

## **Dehydration**

An abnormal loss of water from the body, especially due to illness or physical exertion.

Etiology

There are two major causes of dehydration:

1- Inadequate water intake...which occur due to

- **Deprivation of water.**
- **Lack of thirst due to toxemia.**
- **Inability to drink water as in esophageal obstruction.**

2- Excessive fluid loss. Which occur due to

- **Diarrhea, vomiting, polyuria, extensive skin wound, copious sweating.**
- **Acute carbohydrate engorgement in ruminants.**
- **Acute intestinal obstruction and diffuse peritonitis.**
- **Dilation and torsion of abomasum**

## **Pathogenesis**

Two factors are involved in the pathogenesis of dehydration:

**A- Depression of tissue water content with resulting interference in tissue metabolism.. so**

1-The initial response to negative water balance is the withdrawal of fluid from the tissues and the maintenance of normal blood volume.

- The fluid is drained primarily from the intracellular and interstitial fluid spaces. Essential organs including the central nervous system heart and skeleton ,and the major loss occurs from connective tissue, muscle and skin.

- The loss of fluid from the interstitial and intracellular spaces results in loss of skin elasticity, dryness of the

skin and mucosa, and a reduction and retraction of the eyeball (enophthalmia) due to reduction in the volume of the postorbital fat deposits.

### **B- Reduction in the free water content of blood**

Reduction in the fluid content of the blood causing a reduction in circulating blood volume (volume depletion) and an increase in the concentration of the blood (hemoconcentration). **Therefore** there is an increase in the viscosity of the blood, which affect blood flow and may predispose to peripheral circulatory failure.

### **C-Tissue breakdown**

Dehydration exerts important effects on tissue metabolism. There is an increase in breakdown of fat, then carbohydrate and finally protein, to produce water of metabolism. This breakdown result in anaerobic conditions results in the formation of acid metabolites and the development of metabolic acidosis

### **Clinical Findings of dehydration:**

- Dryness and wrinkling of the skin.
- Sunken eye “ the eyeballs recede into the sockets ”; because of the loss of peri-orbital and ocular fluid.
- Depression of tissue fluid levels lead to increase in the body temperature;( non specific fever ) because of insufficient fluid to maintain the loss of heat by evaporation.



### **Evaluation of dehydration status:**

The state of dehydration is evaluated by inspection and palpation of the skin, and examination of the eyes.

Normally, the skin is elastic and, when picked up or tended with fingers, it returns to its previous position when released. In dehydrated animals the skin will remain tended for varying periods of time. The test is called “skin-fold test”. The skin of the upper eyelid and neck gives one of the best indication of the degree of dehydration.

- Normal skin fold return time is 1-2 second
- 2-4 second mean mild dehydration
- More than 4-8 second moderate dehydration
- More than 8-12 second sever dehydration



### **Clinical pathology**

Dehydration is characterized by  
an increase in the packed cell volume  
increase total serum protein concentration,