

Anatomical Changes in the Body Related to *Galagaṇḍa*

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Abstract

Thyroid is a small butterfly-shaped gland located at the base of the neck below the Adam's apple. It is part of a complex network of glands called the endocrine system, which regulates nearly all body functions, including metabolic, respiratory, cardiovascular, digestive, nervous, and reproductive systems either directly or indirectly. The thyroid gland manufactures hormones that regulate the body's metabolism (the process of creating and using energy). Thyroid problems are among the most common endocrine disorders presently seen worldwide. Patients with thyroid disorders suffer either from hypofunctioning or from hyperfunctioning of the gland. Whereas the former leads to a decrease in the concentrations of circulating thyroid hormones, the latter increases the same. These two dysfunctions are commonly referred as hypothyroidism and hyperthyroidism, respectively. Hypothyroidism is a clinical syndrome resulting from a deficiency of thyroid hormones, which in turn results in a generalized slowing down of metabolic processes. In the pride of India i.e. *Āyurveda* there is no clear-cut evidence of hypothyroidism, but on the basis of its clinical presentation, it can be explained under the heading of *Galagaṇḍa*. *Ācārya* says that, *Vāta* and *Kapha* aggravated in the neck and having accumulated in *Manyā* and along with *Meda* produce glandular enlargement with their characteristic symptoms. It is known as *Galagaṇḍa*. *Galagaṇḍa* has been defined as the swelling, big or small, which hangs like scrotum in the neck.

Keywords

Thyroid gland, Hormones, Hypothyroidism, Galagaṇḍa etc.



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INTRODUCTION

Disorders of thyroid gland are as old as the history of mankind. In *Āyurvedika* literature, no anatomical description of thyroid gland can be found which may be due to the following reasons:

- Thyroid gland is not situated in any *koṣṭha*.
- Our *Ācārya* could not get any utility from the physiological point of view. So, they could not concentrate on it.
- In that era, there were no advance tools for the knowledge of anatomy.
- Mostly anatomical knowledge was described on macroscopic level.
- In normal conditions thyroid gland cannot be visualized superficially.

In the pathological condition, when the enlargement of thyroid gland occurs, it is visualized superficially, in this condition *Ācārya* described it and gave a title i.e. *Galagaṇḍa*.

ANATOMY OF THYROID GLAND¹-

One of the **largest endocrine glands** in the human body is thyroid gland. It is located just below the larynx having two fairly symmetrical lateral lobes; each lobe is usually 5 cm long, its greatest transverse and anteroposterior extents being 3 cm and 2 cm

respectively. One on either side of trachea, joined by a thin portion of thyroid tissue called the isthmus (middle lobe) crossing in front of the second, third and fourth tracheal ring. As a normal variant, the left lobe is often smaller than the right lobe. From the isthmus of the thyroid, a variable sized lobe extends upward in the neck, which is known as the pyramidal lobe. It possesses no duct. It usually weighs 25 g, but this varies. The gland is slightly heavier in females, and enlarges during menstruation and pregnancy.

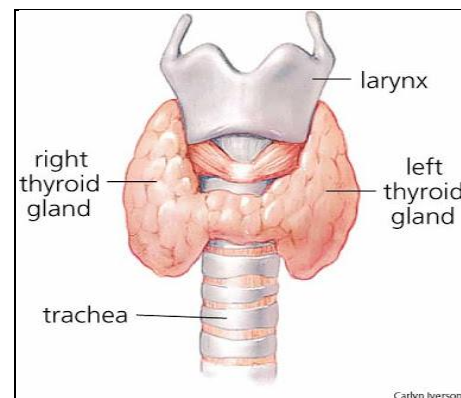


Fig. 1 Structure of thyroid gland

The thyroid gland is the only gland that is able to store its secretions outside its principal cells. In addition, the stored form of the hormones is different from the actual hormone that is secreted into the blood system. Enzymes break down the stored chemical prior to its release into the blood.

FUNCTIONS OF THE THYROID HORMONES-

Thyroid hormones affect almost every cell in the body. Some important effects of thyroid hormones on various cells and organ systems are:

- ▶ Increases body metabolism by increasing the rate at which cells use oxygen and food to produce energy.
- ▶ Causes the cardiovascular system to be more sensitive to sympathetic nervous activity.
- ▶ Increases heart rate and force of contraction of heart muscle.
- ▶ Maintains normal sensitivity of respiratory centers to changes in oxygen and carbon dioxide concentrations.
- ▶ Stimulates the formation of red blood cells to enhance oxygen delivery.
- ▶ Stimulates the activity of other endocrine tissues.
- ▶ Ensures proper skeletal development in children.

HYPOTHYROIDISM

Hypothyroidism occurs when the thyroid is hypoactive and does not produce enough thyroid hormones. The most common form

of hypothyroidism diseases described in *Āyurveda* is the enlarged thyroid gland (*Galagaṇḍa*), now known as goiter. In fact, goiter is produced by the inadequate secretion of thyroid hormones, resulting in a positive feedback of a pituitary hormone, thyrotropin (thyrotropin-stimulating hormone [TSH]), on the thyroid gland that ultimately enlarges. This disease process was recognized by early *Āyurvedika* practitioners.

Causes of Hypothyroidism (Fig 2)-

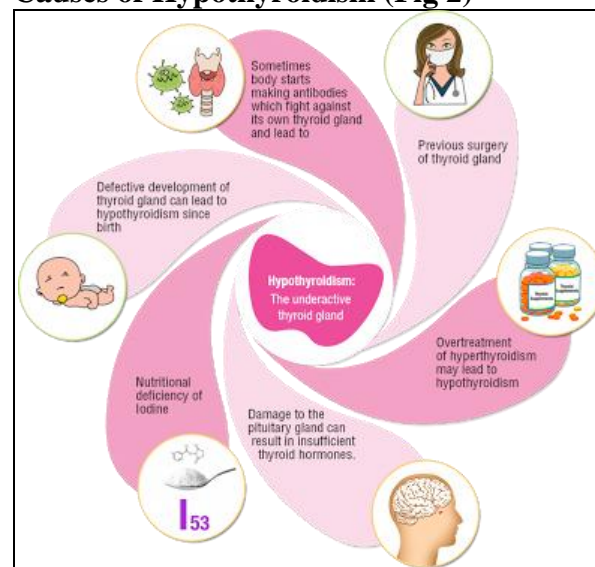


Fig. 2 Causes of hypothyroidism

Symptoms of Hypothyroidism

Hypothyroidism always results in a gradual decrease in metabolism with the slowing of mental and physical activity. Patients may experience one or more common symptoms, including sensitivity to cold, dryness of the skin and hair, constipation, anorexia, angina,

anemia, and disordered menstrual function (Fig 3).

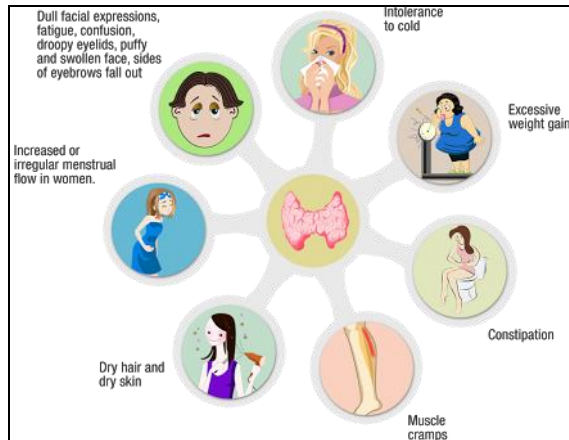


Fig. 3 Symptoms of hypothyroidism

Hypothyroidism as such is not mentioned in *Āyurveda*, but with the help of its clinical presentation and *Doṣa-Dūṣya Siddhānta* of *Āyurveda* it can be very well understood and managed. In *Āyurveda* the disorders of thyroid gland are described under the title of *Galagaṇḍa*.

REVIEW OF LITERATURE

Galagaṇḍa

- ▶ *Galagaṇḍa* described as *Nānātmaja Kaphaja Roga*², its *Samprāpti*, *lakṣaṇa* described in *Triśothīya Adhyāya*³ and its *Asādhya* condition is explained in *Śvayathu Cikitsā*⁴.
- ▶ *Suśruta* has described *Galagaṇḍa* in detail in *Nidānasthāna*⁵ and has also

given its management in *Cikitsāsthāna*⁶.

- ▶ *Vāgbhaṭṭa* described *Galagaṇḍa* in *Mukharogādhyāya* with its treatment⁷.

Nidāna Pañcaka -

Nidāna:

Specific cause of *Galagaṇḍa* separately has not been mentioned in *Samhitā*. *Nidāna* has mentioned for the *Śoṭha Roga*, *Mukha Roga* and *Kaphaja Nānātmaja* as same as for the *Galagaṇḍa Roga*.

The general causative factors of *Śoṭha Roga*, *Mukha Roga* and *Kaphaja Prakopa* are classified into the following groups⁸-

- 1) *Āhārataḥ* (dietetic factors)
- 2) *Vihārataḥ* (regimen factors)

<i>Āhārataḥ</i>	<i>Vihārataḥ</i>
<i>Dahī</i> , <i>Kṣīra</i>	<i>Mithyā Prayoga</i> of <i>Snehana</i> , <i>Svedana</i> , <i>Vamana</i> , <i>Virecana</i> , <i>Vasti</i> , <i>Śirovirecana</i>
<i>Ānūpa</i> , <i>Udaka</i> <i>Māmsa</i> – <i>Matsaya</i> , <i>Māhiṣa</i> , <i>Varāha</i> <i>Māmsa</i>	<i>Mithyā Prayoga</i> of <i>Saṃsarjana Karma</i>
<i>Harītaka</i> , <i>Phala</i> , <i>Śāka</i> , <i>Rāga</i>	Complication of diseases like <i>Śoṭha</i> , <i>Pāṇḍu</i> , <i>Udara Roga</i> , <i>Chardi</i> , <i>Alasaka</i> , <i>Visūcikā</i> etc.
<i>Nava Śūka Dhānya</i> , <i>Śamī Dhānya</i> , <i>Viruḍha</i> (<i>aṃkurita</i>	<i>Vegavidhāraṇa</i> of <i>Chardi</i> , <i>Udgāra</i> , <i>Śūkra</i> , <i>Mutra</i> ,

anna), *Piṣṭa Anna* *Purīṣa* etc.

Excessive *Amla* and *Upavāsa-karṣita*
lavāna Rasa seven

Mṛtikā, *Adhva-karṣita*
Pamkaloṣṭha

Guru Anna, Madya

PURVARUPA- The *Purvarupa* regarding
Galagaṇḍa is not available in *Samhitā*.

RUPA- *Galagaṇḍa* has been defined as the swelling, big or small, which hangs like scrotum in the neck.⁹

Types of Galagaṇḍa - Three types of *Galagaṇḍa* is mentioned in *Samhitā*.¹⁰

- 1) *Vātaja* - *Toda* (Pricking Pain)
Kṛṣṇasirā Vāta/ kṛṣṇa Rājimāna
(Full of Blackish Vein), *Kṛṣṇa*,
Aruṇa, *śyāva*, *Paruṣa*, *Ciravṛddhi*,
Pākam Yadṛchayā, *Pākam Kadācit*,
Āsya Vairasya, *Tālu Śoṣa*, *Gala Śoṣa*
etc.
- 2) *Kaphaja* – *Sthira*, *Savarṇa*, *Alpa*
Rujā, *Ugra Kaṇḍū*, *Śīta*, *Mahāna*,
Cirābhivṛddhi, *Cira Prapacyate*,
Madhuram Āsya, *Tālu Pralepa*, *Gala*
Pralepa, *Guru* etc.
- 3) *Medaja-* *Snigdha*, *Mrdu*, *Pāṇḍura*,
Aniṣṭa Gandhi, *Nīruja*, *Atikaṇḍu*,
Pralambate Alābuvat, *Alpamula*,
Dehānurupa Kṣaya Vṛddhi,
Snigadha Āsytā, *Janto Gale Anu*
Śabdā etc.

Samprāpti-

Galagaṇḍa is only due to provoked *Kapha Doṣa*¹¹. *Vāta* and *Kapha* having aggravated in the neck and having accumulated in *Manyā* and along with *Meda* produce glandular enlargement with their characteristic symptoms¹².

Sādhyāsādhyatā:¹³

Patient of *Galagaṇḍa* who breath with difficulty (*Kṛcchādśvasantam*), whose whole body has become flaccid (*Mṛdusarvagātram*) and disease has lasted more than an year (*Samvatsarātītām*), who has anorexia (*Arocakārtam*), is emaciated (*Kṣīṇam*) and has hoarseness of voice (*Bhinnasvaram*) is incurable.

CONCLUSION

- ▶ Thyroid disorders are common worldwide. In India too, there is a significant burden of thyroid diseases. According to projection from various studies on thyroid diseases, it has been estimated that about 42 million people in India suffer from thyroid diseases.
- ▶ The main type of cells in the thyroid are follicular cells. These cells produce T4 (thyroxine) and T3 (triiodothyronine) hormone.

► Hypothyroidism is a common thyroid disorder which results from a deficiency of thyroid hormones.

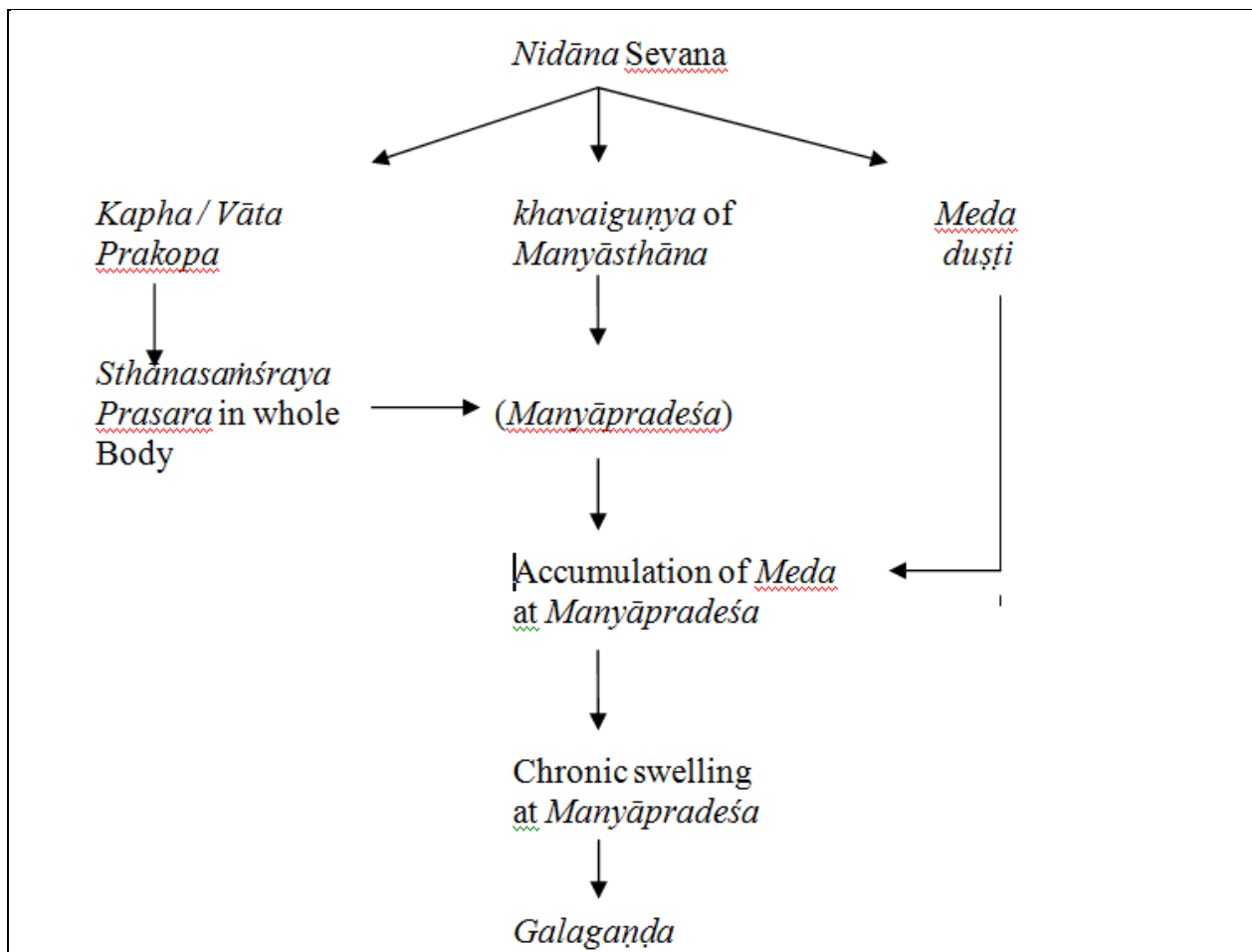
► Hypothyroidism as such is not mentioned in *Āyurveda*, but with the help of its clinical presentation and *Doṣa-Dūṣya Siddhānta* of *Āyurveda* it can be very well understood and managed.

► In *Āyurveda* the disorders of thyroid gland are described under the title of *Galagaṇḍa*.

► *Ācārya* described *Galagaṇḍa* under *Śoṭha Roga*, *Mukha Roga* and *Kaphaja Nānātmaja Vikāra*.

► *Suśruta* has mentioned that it appears *Muṣkavat* in *Gala* which means that it hangs like a scrotum in neck region which indicates towards the two lobes of thyroid gland.

► *Kapha Doṣa* plays a major role in this disease.



REFERENCES

1. Clinical Oriented Anatomy, by Keith L. Moore, Arthur F. Dalley, Anne M.R. Agur, 6th ed., published by Wolters Kluwer (india) Pvt. Ltd., New Delhi, 2010, Page No. 1018-1020.
2. Charaka Samhita (Agnivesh) Part 1- Vidyotini Hindi Commentary by Kashi Nath Shastri, Gorakh Nath Chaturvedi, Published by Chaukhamba Bharti Academy, Ghokul Bhawan, Gopal Mandi Lane, Varanasi, 2009, Page No. 404-405.
3. Charaka Samhita (Agnivesh) Part 1- Vidyotini Hindi Commentary by Kashi Nath Shastri, Gorakh Nath Chaturvedi, Published by Chaukhamba Bharti Academy, Gokul Bhawan, Gopal Mandi Lane, Varanasi, 2009, Page No. 378.
4. Charaka Samhita (Agnivesh) Part 2- Vidyotini Hindi Commentary by Kashi Nath Shastri, Gorakh Nath Chaturvedi, Published by Chaukhamba Bharti Academy, Gokul Bhawan, Gopal Mandi Lane, Varanasi, 2009, Page No. 372.
5. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 314-315.
6. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 474.
7. Vagbhata, Nirmala Hindi Commentary of Astanga Hrdayam, edited by Dr. Brahmanand Tripathi, Chaukhamba Sanskrit Pratishthan, Delhi, reprint 2012, Page No.1031-1032.
8. Charaka Samhita (Agnivesh) Part 1- Vidyotini Hindi Commentary by Kashi Nath Shastri, Gorakh Nath Chaturvedi, Published by Chaukhamba Bharti Academy, Gokul Bhawan, Gopal Mandi Lane, Varanasi, 2009, Page No. 369.
9. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 315.
10. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 314.
11. Charaka Samhita (Agnivesh) Part 1- Vidyotini Hindi Commentary by Kashi Nath

Shastri, Gorakh Nath Chaturvedi, Published by Chaukhamba Bharti Academy, Gokul Bhawan, Gopal Mandi Lane, Varanasi, 2009, Page No. 378.

12. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 314.

13. Dalhana, Nibandhasangraha Commentary of Sushruta, edited by Vaidya Jadavji Trikamji Acharya and Narayan Ram Acharya, Chaukhamba Surbharti Prakashan, Varanasi, 2012, Page No. 314-315.