HUMAN ANATOMY & PHYSIOLOGY-II- BP201T

UNIT: 4 (ENDOCRINE SYSTEM)
CLASS: 9

TOPIC: PINEAL GLAND

Pineal gland or epiphysis is located in the diencephalic area of brain above the hypothalamus. It is a small cone shaped structure with a length of about 10 mm.

Pineal gland has two types of cells:

1. Large epithelial cells called parenchymal cells

2. Neuroglial cells. In adults, the pineal gland is calcified.

But the epithelial cells exist and secrete the hormonal substance.
Pineal gland has two functions:
1. It controls the sexual activities in animals by regulating the seasonal fertility. However, the pineal gland plays little role in regulating the sexual functions in human being.

2. It secretes the hormonal substance called melatonin.

Melatonin

Melatonin is secreted by the parenchymal cells of pineal gland. Melatonin is an indole (N-acetyl-5-methoxytryptamine). Melatonin acts mainly on gonads. Its action differs from species to species. In some animals, it stimulates the gonads while in other animals, it inhibits the gonads. In humans, it inhibits the onset of puberty by inhibiting the gonads. Diurnal variation in melatonin secretion Melatonin secretion is more in darkness than in daylight. In animals, the secretion of melatonin varies according to activities in different periods of the day, i.e. circadian rhythm. Hypothalamus is responsible for the circadian fluctuations of melatonin secretion.

THYMUS

Thymus is situated in front of trachea, below the thyroid gland. Thymus is small in newborn infants and gradually enlarges till puberty and then decreases in size. Thymus has lymphoid function and endocrine function. It plays an important role in development of immunity in the body.

Thymus has two functions:

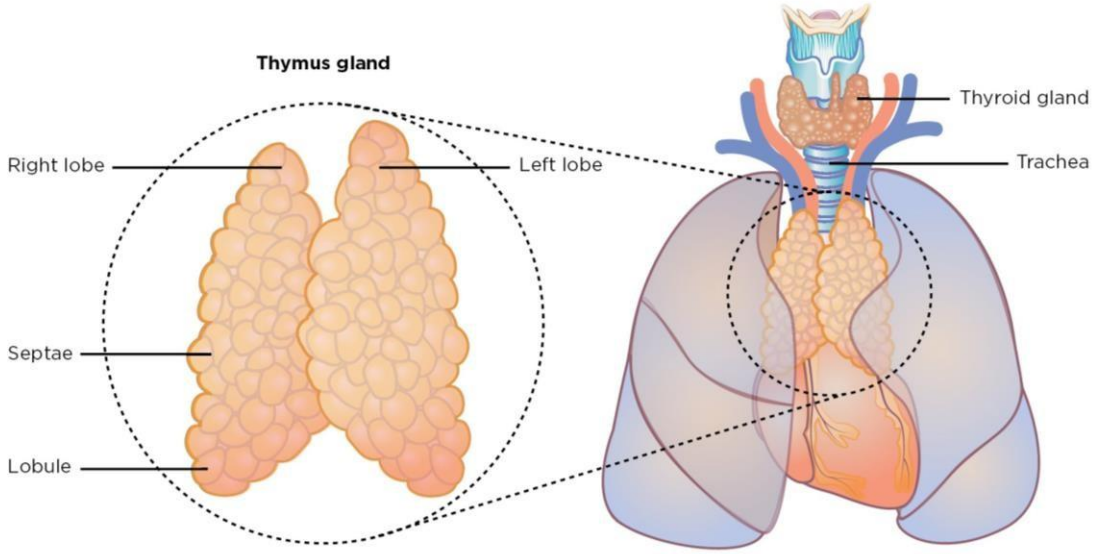
1. Processing the T lymphocytes

2. Endocrine function.

1. Processing the T Lymphocyte: Thymus plays an essential role in the development of immunity by processing the T lymphocytes . The lymphocytes which are produced in bone marrow are processed in thymus into T lymphocytes. It occurs during the period between 3 months before birth and 3 months after birth. So, the removal of thymus 3 months after birth, will not affect the cell-mediated immunity.

2. Endocrine Function of Thymus: Thymus secretes two hormones: i. Thymosin ii. Thymin. Thymosin is a peptide. It accelerates lymphopoiesis and proliferation of T lymphocytes.

Thymin is also called thymopoietin. It suppresses the neuromuscular activity by inhibiting acetylcholine release. Hyperactivity of thymus causes myasthenia gravis.


Thymus gland
Right lobe
Left lobe
Septae
Lobule
Thyroid gland
Trachea