) and goose flesh appearance
5.	*Koopitaal miga bayakkum koosum kan than*	Timid and hyper responsiveness, Poor memory, Depression Psychosis.
6.	*Kaliraaga mutpola kandam thannil* *Karalarakkum kandamaang karapaa naamey*	Pricking sensation in the throat and hoarseness.

In the first line of the above said poem of *Kanda Karappaan, Thaliraaga siramengum miga kanathu,* Yugi describes about the heaviness/plethora of head particularly facial puffiness and edema of eyelids. The edema can occur by fluid retention in tissue spaces. Disorders in thyroid gland leads to an accumulation of mucopolysacccharides, hyaluronic acid and chondroitin sulphate resulting in fluid accumulation.[16,17] Also in Pendred's syndrome in which there are mutations in the pendrin gene encoding a chloride/iodide transporter present in the thyroid and cochlea, leading to goitre, mild hypothyroidism and deafness.[18] In the second line *Thalai kaathu mandai yellaam thadithu nogum* there is edema of ears, says Yugi. The edema of the ear does not mean to be a swelling of pinna or external ear. But as a clarified and careful thought, Yugi could have referred to the fluid accumulation in the middle ear resulting in deafness. Also, Harrison's principles of Internal medicine states that there is a conductive deafness in hypothyroidism due to accumulation of fluid in middle ear.[19]

The third and fourth lines *Naliraaga varutha viku naa thadikkum Nalamaana udambu thanil soriyumaagu* describes the dry itchy lesions of the skin. This is a prominent feature which made Yugi to place this subset of symptoms under Karappan disease classification. The dry skin may prone to dermatitis that is eczema craquelue – a crazy paving splitting of the surface layer. Oxford textbook of Primary medical care states that dry skin present in hypothyroidism.[20]

This is due to the fact that deficiency of thyroid hormone results in decreased intracellular glycosaminoglycans and the cells cannot retain water due to decreased collagen results in wrinkled and dry skin. The thyroid hormone have a direct impact on skin tissues resulting in rough and covered with fine scales, notably on the extensor extremities. Xerosis may resemble an acquired ichthyosis. Palms and soles may be quite dry.[21,22] In this line, '*Naa thadikum*' in *Kanda karappan* refers to large protruding tongue (Macroglossia). Hypothyroidism that

occurs in Childhood is known as cretinisim that is characterized by thick lips, malocclusion and delayed eruption of teeth. Thickening of the lips and macroglossia is due to increased accumulation of subcutaneous mucopolysaccharides.[23,24] In the fourth line, *Kuliraaga kulunthumey mayir koochaagum* describes the coldness of hand and feet present even in the absence of vascular disease is due to thyroid hormone deficiency as stated in Andrew's disease of the skin clinical dermatology.[25] Sage Yugi has accurately explained the cold intolerance that occurs when there is a reduced peripheral blood flow due to vasoconstriction. In the fifth line, *Koopitaal miga bayakkum koosum kan than* explains the mental sluggishness as a clinical feature of *Kanda karappan*. It may be due to some metabolic derangements affecting the nervous system. Thyroxine is essential for the normal functioning of brain.[26]

Literature analysis reveals that there is a prevalence of anxiety in patients with thyroid disorder, which begin with social phobia and generalized anxiety. Besides this high prevalence of anxiety, it is also associated with symptoms of depression and impoverished quality of life.[27] Yugi has included in his symptomatology "*bayam*" which refers to these Psychiatric disorders of hypothyroidism. The last line *"Kaliraaga mutpola kandam thannil Karalarakkum kandamaang karapaa naamey"* explains the hoarseness of voice as a clinical feature of *Kanda karappan*. The voice changes in Thyroid disorders may be due to paresis of the cords due to the thyroid gland enlargement, deposition of polysaccharide and the fluid accumulation in the lamina propria of the vocal folds, edema of the cricothyroid muscle and neural edema of the vagus nerve.[28] Here Sage Yugi in his lines also lays emphasis on the same the same feature of Hypothyroidism.

The hypothyroidism symptoms are well documented and it may vary from person to person and the generally known symptoms are fatigue, cold intolerance, swelling of the limbs, hoarse voice, constipation, dry and coarse skin, cold extremities, weight gain despite of poor appetite, shortness of breath, poor memory and poor concentration and other psychiatric disturbances.[29] From the above discussion it can be evident that the signs and symptoms of *Kanda karappaan* deals with almost all of these symptoms of Hypothyroidism and hence confirms the existence of analogy between the symptomatology of *Kanda karappaan* in *Siddha* text and the conventional medical terminology Hypothyroidism.

CONCLUSION

This literature analysis has shed a light into the *siddha* terminology and clinical diagnostic features of the well known disease condition, the hypothyroidism. This study had created an awareness and parallel analysis of *Siddha* terminologies and the ICD nomenclature of hypothyroidism and thus serving as an essential tool in the future to globalize the traditional *Siddha* System of medicine.

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REFERENCES

1. Zimmerman MB. Iodine deficiency. Endocr Rev., 2009; 30: 376–408.
2. Vanderpump MPJ. The epidemiology of thyroid diseases. In: Braverman LE, Utiger RD (eds). Werner and Ingbar's The Thyroid: A Fundamental and Clinical Text, 9th edn. JB Lippincott-Raven: Philadelphia, 2005; 398–496.
3. Parle JV, Franklyn JA, Cross KW et al. Prevalence and follow–up of abnormal thyrotrophin (TSH) concentrations in the elderly in the United Kingdom. Clin Endocrinol (Oxf)., 1991; 34: 77–83.
4. Heuck CC, Kallner A, Kanagasabapathy AS, Riesen W. Diagnosis and monitoring of diseases of the thyroid. In: WHO, eds. WHO Report. Geneva: WHO, 2000: 8-9.
5. Ambrish Mithal, Mala Dharmalingam, and Neeraj Tewari. Are patients with primary hypothyroidism in India receiving appropriate thyroxine replacement? An observational study. Indian J Endocrinol Metab., 2014 Jan-Feb; 18(1): 83–88.
6. Devdhar M, Ousman YH, Burman KD. Hypothyroidism. Endocrinol Metab Clin North Am., 2007; 36(3): 595-615.
7. Vander JB, Gaston EA, Dawber TR. The significance of nontoxic thyroid nodules: final report of a 15-year study of the incidence of malignancy. Ann Intern Med., 1968; 69: 537–40.
8. Gruters A, Krude H. Update on the management of congenital hypothyroidism. Horm Res., 2007; 68(Suppl. 5): 107–11.
9. Kahraman D, Keller C, Schneider C, et al. Development of hypothyroidism during long-term follow-up of patients with toxic nodular goitre after radioiodine therapy. Clin Endocrinol, 2012; 76: 297–303.
10. Krohn T, Hänscheid H, Müller B, et al. Maximum dose rate is a determinant of hypothyroidism after 131I therapy of Graves' disease but the total thyroid absorbed dose is not. J Clin Endocrinol Metab, 2014; 99: 4109–15.
11. Lee V, Chan SY, Choi CW, et al. Dosimetric predictors of hypothyroidism after radical intensity-modulated radiation therapy for non-metastatic nasopharyngeal carcinoma. Clin Oncol (R Coll Radiol), 2016; 28: e52–60.
12. Verloop H, Louwerens M, Schoones JW, Kievit J, Smit JWA, Dekkers OM. Risk of hypothyroidism following hemithyroidectomy: systematic review and meta-analysis of prognostic studies. J Clin Endocrinol Metab, 2012; 97: 2243–55.
13. Vogelius IR, Bentzen SM, Maraldo MV, Petersen PM, Specht L. Risk factors for radiation-induced

hypothyroidism: a literature-based meta-analysis. Cancer, 2011; 117: 5250–60.
14. Beynon J, Akhtar S, Kearney T. Predictors of outcome in myxoedema coma. Crit Care, 2008; 12: 111.
15. Tugi munivar, Yugi vaithya chinthamani, Palani thandayutha pani temple publication, 1976; pg 769(250).
16. Smith TJ, Bahn RS, Gorman CA. Connective tissue, glycosaminoglycans and diseases of the thyroid. Endocrine Rev., 1989; 10: 366–391.
17. Parving HH, Hansen JM, Nielsen SL, et al. Mechanisms of edema formation in myxedema: increased protein extravasation and relatively slow lymphatic drainage. N Engl J Med., 1979; 301: 460.
18. Taylor et al., Mutations of the PDS Gene, Encoding Pendrin, Are Associated with Protein Mislocalization and Loss of Iodide Efflux: Implications for Thyroid Dysfunction in Pendred Syndrome. J Clin Endocrinol Metab, April 2002; 87(4): 1778–1784.
19. Dan L. Longo et al., Harrison's Principles of Internal Medicine, 18e, Chapter 341, Disorders of thyroid gland, The McGraw-Hill Companies, USA, 2013.
20. Roger Jones, Oxford Textbook of Primary Medical Care, Volume 2, Oxford university press, New York, USA, 2005.
21. Heymann WR. Cutaneous manifestations of thyroid disease. J Am Acad Dermatol, 1992; 26: 885.
22. Hodak E, David M, Feuerman EJ. Palmoplantar keratoderma in association with myxedema. Acta Derm Venereol (Stockh), 1986; 66: 354.
23. Heymann WR. Cutaneous manifestations of thyroid disease. J Am Acad Dermatol, 1992; 26: 885.
24. Loevy HT, Aduss H, Rosenthal IM. Tooth eruption and craniofacial development in congenital hypothyroidism: Report of case. J Am Dent Assoc., 1987; 115: 429–31.
25. William D. James, Dirk Elston, Timothy Berger Andrew's Diseases of the Skin E-Book: Clinical Dermatology. Saunders Elsievers publication, 11th edition, China, 2011.
26. Bauer M, Goetz T, Glenn T, Whybrow PC Thethyroid-brain interaction in thyroid disorders and mood disorder. J Neuroendocrinol, 2008; 20: 1104-1114.
27. Pelúcio L, Nardi AE, Ornelas AC, Levitan M (2016) Psychiatric Disorders and Quality of Life in Patients with Hypothyroidism: A Narrative Review. J Depress Anxiety, 5: 241.
28. Hari Kumar K, Garg A, Ajai Chandra N S, Singh S P, Datta R. Voice and endocrinology. Indian J Endocr Metab, 2016; 20: 590-4.
29. Sethi B, Barua S, Raghavendra MS, Gotur J, Khandelwal D, Vyas U, *et al.* The thyroid registry: Clinical and hormonal characteristics of adult Indian patients with hypothyroidism. Indian J Endocrinol Metab, 2017; 21: 302‑7.