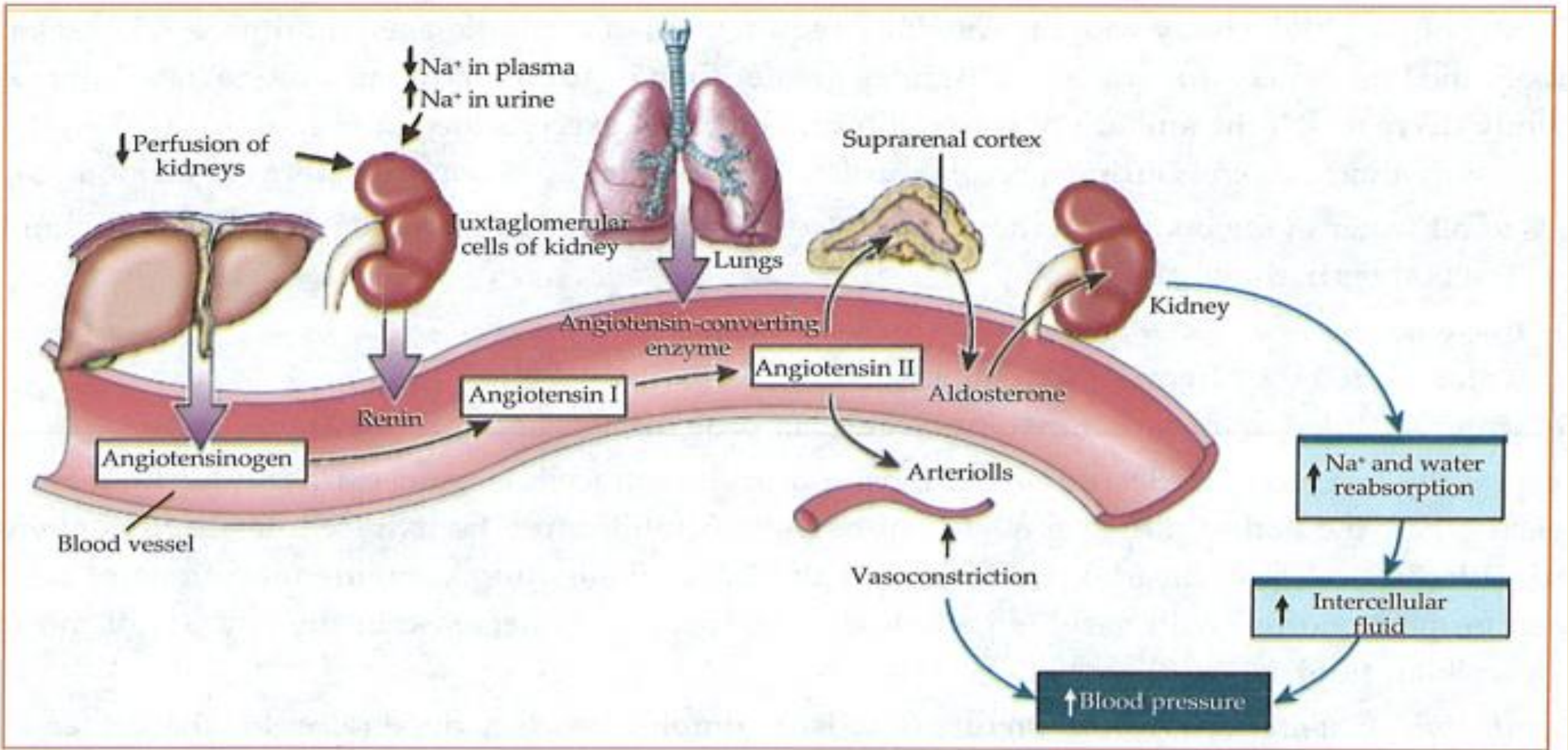


Pathology of water-electrolyte exchange and laboratory diagnostics

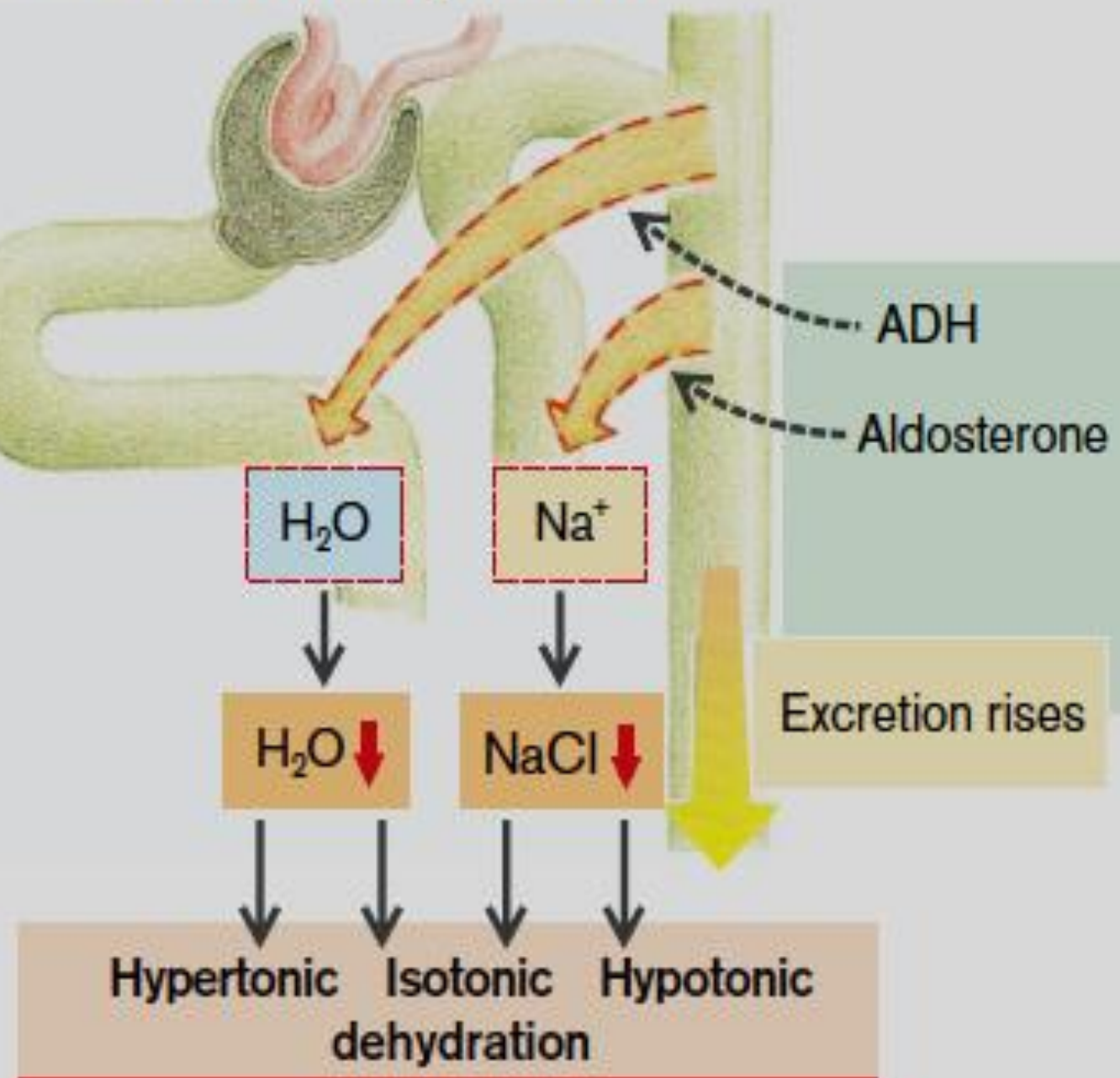


Types of water exchange disorders

Dehydration

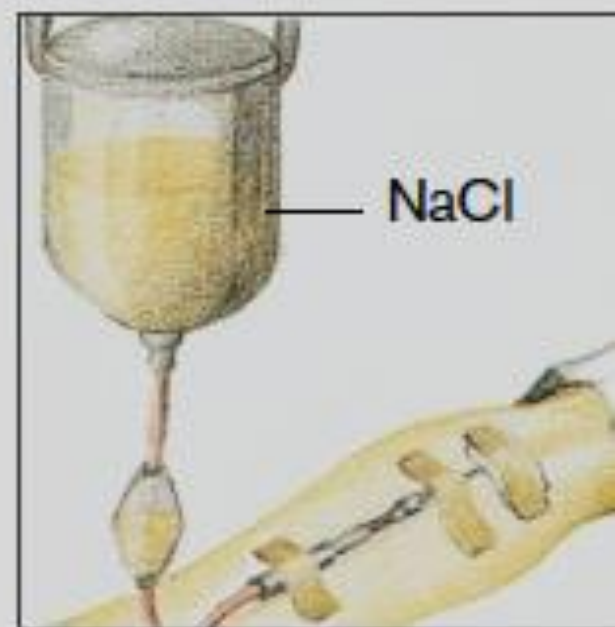
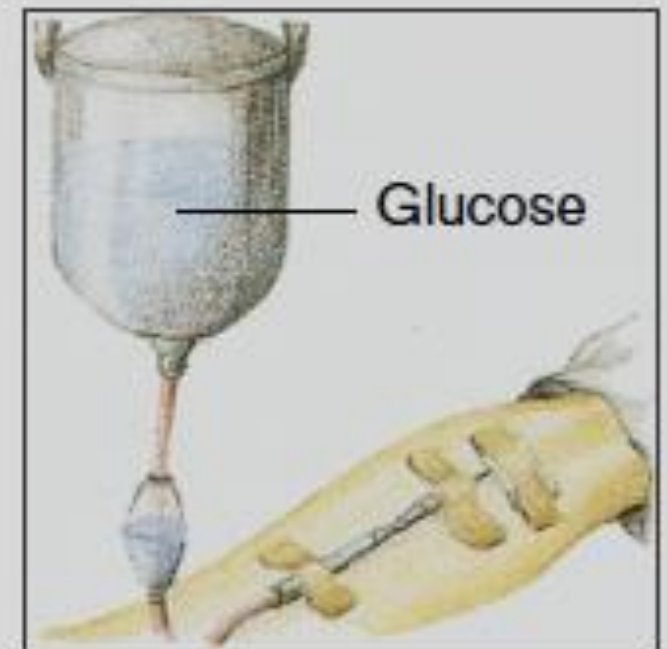
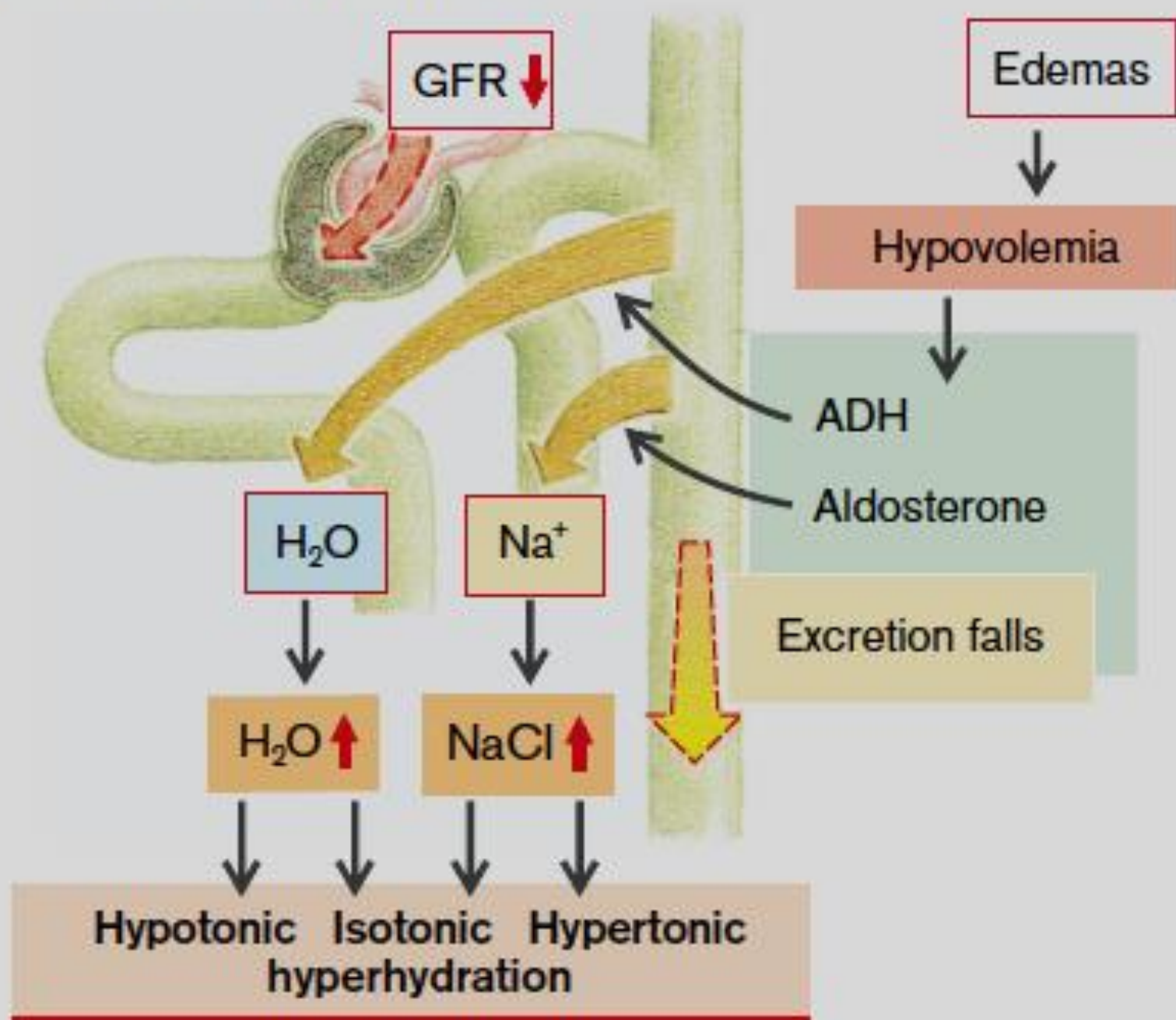
Water retardation

B. Causes of Dehydration

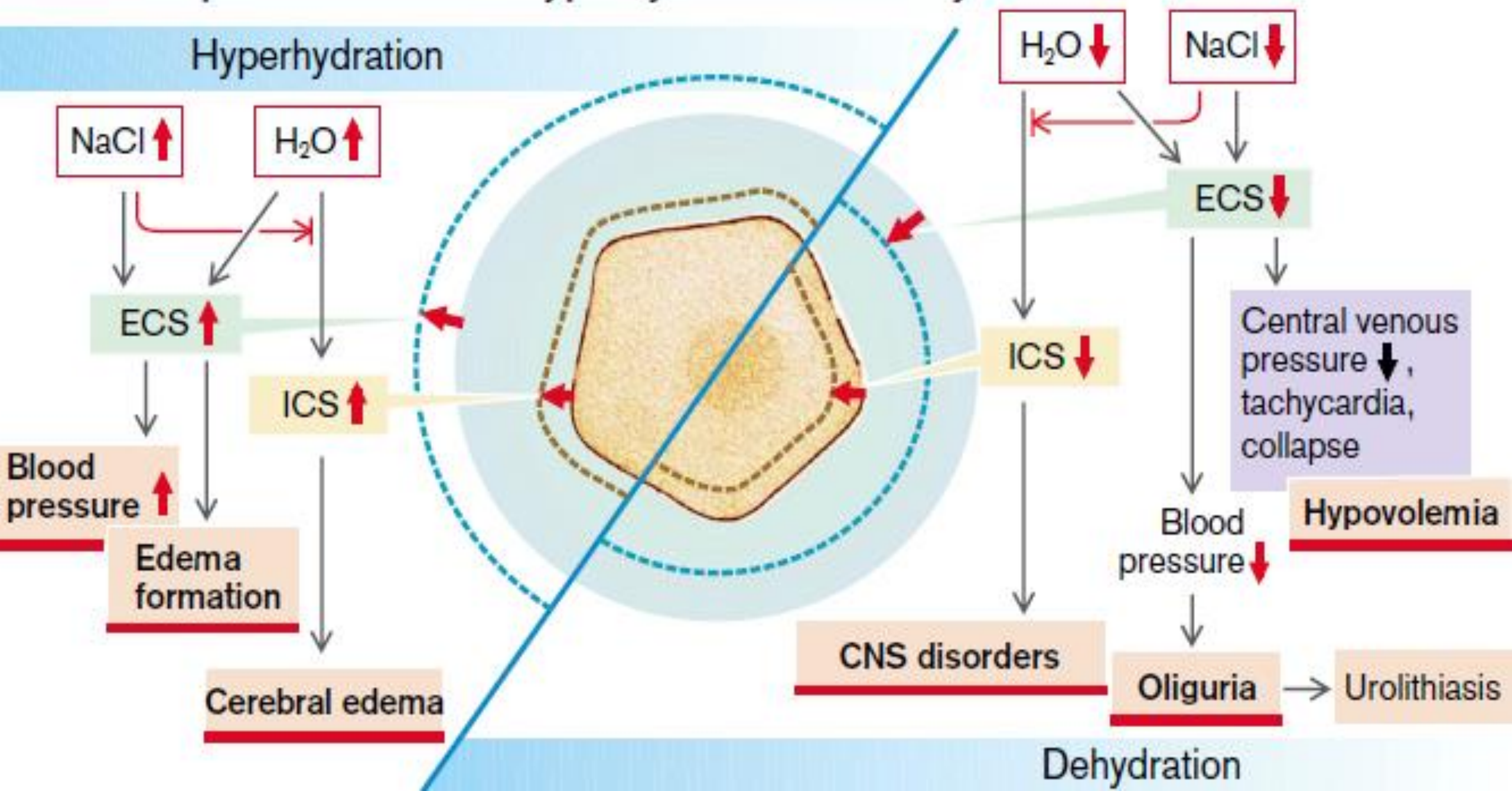


This section contains three diagrams illustrating causes of dehydration. The top diagram shows intestinal fistula with the text 'Diarrhea, intestinal fistula' and boxes for Na^+ and H_2O loss. The middle diagram shows skin with the text 'Sweating, burns'. The bottom diagram shows a blood vessel with the text 'Blood loss'. To the right of these diagrams is a box with the text 'Losses to the 'inside': ileus, ascites, edemas'. A large grey arrow points from this section towards the kidney diagram on the left.

A. Causes of Hyperhydration



C. Most Important Effects of Hyperhydration and Dehydration



Violation of the water-salt balance in the body occurs for various reasons.

For example:

Imbalanced diet (intake of excess carbohydrate foods)

Wrong liquid diet

Alcohol abuse

Intense physical activity adynamia

Cardiovascular diseases Diarrhea and vomiting

Endocrine pathologies Hyperthermia, etc.

Kidney and liver diseases

Metabolic disorders (Diabetes, etc.)

Excessive use of diuretics Pregnancy toxicoses

Symptoms of dehydration:

Plaque on the surface of the tongue

Bad breath from the mouth

Dry skin

Acceleration of breathing

Nausea

Pain in joints and muscles

Tachycardia

Weight loss

Symptoms of hyperhydration:

Weakness

Vomiting

Edema

Don't convulse

Arrhythmia

loss of consciousness

Clinical and laboratory-instrumental examination carried out by doctor's appointment

increased urination → dehydration,
violation of the filtration process → hyperhydration
A common cause of chronic renal failure is → arterial hypertension and diabetes

General and biochemical analysis of blood and examination of urine:

urea * glucose, pH, *creatinine *potassium, sodium, chlorine, etc. * protein

* study of glomerular filtration rate.

*Ultrasound examination is performed

In the pathology of the gastrointestinal system accompanied by vomiting and diarrhea → dehydration

If the doctor suspects an intestinal infection → serological examination of blood to detect the causative agent,

*faeces and vomit mass, etc. bacteriological study

Pilostenosis in children → dehydration and body causes a violation of water-electrolyte balance.

Dehydration → blood clotting

Edemas

According to its pathogenesis

Hydrostatic

Oncotic

Lymphatic

Osmotic

Membranogenic

According to its origin

Cardiac origin

Renal origin

Hepatic origin

Cachectic

Inflammation, etc.

CHART 6-1 Causes of Edema

Increased Capillary Pressure

Increased vascular volume

Heart failure

Kidney disease

Premenstrual sodium retention

Pregnancy

Environmental heat stress

Venous obstruction

Liver disease with portal vein obstruction

Acute pulmonary edema

Venous thrombosis (thrombophlebitis)

Decreased arteriolar resistance

Calcium channel–blocking drug responses

Decreased Colloidal Osmotic Pressure

Increased loss of plasma proteins

Protein-losing kidney diseases

Extensive burns

Decreased production of plasma proteins

Liver disease

Starvation, malnutrition

Increased Capillary Permeability

Inflammation

Allergic reactions (*e.g.*, hives, angioneurotic edema)

Malignancy (*e.g.*, ascites, pleural effusion)

Tissue injury and burns

Obstruction of Lymphatic Flow

Malignant obstruction of lymphatic structures

Surgical removal of lymph nodes

It refers to examination methods during edema:

- *to determine local characteristics of edema or signs of systemic diseases by physical examination
- * to determine the period of existence of edema
- *to investigate the presence of pain in the area of edema
- * pay attention to the color of the skin in the area of edema
- * to conduct a doppler ultrasound examination of the lower extremities
- * to perform computer tomography of organs
- *Biochemical and general analysis of blood
- *general analysis of urine

Applies to instrumental studies:

- *electrocardiogram (ECG)
- *echocardiography
- *ultrasound examination
- * X-ray of organs located in the chest, etc.