

## Popular Article

# Enteritis / Enteropathy/ Malabsorption syndrome in animals

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Enteritis is the inflammation of the intestinal mucosa resulting in diarrhoea and sometimes dysentery, abdominal pain, varying degree of dehydration and acid-base imbalance depending on the cause, severity and location.

In many cases gastritis is associated, leading to gastroenteritis.

### Predisposing Factor

Factors lower the animal immunity, thus increasing the pathogenicity of the causative agent to induce enteritis:

The newly born camel calves deficient in immunoglobulins are more susceptible than adults.

Stress of transportation.

Stress of deprivation of food and water.

Stress of weaning.

Prolonged use of antibacterial agents orally may alter the intestinal microflora and permit the development of super-infection by organisms which would not normally cause disease.

### Etiological Factors

#### a) Infectious factors

##### Bacteria

1- *Enterotoxigenic E. Coli*

2- *Salmonella spp.*

3- *Clostridium perfringens* (type B and C)

4- *Mycobacterium paratuberculosis*

5- *Proteus and pseudomonas Spp.*

##### Viruses

1- Rota and corona virus.

2- Winter Dysentery (Coronavirus).

3- Pesti virus (BVDV)

##### Parasites

*Ostertagia, Haemonchus, Trichostrongylus, Oesophagostomum*

## **Protozoa**

1- *Eimeria*

2- *Cryptosporidium*

## **Mycotic**

*Candida spp.*

### **b) Chemical factors**

Arsenic, copper, mercury, molybdenum, poisonous plants, nitrates

### **c) Nutritional deficiency**

Copper deficiency, conditioned by excess molybdenum

### **d) Dietary**

1- Overfeeding.

2- Simple indigestion.

## **Pathogenesis**

Any dysfunction of intestine will cause malabsorption and diarrhoea. Malabsorption due to causative agent may be result of following mechanism:

Osmotic diarrhoea

Exudative diarrhoea

Secretory diarrhoea

### **Osmotic Diarrhoea**

Saline purgative, overfeeding, indigestible feed - Increase the osmotic pressure - Osmotic movement of excessive amount of fluid into the lumen - Diarrhoea

### **Exudative Diarrhoea**

bacteria, virus, fungi, chemical agent - Acute or chronic inflammation or necrosis of intestinal mucosa - Increase in fluid production - Increase in inflammatory products - Reduction in absorption of fluid and electrolytes - Diarrhoea

### **Secretory Diarrhoea**

Enterotoxin of enterotoxigenic E.Coli - Hypersecretion- Secretion is comparatively more than absorption - Diarrhoea

## **CLINICAL FINDINGS**

### **A- Diarrhoea**

Severe watery Diarrhoea, sometimes dysentery, and often tenesmus in acute enteritis.

The feces is watery and profuse in case of lesions of small intestine.

Small volume and soft feces with excess quantity of mucus occur in case of lesions of large intestine.

The presence of blood or fibrinous cast, indicate severe inflammatory lesion of intestine.

The feces is voluminous, soft and odoriferous in case of dietary diarrhoea

### **B- Dehydration**

Dehydration is usually marked in acute diarrhoea (10-12 hr after onset of diarrhoea).

Signs of dehydration include dry muzzle, sunken eye, shrunk skin and oliguria.

Dehydration can be assessed by tinting of the skin.

### **C- Weight loss**

Chronic weight loss associated with chronic diarrhoea may indicate Johns disease.

Moderate weight loss, profuse diarrhoea with normal hydration and depigmentation of hair and indicate copper deficiency conditioned by excess molybdenum in diet.

Weight loss with profuse diarrhoea occurs also in intestinal heminthiasis.

### **D-Systemic reaction**

Septicemia, toxemia and fever occur mostly in infectious enteritis, such as salmonellosis and colibacillosis

### **E- Peripheral circulatory collapse**

Lack of perfusion of liver, kidney, and peripheral tissues due to dehydration lead to uremia, enhance anaerobic oxidation and produce lactic acidosis.

### **F- Acid-base and electrolyte imbalance**

Loss of bicarbonate leads to metabolic acidosis manifested by hyperventilation.

Hyponatremia leads to muscle weakness in animals.

### **G- Abnormalities in heart rate**

Tachycardia or bradycardia and cardiac arrhythmia may occur depending on the degree of acidosis and electrolyte imbalance.

### **H- Abdominal pain**

Abdominal pain in calves with enteric colibacillosis is manifested as intermittent bouts of stretching and kicking at the abdomen.

In adults, abdominal pain is associated with salmonellosis lead and arsenic poisoning.

## **Diagnosis**

By taking proper history of animals

By Clinical signs and symptoms

By Lab. Diagnosis

a) Faecal examination:- To determine the presence of causative parasite, fungi, bacteria, virus etc.

b) Blood analysis:-

Haemoconcentration (elevated PCV %).

Hypochloremia, hyponatremia and reduction of bicarbonate (metabolic acidosis).

Hyperkalemia is possible in severe metabolic acidosis.

Increased blood urea nitrogen (BUN) due to inadequate perfusion of kidney associated with dehydration leading to renal insufficiency.

## **Treatment**

Five goals of treatment should be fulfilled:

A. Temporary withdrawal of the diet if necessary.

B. Removal of the causative agent (Anthelmintics against parasitic enteritis, antibacterial against bacterial enteritis, non-specific symptomatic treatment for viral enteritis etc)

C. Replacement of lost fluids and electrolytes.

D. Intestinal protectants and adsorbents.

E. Use of anti-diarrhoeal drugs e.g. drugs inhibit secretion and control intestinal hypermotility if necessary.

### **A) Temporary Withdrawal Of The Diet:**

If the diarrhea is dietary in origin, the feed should be removed until the animal is fully recovered.

### **(B) Antibacterials:**

The use of antibacterials either orally or parenterally, or by both routes simultaneously.

Parenteral preparations are indicated in animals with acute diarrhea, toxemia and fever (many antibacterials when given parenterally are excreted by the liver into lumen of the intestine).

Oral preparations may be sufficient in cases of subacute diarrhea with minimal systemic effects.

### **(C) Fluids And Electrolytes:**

To correct the 3 major abnormalities of dehydration, acidosis and electrolyte deficit.

-When severe acidosis is suspected, a 5% hypertonic solution of bicarbonate is given IV at a rate of 5-7 ml/kg B.W at a speed of 100 ml/ minute.

-Administration of electrolyte solution in quantities necessary to correct the dehydration. :

(a) In severe dehydration (equivalent 10% of B.W), large amount of fluids are necessary at rate of 100-150 ml/kg B.W per 24 hours I/V and 1 gm of KCl must be added for each litre of fluid to overcome hypokalemia.

(b) In animals, which are not severely dehydrated, oral route can also be used successfully to correct dehydration

#### **D- Intestinal Protectants And Adsorbants :**

Kaolin and pectin mixtures are used widely to coat the intestinal mucosa, inhibit secretions and increase the bulk of faeces.

#### **E- Anti-Diarrhoeal Drugs :**

Antisecretory drugs for treatment of diarrhea due to hypersecretory activity. For example:

atropine sulphate, chlorpromazine Hcl