



Enteritis



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Outline

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Introduction

- Enteritis is common disease occur in farm animal especially in neonate and young animal .
- Enteritis cause large of economic loss to farmer due to poor weight gain and low in milk production in diary animal in addition to mortality .

Definition

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

Etiology

I- predisposing factors

1. The newly born calves deficient in immunoglobulins (passive) are more susceptible than adults.
2. Stress of transportation.
3. Stress of deprivation of food and water.
4. Stress of weaning.
5. Prolonged use of antibacterial agents orally may alter the intestinal microflora and permit the development of superinfection by organisms which would not normally cause disease.

II- Etiological factors

A- Infectious Causes

I- Bacteria

Etiological agent	Age & class of animal affected	Major clinical findings
1- Enterotoxigenic <i>E. Coli</i> 2- <i>Salmonella spp.</i> 3- <i>Clostridium perfringens</i> (type B and C). 4- <i>mycobacterium paratuberculosis</i> 5- <i>Proteus</i> and <i>pseudomonas Spp.</i>	<ul style="list-style-type: none"> - Newborn calves (3-5 d old). - All ages, outbreak occurs, stress-induced. - Young well-nourished calves. - Mature cattle, sporadic, single animal affected. - Calves treated for diarrhea with prolonged course of antibiotics 	<ul style="list-style-type: none"> - Acute profuse watery diarrhea, dehydration and acidosis. - Acute diarrhea, fever, dysentery, high mortality - Severe hemorrhagic enterotoxemia, rapid death. - Chronic diarrhea with loss of weight, long course, no response to therapy. - Chronic to subacute diarrhea, progressive weight loss, no response to treatment.

II- Viruses

Etiological agent	Age & class of animal affected	Major clinical findings
1- Rota and corona virus. (common)	- Newborn calves, 5-21 d old .	- Acute profuse watery diarrhea, virus can be demonstrated in feces.
2- Winter Dysentery (Coronavirus).	- Mature housed cows .	- Acute epizootic transient diarrhea and dysentery lasting for 24 h.
3- Bovine viral diarrhea (mucosal disease).	- Young cattle (8-24 month old).	- Erosive gastroenteritis and Stomatitis, usually fatal.
4- Rinderpest	- Highly contagious, occur in plague form.	- Erosive gastroenteritis and Stomatitis, high morbidity and mortality.
5- Bovine malignant catarrh.	- Usually mature cattle.	- Erosive gastroenteritis, nasal and ocular discharge

III- Parasites

Ostertagia Haemonchus, and Trichostrongylus, Oesophagostomum	- Young cattle in pasture	- Acute or chronic diarrhea, dehydration, hypoproteinaemia, fecal examination.
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IV- Protozoa

1- Eimeria (coccidia)	- Calves over 2-3 weeks old up to 12 month of age.	- Dysentery, tenesmus, bloody feces, fecal examination is diagnostic.
2- Cryptosporidium	- Calves 5-35 days of age	- Acute diarrhea

V- Mycotic

Mycotic Candida spp.	- Young calves following prolonged use of antibacterials.	- Chronic diarrhea, no response to treatment.
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B- Non Infectious Causes

Chemical factors:

Arsenic, copper, mercury, molybdenum, poisonous plants, nitrates	- all ages affected, history of access to the substance, outbreaks occurs	- all severities of diarrhea, dysentery, abdominal pain, dehydration, toxemia, nervous signs may occur
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Nutritional deficiency.

Copper deficiency	Usually mature cattle in pasture .	Subacute and chronic diarrhea, osteodystrophy, no systemic effect, hair color changes.
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Dietary:

Overfeeding.	- Young calves overfed on milk.	- Mild diarrhea, feces pale and yellow .
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Pathogenesis

Etiological factors

Inflammation
Necrosis MM

Secretion-absorption defect

Osmotic disturbance

bacteria and virus multiply
in the brush border cells

↓
decreased carrier-protein
function

↓
decreased mucosal absorptive
surface area

↓
Decrease transport of nutrients
Into circulation

↓
colibacillosis

↓
the intestinal secretion
is increased beyond the
absorptive capacity

↓
increase in the cyclic
adenosine monophosphate

↓
Loss of Na, Cl, HCO₃ and
water

↓
Metabolic acidosis
dehydration

↓
**overfeeding and
indigestible feeds**

↓
malabsorbed nutrients
exert strong intraluminal
osmotic effects

↓
movement of excessive
amount of fluid into the
lumen of intestine

↓
watery feces and diarrhea

Clinical findings

A- Diarrhea

B- Dehydration

C- Weight loss

D-Systemic reaction

E- Peripheral circulatory collapse

F- Acid-base and electrolyte imbalance

G- Abnormalities in heart rate

H- Abdominal pain

Clinical findings

A- Diarrhea

- Severe watery diarrhea, 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 feces is voluminous, soft and odoriferous in case of **dietary diarrhea**.
- The presence of blood or fibrinous cast, indicate **severe inflammatory lesion of intestine**.

B- Dehydration

- Dehydration is usually marked in acute diarrhea (10-12 hr after onset of diarrhea).
- Signs of dehydration include
 1. Dry muzzle.
 2. Sunken eye.
 3. Tinting of the skin.
 4. Pale mucous membrane.
 5. Oliguria.

C- Weight loss

- ⦿ Chronic weight loss associated with chronic diarrhea may indicate **John's disease**.
- ⦿ Moderate weight loss, profuse diarrhea with normal hydration and depigmentation of hair and indicate **copper deficiency** conditioned by excess molybdenum in diet.
- ⦿ Weight loss with profuse diarrhea occurs also in **intestinal helminthiasis**.

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

- ④ Loss of bicarbonate leads to metabolic acidosis manifested by hyperventilation.
- ④ Hyponatremia leads to muscle weakness

G- Abnormalities in heart rate

- ⦿ Tachycardia or bradycardia
- ⦿ 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.

Diarrhea and tenesmus due to Coccidia infection in a buffalo calf



Bacterial enteritis in a calf (soiling of perineum and hindquarters)





Soiling of perineum (calf diarrhea)



Tenesmus and soiling of the hind quarters (Coccidiosis).

Diagnosis

- ⦿ History
- ⦿ Clinical signs
- ⦿ Lab. Diagnosis:
 - **Fecal examination**: to determine the presence of causative **parasite, fungi, bacteria, virus** .
 - **Culture** from feaces

- **Blood analysis:**

- Haemoconcentration (elevated PCV %).
- Hypochloremia, hyponatremia and reduction of bicarbonate (metabolic acidosis).
- Hyperkalemia is possible in severe metabolic acidosis.

Treatment

Five goals of treatment should be fulfilled:

- A. Temporary withdrawal of the diet if necessary.
- B. Removal of the causative agent .
- C. Replacement of lost fluids and electrolytes.
- D. Intestinal protectants and adsorbents.
- E. Use of anti-diarrheal drugs e.g. drugs inhibit secretion and control intestinal hypermobility 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.
- Sulpha-Trimetheprime 15to30Mg\Kg
- Gentamicin-2.2to6.6Mg /Kg
- Oral preparations may be sufficient in cases of subacute diarrhea with minimal systemic effects.
(Neomycin)

(C) Fluids and electrolytes:

- ⦿ Supportive therapy like **Multi vitamin** .
- ⦿ To correct the 3 major abnormalities of dehydration, acidosis and electrolyte deficit.
- ⦿ When **severe acidosis** is suspected, a **8.4% hypertonic soln. of bicarbonate** is given IV at a rate of **5-7 ml/kg B.W.**

- ⦿ 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.

- Normal Saline 0.9%

- (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 :

1. Coat the intestinal mucosa .
2. Inhibit secretions .
3. Bind toxin .

E- Antidiarrheal drugs :

- Anti secretory drugs for treatment of diarrhea due to hyper secretory activity.

For example:

- atropine sulphate .

Prevention and control

- ⦿ Practicing good sanitation and hygiene .
- ⦿ Provide specific immunity by vaccinated the pregnant dam or susceptible animal (young animal) .
- ⦿ provide Adequate space for animal and by provide cleaning of pens and efficient removal of manure .
- ⦿ Provide neonate with adequate colostrum for immunity.
- ⦿ Isolated the infected animal .
- ⦿ Proper handling of food .



Thanks for attention

Any question ??????????

Group B in clinic course