

# Hypothalamous

Structure

# Hypothalamous

- Hypothalamous is the basal part of the diencephalon lying below the thalamous
- It forms the wall of the lower part of the 3<sup>rd</sup> ventricle
- The tuber cinereum is the part of 3<sup>rd</sup> ventricle floor that extends downward toward the infundibulum
- The lower part of the tuber cinereum which has rich supply of blood drains into pitutary stalk & then into the secondary plexus in the anterior pituitary called median eminence



# Hypothalamous

- The vascular link bet median eminence & pitutary is called hypophysial portal system
- Within hypothalamous numerous clusters of neurons are present
- Hypothalamic nuclei- symmetrically located around the 3<sup>rd</sup> ventricle
- Supraoptic nuclei & para optic nuclei- contain cell bodies whose axons extends into median eminence & then into neurohypophysis this is called the **Supraopticoparaventriculohypophysial tract.**

# hypophysis

- The other major group of nuclei include ventro medial nuclei, arcuate nucleus, lateral tubular & dorso medial nuclei
- This neurosecretory neurons neurohormones regulate the adenohypophysis

# hypophysis

- Supra & para **synthesis oxytocin & vassopressin**
- the neurons of parvocellular neurosecretory system towards the pitutary stalk forms tuberoinfundibular tract
- Hypophysiotropic factors released by these neurons are responsible for maintaining the normal functions of pitutary.

# Hypothalamous

- When a pituitary graft was placed in the basal fore brain of rats the medial basal hypothalamous was able maintain the regular function of pituitary Thus that region is called as medial basal Hypothalamous area
- Where local release of hypophysiotrophins control this functions

# Hypothalamous

Brain centers



Hypothalamic para ventricular neuron



hypotrophins

Pituitary portalvasculator of median eminence which is the final point of CNS

Hypophysial portal system provides a restricted vascular link bet neurosec cells of hypothalamous and Anterior pitutary



# Hypothalamous

- Hormones are found to be more in concentration in portal vessel than in system circulation

- **Picture**

By using a knife MBH-POA connection was cut even the hypothalamic deafferentation the hypophysiotropic area remained almost fully functional

The cells origin of the hypophysiotropins reside mostly within MBH-POA(pre optic area)

# hypophysiotrophic hormone

- Thyrotrophin releasing hormone
- -stimulates synthesis & secretion of TSH
- In 25000 ovine & porcine hypothalamic fragments about 1mg of TRH was obtained
- they are similar structure to that of the human
- They are synthesised from a large precursor active peptide
- Only repeated TRH coding unit is found in amphibia to human.

# TRH

- TRH are immunoreactive cellular bodies
- High con is found in paraventricular nucleus of the hypothalamous & preoptic area

# Somatostatin(SST) inhibit GH secretion from somatotrophs

- GH-release from the pituitary depends on GH-releasing factor & Gh release inhibiting hormone
- It was the SST that inhibit the function of GH
- SST is directly effect on Gh release on pituitary somatotrophs

# GH-releasing hormone & Cherlin stimulate GH secretion

- It is 44 amino acid peptide
- Gonadotropin releasing hormone Stimulates LH & FSH secretions from gonadotrophs
- Corticotrophin releasing hormone stimulates ACTH secretion from corticotrophs
- Dopamine is a major prolactin release-inhibiting factor