

**PINEAL GLAND – THE THIRD EYE**Hinduja P. S*¹, Nivil Joseph², Pragalb MR³¹Assistant Professor, Dept. of Shareera Rachana, JSSAMC, Mysore²Assistant Professor, Dept. of Roga Nidana, JSSAMC, Mysore³Consultant & Physician, Trivendrum, Kerala**ABSTRACT**

The pineal gland is one of the smallest and most important endocrine glands in the body. Located in the center of the brain close to the more well-known pituitary gland, the pineal gland gets its name from its characteristic pine cone shape. It is also known as the pineal organ, the pineal body or the “third eye”. This small gland controls your body’s sleep-wake pattern. However, due to lots of factors, calcification of pineal gland can occur, hampering brain function. The reason behind the name third eye and the relevance of this gland especially based on their anatomical and clinical importance is also highlighted.

KEYWORDS: pineal gland, third eye, anatomy.**INTRODUCTION**

In Hindu mythology there are thirty three core Gods, among them superior is Lord Shiva. Anatomically he is different from others, he possess a third eye at the center of the forehead. In great Hindu epic he is often referred as *Thyambaka deva*, which means the three eyed God. This third eye stands for the spiritual knowledge and power. Fire is the third eye, like fire his powerful gaze can search evil and destroy it completely. According to mythology gods are symbolizing each human, so in our body also there may be a third eye. One parts of the vertebrate brain functions as a third eye, i.e. similar to a normal eye and destroys the evil things. That’s the pineal gland. Pineal gland once thought to be of little significance but now researches shows that it is an important endocrine gland.

Why it is called as “third eye”?**Histological similarity:**

Composed of light sensitive cells that resemble retinal cells.

Embryological similarity:

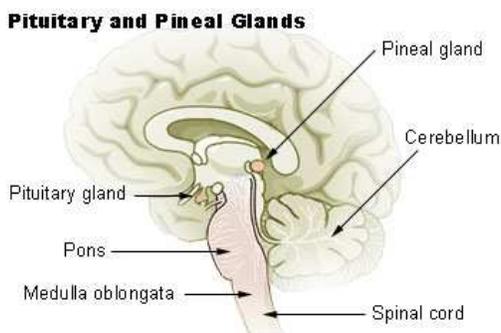
These light sensitive cells are evolved from the same types of cells that retinal cells have evolved from.

Structural similarity:

As our normal eye, pineal gland is also filled with fluid.

Egyptian belief- after death the soul reincarnate to the subsequent body through the pineal gland.

Pineal gland- Anatomy



Pineal gland is an enigmatic small endocrine organ.

Unlike other parts of the brain which comes in pairs, the pineal gland is singular, situated in the exact geometrical center of the brain.

The pineal gland is:

The pineal body,

Epiphysis cerebri, (roof of the 3rd ventricle)

Epiphysis, Conarium or the “third eye”

It has a vital function in controlling our body’s internal rhythm. So it is highly vascular compared to other glands.

LOCATION

A part of epithalamus, projects backwards so that it lies posterior to the midbrain. Just below the corpus callosum and just above the cerebellum. In attached to the posterior wall of 3rd ventricle by a pineal stalk superior part of base of stalk contains the habenular commissure Inferior part- posterior commissure, covered by a capsule formed by pia matter.

BBB- brain filter mechanism- absent

Pineal gland is derived from the Latin word “Pinea”>>> “pinecone”.

It is conical in shape which resembles a pine cone.

Length: 5 to 8mm

Greatest width: 3 to 5mm.

Weight: ~0.1-0.2 g

It symbolizes truth, knowledge, enlightens and eternity. Since thousands and thousands of years the pineal gland is believed to be the seat of soul by Egyptians.

EMBRYOLOGY

Pineal gland arises during the seventh week as an outgrowth between the thalamus and colliculi of the midbrain from ectoderm associated with the diencephalon.

HISTOLOGY

1. Pinealocytes: Concerned with the production of hormones
2. Advanced neurons, astrocytes, arranged in clusters
3. Glial cells: The interstitial cells which gives shape to the gland
4. Elongated and run between nests of pinealocytes

PHYSIOLOGY

SEROTONIN: 5- hydroxytryptamine (5HT)

It's an inhibitory neurotransmitter that regulates signals between neurons.

Serum= blood; tonin = to give tone

Functions

- It helps to give tone to vascular smooth muscles
- Precursor of melatonin-helps in the production of melatonin.
- It acts as an anti-depressant
- Helps in the regulation of mood, appetite, sleep, cognitive functions, including memory and learning.

MELATONIN (acetyl-5-methoxytryptamine)

Functions

- Affect mood and modulate our wake/sleep patterns (circadian rhythm) and seasonal functions
- Melatonin influences sexual development& onset of puberty
- Helps to protect the body from cell damage caused by free radicals- **anti aging hormone**
- Counter act acquired immune deficiencies.

DMT (Dimethyltryptamine)

- Naturally occurring hallucinogenic substance produced in pineal gland
- Level become peak at three times mainly in lifetime, in 49th day of gestation, at the time of birth and at the time of death.
- Schedule 1 drug of legal section under C
- Experiences include “ profound time delation, time travel, journeys to paranormal realms, and encounters with spiritual beings or other mystical/ trans dimensional modalities

PINEAL GLAND- FUNCTIONS

The pineal gland connects the endocrine system with the nervous system in that it converts nerve signals from the peripheral nervous system into hormone signals.

IN CIRCADIAN RHYTHM

- Circa= approx; diam= day
- The cycles of behavior that occur regularly in a day.
- Circadian rhythms are needed for balancing behavior and body states according to environmental changes.
- Melatonin maintains this rhythm.

IN IMMUNE SYSTEM

1. Melatonin act as an immune modulator
2. Melatonin seems to cause **increased activity of immune cells called T cells** (specifically CD4 cells).
3. It also causes the **production and release of chemicals such as interleukin 4 (IL-4)** which are very important to the immune system.
4. enhance **cytokine production**, and by doing this **counteract acquired immune deficiencies**

ANTIOXIDANT PROPERTY

Protect cells from damage by oxidants such as free radicals.

Free radicals can damage essential molecules in the cell such as DNA.

Mop up these free radicals

This can prevent gene mutations that can lead to cancer.(anti- cancerous hormone)

PATHOLOGICAL CONDITIONS

Pineal region neoplasm's constitute only 0.3-2.7% of intracranial tumors. They are considered an important clinical entity because of their strategic location.

PINEAL TUOMOR

- Most often in children and young adults.
- Common of these are germ cell tumors (germinomas and teratomas), which arise from embryonic remnants of germ cells.
- These tumors are malignant and invasive and may be life-threatening

PINEAL CYST

Benign cysts in the pineal gland, which have been found in almost a quarter of healthy young adults. Cysts are sharply delineated and ovoid in MRI. Diameter: 2–14 mm.

PINEAL GLAND DISORDERS

Hypomelatoninism

Hypermelatoninism

Dysmelatoninism

SEASONAL ADDITIVE DISORDER

A type of depression that afflicts some people during the winter months, when night is longer.

It is due to the over production of melatonin

JET LAG

Jet-lag is the result of long distance travel east/west crossing time zones at a rapid rate.

Symptoms such as sleep disturbance, loss of appetite, reduced psychomotor efficiency and general malaise may occur.

FLUORIDE TOXICITY

- By the Age of 60, 70% is calcified
- No evidence of change in gland activity
- Ingested fluoride is accumulated
- In child- 50% & in adult- 10%

Management:

Reverse osmosis- de fluoridating the water

WEARING SUNGLASSES CAN AFFECT YOUR PINEAL GLAND

Eye glasses and contact lenses rob you of energy by blocking some of the ultraviolet rays that travel through the eyes to the pineal gland

APPLIED ASPECT- melatonin containing medicines are available

Indication: insomnia, hyper active disorders etc.

Contra indication: depressive conditions

Natural ways to Improve and Protect Melatonin Production

Rasayana Benefits:

Charaka Samhita describes the uses of *Rasayana* therapy as it provides *Dheergayu* (longevity), *Smriti*, *Medha* (promotes memory, intellect), *Arogya* (health), *Tarunya* (youthful age), *Prabha* (excellence of lusture), *Varna* (complexion) and *Swaroudarya* (voice), *Deha*, *indriyabala* (strength of physique and sense organ), *Vakssiddhi* (successful words), *Pranati* (politeness) and *kanti* (brilliance). (C.chi.1/1/7)

Kutipravesika Rasayana:

Kutipravesika is one in which Rasayana is given with person staying inside a closed Kuti whereas Vatatapika is that in which Rasayana is administered with patient exposed to Vata and Atapa.

DISCUSSION

Kutipravesika rasayana is a rejuvenating therapy performed inside a dark room, which can support the production of melatonin- the anti-aging hormone.

Structurally *sahasrara chakra* can be correlated to pineal gland.

The hallucinogenic state attained by saints as a result of continuous meditation may be due to the production of DMT.

The *Acharyas* have explained *ritu charya* mainly on the basis of biological clock of the body.

CONCLUSION

It is important to keep the pineal gland active because of the wide functions of this gland.

Pineal gland is capable of influencing the activities of pituitary gland- the master gland, through this it regulates functions of other glands.

This gland actually does function as a sort of “eye” deep in the center of the brain.

When it is active, the pineal gland helps you to get good sleep – and helps you to be wide awake during the day.

Spiritually, an open third eye also brings to you bliss, intuition, concentration, clarity and decisiveness. With a highly functioning pineal gland, your physical and mental functioning will be improved.

Even scientists feel there’s something more to this tiny little gland than they have been able to uncover so far.

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Ajna, the third eye, is the gate where the energy that surround us enters the body. It's the eye of intuition and a channel to communicate with other people (like a mystic mobile phone). It's associated with vivid dreams and occult powers. But hindu people is not the only people who connect the pineal gland with something special. Science has discovered that the pineal gland has functions "predicted" by the hindu tradition. The pineal gland, as you can guess, is a gland. This gland secretes substances that our body needs to regulate itself and adjust its processes to the planetary cycles and day-night cycles. This is why your body behaves differently hour by hour, season by season. How does the pineal gland know about seasons and day hours?