

Calf diarrhoea and or enteritis



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Definition:

It is a frequent evacuation of soft fluid feces of young animal associated with rapid loss of body weight with normal appetite. In newborn, dietary scours is complicated by secondary infection.

Causes of dietetic diarrhea:

- (1) Drinking excessive amount of milk at too long intervals.
- (2) Drink milk or water too rapidly.
- (3) Failure of feeding of colostrum.
- (4) Sudden change from whole milk to milk replaces.
- (5) Defect of rennin secretion in abomasum.

(6) Defects in milk or milk replaces:

1) Hot or cold or dirty.

2) Bad storage or expired date.

3) More diluted or more concentrated.

4) Very low in casein or calcium.

5) High in sodium or pH.

6) Milk replacer rich in soyabean protein or fish protein.

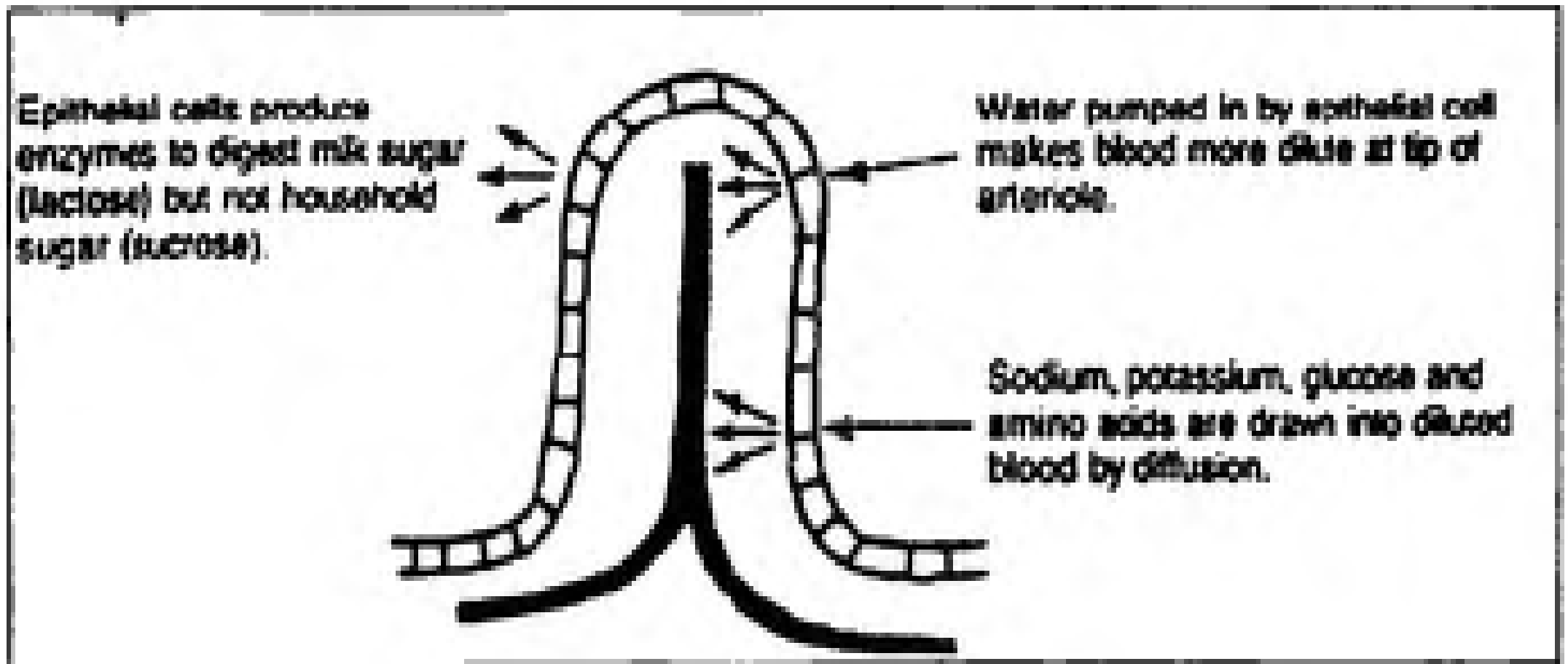
(7) Enzyme deficiency as lactase, sucrase, maltase lead to excretion of watery feces in dog & newborn animals.

(8) Osmotic diarrhea: Taking more sugar, fat or purgatives.

(9) Low immunity and immunoglobulin.

(10) Failure of abomasal groove to close with subsequent fermentation of milk in the rumen can result in chronic diarrhea & mild bloat.

(11) Certain drugs as oral chloramphenicol, neomycin, etc.



Flow of water and nutrients in a normal calf

Pathogenesis:

The Causative agent of calf scour or prolongation of drinking time results in abnormal dilution of milk with saliva & production of froth, easily digested curd leading to incomplete curdling of milk & abomasal bloat, distension & irritation of gastric mucosa & reflexly hypermotility occurs resulting in rapid passage of undigested milk to intestine & rapidly putrefy then malabsorption, diarrhea & dehydration occur.

Also, the bacterial or viral infection or parasitic infestation may lead to inflammation and or desquamation of intestinal epithelium decreasing enzyme secretion as well as escaping of body fluid resulting in:

- 1) Decrease of intestinal enzymes causing maldigestion & malabsorption.
- 2) Excessive body fluid loss with electrolyte, bicarbonate, water & even blood in feces
- 3) Changes in bacterial flora of the small intestine.
- 4) The net results are: Dehydration, Metabolic acidosis, Electrolyte abnormalities (hyponatremia, varying degrees of hyperkalemia), Negative energy balance, and Overgrowth of the small intestinal lumen with gram negative bacteria as well as Peripheral circulatory failure (cold extremities, subnormal temperature), Recumbency, Coma and finally Death.

NB: Calves with diarrhea die from: Septicemia, Acidemia, Hyperkalemia, Hypothermia or Prolonged malnutrition and hypoglycemia.

Differential diagnosis of some causes of diarrhea in calves

Condition	Normal age when apparent	Frequency of occurrence	Epidemiology	Presence of blood	Attitude	Acute or chronic signs	Diagnosis
<i>Clostridium perfringens</i> (Welchii) types B and C	Up to 10 days old	Uncommon	Good condition calf	Yes	Dull	Acute	Fecal swab
Dietary scour	Up to 4 weeks	Very common	Management	No	Bright	Both	Fecal swab
Colibacillosis	Up to 1 week	Very common	Management/colostrum	May be	Dull	Acute	Fecal swab
Rotavirus	1-21 day old	Common	Overcrowding	No	Dull	Acute	Virus isolation serology
Adenovirus	About 1 week	Rare	-	No	Dull	Acute	Virus isolation serology.
Enterovirus	First few days	Rare	Carrier cows	No	Dull	Acute	Serology
Infectious bovine rhinotracheitis (alimentary)	First few days	Rare	Herd infection	No	Dull	Acute	Virus isolation serology
Astrovirus	First few days	Rare	Carrier cows	No	Dull	Acute	Virus isolation serology
<i>Salmonella dublin</i>	Over 2 weeks	Common	Carrier cows	Often	Dull	Acute	Fecal swab
Other salmonella	5-120 days old	Common	Contaminated feed / water	Often	Dull	Acute	Fecal swab
Calicivirus	first few days	Rare	Carrier cows	No	Dull	Acute	Virus isolation serology
Coronavirus	Up to 3 weeks	Common	Overcrowding	No	Dull	Acute	Virus isolation
<i>Campylobacter</i> sp. Infection	Over 1 week	Uncommon	Probably carriers	No	Slight dull	Acute	Fecal swab
<i>Proteus</i> , <i>Pseudomonas</i> sp.	Over 10 days	Rare	Long use antibiotic	No	Slightly dull	Chronic	Fecal swab
<i>Candida</i> sp.	Over 10	Rare	Long use antibiotic	No	Slightly	Chronic	Fecal swab

	days				dull		
Intestinal disaccharidase deficiency	From birth	Rare	Lack of enzyme	No	Slightly dull	Chronic	Glucose tolerance
Cryptosporidiosis	5-28 days old	Common	Fecal spread	No	Slightly dull	Acute	Oocysts in feces
Coccidiosis	Over 17 day old	Common	Overcrowding , contaminated feed	Yes	Slightly dull	Subacute	Oocysts in feces
Arsenic poisoning	Over 10 days	Very rare	Source of arsenic	Occasionally	Very dull	Peracute	Arsenic in urine , liver and kidney
Fluorosis	Over 4 weeks	Very rare	Source of fluoride	No	Dull	Acute	Blood and urine fluoride levels
Copper poisoning	Towards 3 months	Rare	Injection or pasture dressing	Some	Very dull	Both	Blood and liver copper levels
NaCl poisoning	Over 5 weeks	Rare	Water supply interruption	No	Slight dullness	Acute	Blood sodium levels
Mercury poisoning	Over 10 days	Very rare	Seed grain used	Some	Dull	Both	Urine and kidney mercury levels
Molybdenum poisoning	Towards 3 mon.	Rare	Area of country	No	Some dullness	Both	Blood copper levels
Nitrate poisoning	Over 5 weeks	Uncommon	High nitrogen usage	No	Dull	Acute	Methaemoglobin
Aflatoxicosis	Towards 3 mon.	Rare	Groundnut usually	May be	Dull	Acute	Feed analysis
Lead poisoning	Over 2 weeks old	Uncommon	Batteries, paint, etc.	No	Excitable	Usually acute	Blood and kidney lead levels
Tuberculosis	Any age	Very rare	Infected milk	No	Slightly dull	Chronic	Tuberculin test
Furazolidone poisoning	Any age	Rare	Furazolidone previously in feed	Yes	Dull	Chronic	History of feeding furazolidone
Vitamin A deficiency	Any age	Rare	Lack of vitamin A and carotene	No	Dull or convulsions	Chronic	Plasma and liver vitamin A levels
Copper deficiency	3 months	Rare	Lack of copper	No	Some dullness	Chronic	Blood and kidney copper levels

Treatment:

(1) Hygienic treatment:

- 1) Remove, correct and treat the real cause(s) as diet, bacteria, parasite, etc.
- 2) Milk feeding should be stopped for 24hrs & oral electrolyte solution is used. Milk is then gradually reintroduced.
- 3) Foals should be muzzled & allowed only limited accesses to the mare.

(2) Medicinal treatment:

- 1) Fluid therapy and antacid.
- 2) Energy supply & electrolytes
- 3) Intestinal adsorbent, astringent & antiseptic given orally, half or one hour before sucking.
- 4) Ancillary treatment.

Treatment of 50 Kg calf suffering from soft watery feces and dry muzzle with sternal recumbency

(1) If the temperature is normal, fecal exam is negative, Treatment should be:

1) The required fluid therapy in 24 hrs = $10\%BW = 50 \times 0.10 = 5$ liters:

1- In the first four hrs IV injection of 250ml Na bicarbonate 5% (4-5 ml/Kg BW as antacid); 250ml NaCl 0.9-5 % (4-5 ml/ Kg BW as electrolytes and correct hyperkalemia) and 250 ml glucose 5-10% (energy supply).

NB: Rise the hindquarter of the calf to obtain clear jugular vein.

Calf with Diarrhea

Calf standing-
appears strong

Calf weak
> 8% dehydrated

Calf unable
to stand

Calf less than
1 week of age

Calf greater than
1 week of age

5 liters of saline with
250 mEq of
bicarbonate added

5 liters of saline with
500 mEq of
bicarbonate added

Oral electrolyte solutions (high SID)



2- In the second four hrs repeat similar dose IV, if urination occurs complete with oral fluid therapy. If urination does not occur repeat similar dose IV.

3- The rest amount of fluid should be taken per os instead of milk during the first 24 hrs e.g. Lectade, sachet A&B or Lactolyte one bag, etc, in two liters of warm water (for energy supply, hypoglycemia & hypothermia). Calf takes 3-4 liters (to complete fluid therapy up to 10% of body weight) divided into 2-3 times in first day then milk is reintroduced gradually as 25,50,75&100 % instead of fluid therapy during second, third, fourth & fifth days, respectively.

2) Antidiarrheic drugs: 10 gm sulpha guanidine(intestinal antiseptic), 0.5 gm tannic acid(astringent) and 10-20 gm bismuth nitrate(intestinal coating) ,or use kaolin pectin mixture or other patent preparation, etc, per os one hr before sucking or eating daily till recovery.

3) Ancillary treatment: probiotics, B vitamins , and lactase (intestinal protectants and motility modifiers).

(2) If lateral recumbency occurs,(comatose diarrheic calves) treatment should be:

- 1) The required fluid therapy in 24 hrs = $50 \times 0.10 = 5$ liters: In the first four hrs IV injection (very slowly, 1-5 ml/minute) of 200-250 ml hypertonic sodium bicarbonate solution 8.4% (for severe metabolic acidosis), 200-250 ml hypertonic saline solution 7.2% (for severe hyponatemia) and two liters glucose 5-10% (for blood expansion & energy supply especially in subnormal body temperature).
- 2) Apply chest rug and warm the place to warm the calf.

- 3) In the second four hrs inject 1-2 liters glucose, if urination occurs complete with oral fluid therapy. If urination does not occur repeat glucose injection.
- 4) The rest amount of fluid is completed as mentioned before.
- 5) Antidiarrheic drugs.
- 6) Ancillary treatment.

(3) If temperature rises apply cold fomentation and use suitable antibiotic after sensitivity test.

(4) Remove, correct and treat the real cause(s) as diet, Bacteria, parasite, etc.

Control of dietetic diarrhea:

(1) Sucking of colostrum after birth within 1 to 12 hrs.

(2) Sanitary house, good ventilation place, free from air current & pathogens during parturition & after birth.

(3) Avoid crowding.

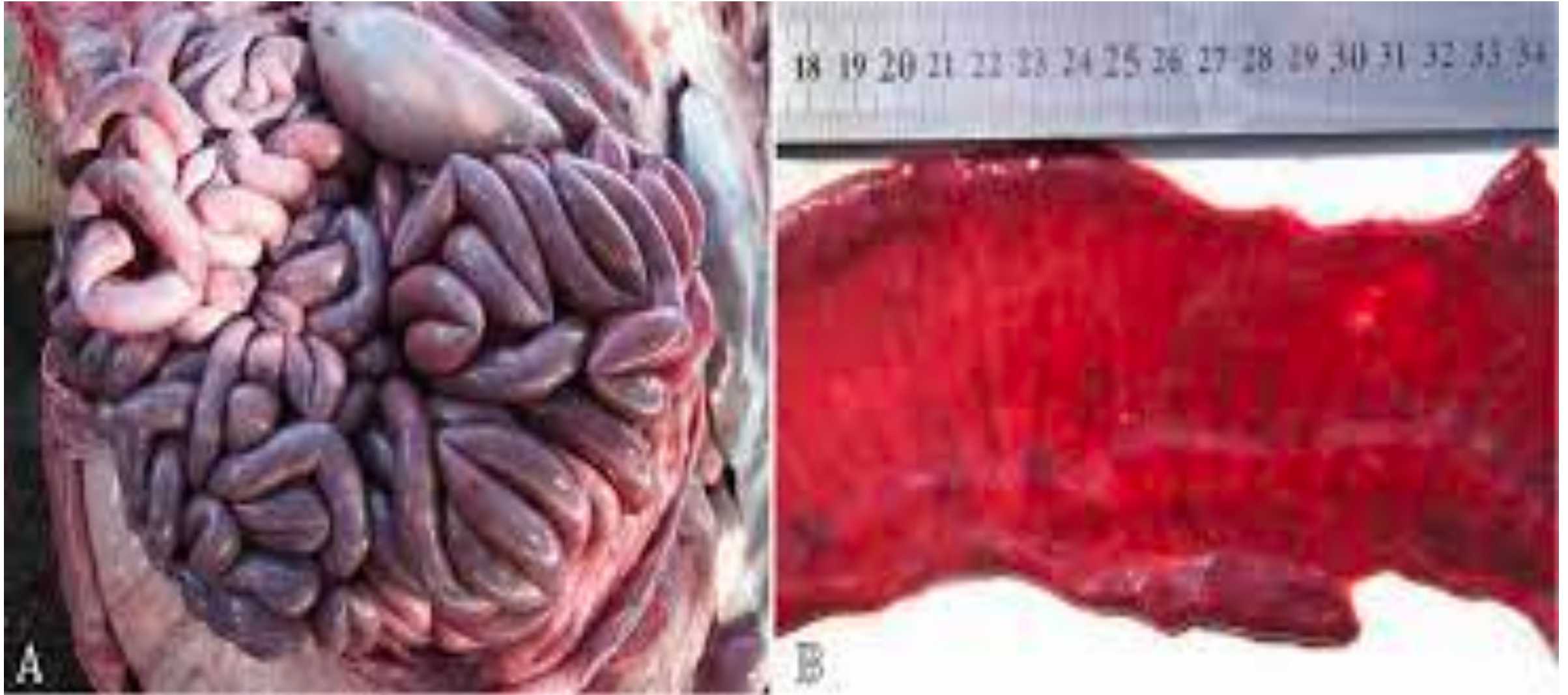
(4) Sanitary use of milk replacer: contents, preparation, mixing, dilution, concentration, fat contents, water used, temperature during manufacture & sucking, etc.

(5) Isolation of animal during appearance of any disease.

(6) Oral dosing of piperazine citrate (5-15 gm for calf) or other antiparasitic drug within 15-30 days old.

(7) Use suitable drugs as early as possible in proper dose, route & time during appearance of any disease.

Hemorrhagic enteritis



Hemorrhagic enteritis

GIT hemorrhage in animals may be caused by:

(1) Parvovirus infection in dog.

(2) Heavy coccidial infection.

(3) In general, bleeding from GIT mucosa is caused by: gastric ulcer, ingestion of certain drugs (e.g. aspirin, phenylbutazone etc), gastric neoplasm, purpural disease or due to heavy parasitic infection.

(4) Ingestion of anticoagulants, aflatoxin, and corrosive chemicals.

(5) Invasive ***E. coli*** as well as salmonella sp. may cause erosion of intestinal mucosa leading to bleeding.

(6) Tarry colored feces occurs in dogs with ancylostomal infection and in cattle with piroplasmosis, abomasal ulcer and displacement.

NB: Gastric ulcer produces dark, tarry, colored firm feces. Feces are not firm when the bleeding is associated with enteritis.

NB: Anemia is the cardinal sign in animals suffering from such diarrhea.

Diagnosis:

- (1) Bleeding from the upper GIT, feces is tarry colored. There is chance of hematemesis.
- (2) Bleeding from lower GIT, hematemesis is not the feature. The color of the feces depends on the rapidity with which blood reaches the anal opening. It may be red, reddish or slightly altered.

Treatment:

- (1) Treat the real cause (ulcer, parasite, etc).
- (2) Absolute rest with arrangement of elevation of hindquarter of animals.
- (3) Recording of pulse rate. If pulse rate falls steadily, it will indicate that initial effects of hemorrhage are being

- compensated, but if there is fresh bleeding, there will be elevation of pulse rate.
- (4) Estimation of Hb % and hematocrit to evaluate hemoconcentration.
 - (5) Sedation.
 - (6) Gastric hypothermia: by oral ice or cold water for dog. Lavage with ice-cold water will stop bleeding from ulcer.
 - (7) Antacids and feeding: Bland food or milk in case of monogastric animal should be fed at two hour interval. Liquid antacid should be fed at 3 to 4 hour interval in case of ulcer.
 - (8) Vitamin K is used when the cause of bleeding is due to use of non-steroidal anti-inflammatory drugs (e.g., aspirin, salicylate) because they lower the blood level of prothrombin and platelets,
 - (9) Fluid and blood transfusion (50-120 ml/Kg BW in 24 hours).
 - (10) Surgical intervention in cases of surgical bleeding.

Constipation



Constipation

Definition:

It is an absence or infrequent difficult defecation. Feces remain in colon & rectum for long period so more water is reabsorbed & fecal mass becomes dry & hard.

NB: Tenesmus is infective or painful straining to defecate, usually accompany dyschezia.

Causes:

- (1) Lack of: exercise, roughage food, bile salts, calcium (hypocalcemia) or glucose (ketosis).
- (2) Dry hard food (bone), impaction of colon (due to bone, hair, clothes etc), obstruction of intestine or stone formation (enterolith).
- (3) General muscular weakness, dehydration, paralytic ileus.
- (4) Hypertrophy of prostatic glands, chronic peritonitis, Hyper or hypothyroidism.
- (5) Diseases of anal gland & perianal regions (abscess, fistula, proctitis)
- (6) Painful conditions of pelvic regions
- (7) Overdosing of certain drugs: astringents, sulphonamides, and diuretics.

Symptoms:

- (1) Feces is dry, hard, may be stained with mucus or blood, accompanied with tenesmus.
- (2) Complete stop of defecation, rectum is blocked with very hard masses of feces.
- (3) Animal dull, depressed, loss appetite, with abdominal pain.
- (4) Later on, intestinal tympany, dehydration, autointoxication & toxemia may occur.

Hygienic treatment:

- (1) Regular exercise: (2) Regular feeding time
- (3) Sufficient water intake (4) Reduce dietary carbohydrate
- (5) Easily digested palatable food as fibrous diet & bran for equines, green food for ruminants.
- (6) Remove the real cause.

Medical treatment:

- (1) Enema with warm water (10 liters for large animal & 0.5-1 liter for small animal) & soft soap or sodium chloride.

Enema or suppository of glycerine is used for dogs & cats.

Enema must be repeated at intervals to stimulate & regulate intestinal movement.

(2) One of the following laxative:

- 1) Liquid paraffin, oil mineral (lubricant laxative) 0.50-2.00 liters for large animal, 60-120 ml for small animal, 2-30 ml for pigs, given per os & or as enema.
- 2) Magnesium sulphate (saline laxative) in sufficient quantity of water per os 250-500 gm for cattle. It is effective within 3-12 hours in simple stomach and approximately 18 hrs in ruminants. Also Magnesium oxide or hydroxide for cattle (250-500 g), horse (30- 100), dog (5-25) and cat (2-5).
- 3) Carbacoal (Hypodermic laxative) by SC injection of 1-2 ml for large animal.

NB: Mg-sulphate & Parasympathomimetics (carbacoal) are contraindicated in cases of:

- (1) Severe impaction (to avoid rupture of rumen).
- (2) Cecal impaction or severe constipation (to avoid rupture of cecum)
- (3) Emaciation (to avoid shock or death).
- (4) Pregnancy (to avoid abortion).
- (5) Equines (rupture of cecum may be occur).

NB: Enema & liquid paraffin are used firstly followed by Mg sulphate or carbacoal or 0.5 gallon of liquid paraffin & 0.5 gallon of Mg-sulphate.

Affection of anal sacs in pit animal

There are two anal sacs contain myraid glands situated ventrolaterally to the anus. Their secretions lubricate anal orifice & facilitate passage of firm feces.

Causes:

May be irritation of anal sacs or lack of muscular tone or animal obesity or tape worm infestation.

Symptoms:

- (1) Frequent attempts to lick or bite the anal region.
- (2) Rubbing of perineal region against ground or solid object.
- (3) Inflammation & swelling of anal region (common in canines).
- (4) Sometimes, the distended gland bursts, release thin yellow foul smelling secretion mixed with pus and setting up of fistula of the anal gland.
- (5) Constipation.

Treatment

Grasp the anus, exert firm pressure on the sacs by introducing a gloved finger into the anus & compressing the sacs between this finger & the thumb then insert small amount of lubricant 1-5 ml (liquid paraffin) in the sac then give oral laxatives for 3-5 days (5-20 ml) liquid paraffin. When the anal secretion is dry inject 1 or 2 ml of warm olive oil in the sac, leave it 1-2 days, then it is easily removed. In tape worm infestation give suitable anthelmintic. In pus formation, drainage the pus, antiseptic wash, then local & systemic antibiotic or sulphonamide.