

SKIN & BODY TEMPERATURE

Discuss Role of Hypothalamus in regulating Body Temperature?

Role of Anterior Hypothalamus:

Preoptic Area: The principle area in brain by which body temperature is controlled is

- Preoptic area
- Ant. Hypothalamic nuclei of Hypothalamus

Anterior Hypothalamic Preoptic area has been found to contain large no. of

- i) Heat Sensitive Neurons
- ii) Cold sensitive Neurons

MECHANISM:

When Preoptic area is heated, skin produces sweat while at same time skin blood vessels over entire body become "vasodilated"

This is immediate reaction to return body temperature toward normal level, and excess body heat temperature production is inhibited.

Describe effect of clotting on conductive heat loss?

Clotting reduce conductive and convective heat loss.

Clotting entraps air next to weave of cloth thereby \uparrow thickness of the so-called private zone, of air adjacent to skin & also \downarrow flow of convection of air current.

When clotting become wet because highly conductivity of water \uparrow rate of heat transmission thru cloth 20-folds or more.

What is Mechanism of Sweating and impact of Acclimatization on it?

Mechanism of Sweat secretion:

- (i) A deep subdermal coiled portion secretes sweats.
- (ii) A duct portion modifies conc. of constituents in "Primary" / "precursor fluid".

Acclimatization of Sweating Mechanism:

Normal person can produce 700 ml sweat/hr.

But when exposed to hot weather sweating capability progressively \uparrow to 1.5-2 lit/hr

This is called acclimatization of sweating.

Importance:

- (i) \uparrow sweating in hot weather removes excess heat from body.
- (ii) Conserve Na^+ in body due to \uparrow secretion of Aldosterone.

Causing Factor:

- ↑ Capillary Pressure
- ↓ Plasma Colloidal osmotic Pressure Cused
by decreased Plasma Protein
- Blockage of Lymphatic return
- ↑ Capillary Permeability

Examples:

- ⇒ Heart Failure
- ⇒ Nephrosis

SAFETY Factors OF EDema:

It is a combination of 3 Factors
which prevent development of Edema

- ① Negative interstitial pressure
- ② Lymph Flow can rise by 10-15 folds
↓
It will carry away excess fluid → interstitium
- ③ ↑ Lymph Flow carries away protein
from interstitium this is called
"washdown" of interstitial fluid protein

QNO 17 Write down total body fluid distribution?

Water is 60% of total body weight

☞ Intracellular Fluid = 28 Liter

☞ Extracellular Fluid = 14 lit

☞ Plasma = 3 lit

☞ Interstitial Fluid = 11 liter

☞ Fluid of GIT

☞ Fluid of Potential spaces

☞ Cerebrospinal Fluid

QNO 18 :- Enumerate Mean of Transport in Proximal tubules?

Na^+ - amino acid Co-transport

Na^+ - Hydrogen Co-transport

Na^+ - Glucose Co-transport

Na^+ - K^+ Pump

Facilitated diffusion

Counter Current Multiplier

QNO 13 :- Define Plasma clearance and write Down Clearance method to quantify kidney Functions?

Plasma Clearance:

Volume of Plasma which is cleared of a substance each minute is called Plasma clearance of that substance

PC of urine = 70 ml/min

Clearance method:

$$\text{Clearance Rate} = \frac{C_s - U_s \times V}{P_s} \quad \text{ml/min}$$

Functions

Glomerular Filtration
Clearance Ratio
Renal Blood Flow
Excretion Rate
Secretion Rate
Reabsorption Rate

Methods

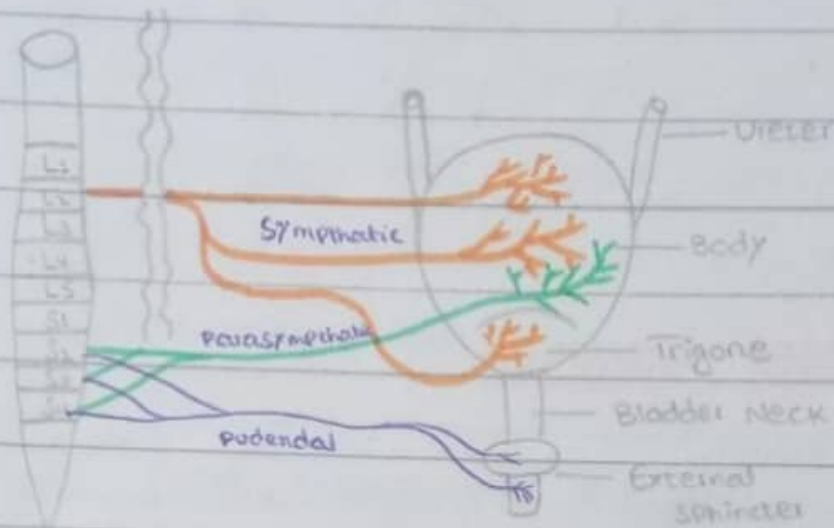
- inulin clearance to estimate kidney GFR
- PAH clearance
- Creatinin Clearance

QNO 14 :- Enumerate autoregulation mechanism for regulation of GFR in kidney?

- Tubuloglomerular Feedback Mechanism
- Myogenic autoregulation of Renal Blood Flow

QNO 4:- Draw and Explain Micturation Reflex?

Draw :-



Micturation Reflex:

