

AYURVEDIC PERSPECTIVE OF CUSHING'S SYNDROME

NNL Bhagavathi¹, Rajkumar Chinthala², Vidyanath R³¹Katachikitsa P.G. Scholar, ²Samhita P.G. Scholar³ P.G. Professor & HOD, P.G. Dept. of Ayurveda Samhita & Siddhanta,
Dr. B.R.K.R. Govt. Ayurvedic College, Hyderabad – 500038, Telangana, India

ABSTRACT

Endocrinology is the study of hormones. These hormones can be compared with *Dhatwagnis* (digestive fire of seven body tissue elements) in Ayurveda as vitiated *Dhatwagnis* can cause displacement of respective *Dhatus* (the body tissue elements) i.e. *Vimargagamana*. Cushing's syndrome is caused by persistent hyper secretion of cortisol by the Adrenal cortex. Clinical features include "moon face", "buffalo hump" on the back, pendulous abdomen, flushed facial skin, abdominal striae, poor wound healing, hyperglycemia, decreased resistance to stress and mood swings. The jigsaws of endocrinal disturbances are complex which are best explained in *Ashtouninditeeyam* chapter of *Charaka Samhita Sootra sthana*. Although difficult to treat Ayurvedic treatments can prevent the further *Sthanasamshraya* (displacement from respective place) of *Doshas* which may lead to *Prameha* (*Diabetic condition*), *Asthi kshaya* (depletion of bone tissue), *Krichrartava* (depletion of menstrual blood) etc, *Dhathu paka* (transformation of body tissue elements), *Medho Dushti* (vitiation of adipose tissue), *Vata Pratilomata* (movement of *Vata Dosha* in opposite direction) in different *Srotases* (body channels) are the key features in *Samprapti* (manifestation of the disease). A perfect understanding of this *samprapti* helps in combating the disease and thereby prevents the progression of disease and its complications. The present paper is an attempt to present the pathophysiology of Cushing's syndrome and possible treatment in Ayurvedic perspective.

Keywords: Endocrinology, *Dhatwagni*, *Vimargagamana*, *Sthanasamshraya*, Cushing's syndrome.

INTRODUCTION

Endocrinology is the study of hormones. Endocrine glands secrete hormones into interstitial fluid, these hormones diffuse into blood capillaries and blood carries them to target cells. These glands include the adrenal glands, pituitary gland, thyroid gland, parathyroid glands, pancreas, ovaries (in females) and testicles (in men). Chemically hormones are two types i.e. lipid soluble, water soluble hormones. These hormones can be compared with *Dhatwagnis* in Ayurveda as vitiated *Dhatwagnis* can cause displacement of respective *Dhatus* i.e. *Vimargagamana*.

The paired adrenal or suprarenal glands contain two structurally and functionally distinct regions, outer adrenal cortex and inner adrenal medulla. Adrenal cortex produces steroid hormones. Glucocorticoids include Cortisol, Corticosterone, and Cortisone which are secreted by cells of zona fasciculata (one of the three zones of adrenal cortex). Cushing's syndrome is caused by persistent hyper secretion of cortisol by the Adrenal cortex.

Glucocorticoids effects in the body are:

- Protein breakdown
- Glucose formation

- c. Lipolysis
- d. Stress resistance
- e. Anti-inflammatory effects
- f. Depression of immune responses

Causes for Cushing's syndrome:

Cushing's syndrome mainly 2 types based on the etiology i.e. Exogenous Cushing's syndrome, Endogenous Cushing's syndrome.

- **Exogenous Cushing's syndrome:** Taking corticosteroid medications in high doses over an extended period of time may result in Cushing's syndrome. It can be developed from injectable corticosteroids- for example repeated injections to treat inflammatory diseases such as Rheumatoid arthritis, bursitis, organ transplantation and SLE etc. Because the doses required to treat these conditions are often higher than the amount of cortisol your body normally needs each day, the effects of excess cortisol can occur.
- **Endogenous Cushing's syndrome:** It may occur from excess production by one or both adrenal glands, or over production of the adrenocorticotrophic hormone (ACTH), which normally regulates cortisol production in your own body. In this condition Cushing's syndrome may be related to:
 - a. A pituitary gland tumor (pituitary adenoma)
 - b. An ectopic ACTH-secreting tumor
 - c. A primary adrenal gland disease
 - d. Familial Cushing's syndrome

Clinical features of Cushing's syndrome:

- Break down of muscle proteins and redistribution of fat
- Spindly arms and legs accompanied by a rounded "moon face", "buffalo hump" on the back and pendulous abdomen

- Flushed facial skin, skin covering the abdomen develops stretch marks. Striae are formed as a result of rupture of subcutaneous collagen tissue
- Person bruises easily and wound healing is poor.
- Elevated levels of cortisol causes hyperglycemia, osteoporosis (prominent in axial skeleton), weakness, hypertension, increased susceptibility to infection, decreased resistance to stress and mood swings
- **IN WOMEN:** Thicker or more visible body and facial hair (Hirsutism), irregular or absent menstrual periods and clitoromegaly may develops.
- **IN MEN:** loss of libido and impotence may develops

Diagnosis:

The diagnosis of Cushing's syndrome can be difficult, especially endogenous Cushing's syndrome because other conditions allocate the same signs and symptoms. For endogenous Cushing's syndrome the following diagnostic tests may help pinpoint the cause:

- A. **Urine and blood tests:** These tests measure hormone levels in the urine and blood and show whether your body is producing excessive Cortisol. For the urine test, urine should over a 24-hour period. Both the urine and blood samples will be sent to a laboratory to be analyzed for Cortisol levels. DST (Dexamethasone Suppression Test), a blood test that assesses adrenal gland function by how cortisol levels change in response to dexamethasone injection.
- B. **Saliva test:** Cortisol levels normally rise and fall throughout the day. In people without Cushing syndrome, levels of Cortisol drop significantly in the evening. By analyzing Cortisol levels from a small

sample of saliva collected late at night, physician can see if Cortisol levels are too high, suggesting a diagnosis of Cushing syndrome

C. **Imaging tests:** Computerized tomography (CT) scans or Magnetic Resonance Imaging (MRI) scans can provide images of the pituitary and adrenal glands to detect abnormalities, such as tumours. As these tests help physician to diagnose Cushing syndrome, they may also rule out medical conditions with similar signs and symptoms. For example, polycystic ovary syndrome (A hormone disorder in women with enlarged ovaries) shares some of the same signs and symptoms as Cushing has, such as excessive hair growth and irregular menstrual periods. Bone density as measured by dual x-ray absorptiometry (DEXA scan)

Differential diagnosis:

- ✓ Simple obesity
- ✓ Hirsutism
- ✓ Functional ovarian tumors (like PCOS)
- ✓ Diabetes mellitus
- ✓ Hypertension

Complications:

- Complications of Hypertension or of Diabetes
- Susceptibility to infections is more
- Compression fractures of the osteoporotic spine and aseptic necrosis of the femoral head
- Nephrolithiasis
- Psychosis
- Nelson's Syndrome

Ayurvedic view of Cushing's syndrome:

The jigsaws of endocrinal disturbances are complex which are best explained in *Ash-touninditeeyam* chapter of *Charaka Samhita Sootra sthana*. Although difficult to treat Ayurvedic treatments can prevent the further *Sthanasamshraya* of *doshas* which may lead

to *Prameha*, *Asthi kshaya*, *Krichrartava* etc. *Dhathu paka*, *Medho Dushti*, *Vata Pratilomata* in different *srotases* are the key features in *samprapti*. A perfect understanding of this *samprapti* helps in combating the disease and thereby prevents the progression of disease and its complications². On close analysis it can be seen that, there is *Vimargagamana* in different *srotases*. Due to *Athipravruithi* of *Dhatwagni* (excessive secretion of hormones) cortisol the disease is manifested. *Dhatupaka* at *Medho Dhatu* leads to lypolysis. As a result, *Medho Dhatu* is taken by *Vata* to other sites of the body. This is the reason for developing "pendulous abdomen" and "buffalo hump" i.e. can be compared with "*Chalaspigudarasthanah*" mentioned by Acharya *Charaka* in the context of *Atisthoulya lakshanas*³.

It is very interesting to note that since *Medho dushti* which is the precursor of *Asthi Dhatu* is seriously involved in the *samprapti*, *Asthi dhatu* undergoes *Asthisushiratha*- osteoporosis in cushing's syndrome. This is a vital link to establish the relation between successive *Dhatu*s through *Dhatwagni*. *Asthi* is formed from *Medho Dhatu* with concerned *dhatwagni*.

Athipravruithi of *Medhovaha srotas* is followed by *Vimargagamana* of *Medas* As a result, *Medo Dhatu* manifests in different sites of the body. There is also *Vimargagamana* of *Asthi* from bone to the *Vrikka* (kidneys) which is the *Moolasthan* (origin) of *Medovaha srotus* leading to nephrolithiasis- calcium deposition in kidneys. This mutual pathological link between *Medo Dhatu* and *Asthi Dhatu* is quite interesting. It indirectly proves that hormones behave as *Dhatwagni* influencing adjacent *Dhatu*s.

FRAME OF SAMPRAPTI:

- a. **Dosha:** *Sannipatha* with *Kapha Vata* domination
- b. **Dooshya:** *Rasa, Medo, Asthi dhatu*

- c. **Srotas involved:** *Medhovaha Srotas, Asthivaha srotas, Arthavavaha srotas*
- d. **Type of srotodushhti:** *Athipravruthi* and *Vimargagamana*

Line of management:

- ✓ *Dhatwagni sameerana chikitsa* (increasing the digestive power of *Dhatwagni*)
- ✓ *Kapha- Vata shamana chikitsa* (alleviate the *Kapha- Vata Doshas*)
- ✓ *Medo shamana chikitsa* (decrease the adipose tissue)
- ✓ *Asthidhatu balakara chikitsa* (strengthening & nourishing the bone tissue)
- ✓ *Arthavapravartaka chikitsa* (initiating menstruation)

Panchakarmas in cushing's syndrome:

- * *Lekhaneeya vasti-* for *Medovridhi*⁴
- * *Tiktarasa ksheera ghrita vasti-* for *Asthi kshaya*⁵
- * *Kshaara vasti-* for *krichrarthava*⁶
- * *Yapana vasti-* for *Balya* purpose since there is immunosuppression⁷

External treatments (Bahirparimarjana Chikitsa):

- *Udwarthana* for *Medovilayana*⁸

Internal medicines (Antahparimarjana Chikitsa):

▪ **Kwatha preparations:**

- a) *Lekhaneeya gana kwatha*⁹
- b) *Nyagrodadi gana kwatha*¹⁰
- c) *Guggulutiktakam kwatha*¹¹
- d) *Asanadi kwatha*¹²
- e) *Varunadi kwatha*¹³
- f) *Ashtavarga kwatha*¹⁴

▪ **Guggulu preparations:**

- a) *Laksha Guggulu*¹⁵
- b) *Simhanada Guggulu*¹⁶
- c) *Triphala Guggulu*¹⁷

▪ **Ghrita preparations:**

- a) *Karaskara Ghrita*¹⁸
- b) *Siddharthaka Ghrita*¹⁹

▪ **Ksheera paka:**

- a) *Lashuna ksheera pakam*²⁰

CONCLUSION

The main aims and objectives of *Ayurveda* are to maintain the positive health in healthy individuals as well as to treat the diseased persons²¹. A perfect understanding of this *Samprapti* helps in combating the disease and thereby prevents the progression of disease and its complications. It is very difficult to treat Cushing's syndrome. But Ayurvedic treatments can prevent further *Sthanasamshraya* of *Doshas* which may lead to other complications viz. *Prameha* (Diabetes), *Asthishtaya* (Osteoporosis), *Ashmari* (Nephrolithiasis), *Krichrarthava* (Amenorrhoea/ Dysmenorrhoea) and *Vandhyatva* etc. Hence, this was an attempt for better understanding of Cushing's syndrome through Ayurvedic perspectives as perfect knowledge and thorough understanding of *Samprapti* is the only key to either treating the disease or preventing it from progressing into complications.

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CORRESPONDING AUTHOR

Dr. Rajkumar Chinthala

Final year M.D. Scholar,

P.G. Dept. of Ayurveda Samhita & Siddhantha

Dr. B.R.K.R. Govt. Ayurvedic College,

Hyderabad, Telangana, India

E-mail: rajkumarchinthala207@gmail.com

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