

# **Examination of Large Ruminant**

## **Signs of Health in Large Ruminants:**

Moist muzzle, Good rumination, Normal gait and attitude, No ocular or nasal discharge, Normal appetite and rumination, Normal pulse, respiratory rate & body temperature.

## **Restraining of the animal and sites of injection:-**

Holding a fold of the skin in the flank region, Lifting of the tail, Raising of one of the foreleg either by hand or by rope on the wither.

## **Site of injection**

- 1- Injection of intravenous in the jugular vein.
- 2- Injection of S/C. in the head or shoulder area.
- 3- Injection intramuscularly in the area of neck, thigh or brisket muscle.

## **General Inspection**

General inspection means that general observation of the animals prior to examination to detect the signs of health and the following points:

### **1- Posture and Gait**

***(I)-In coordination and ataxia as in case of:*** Hypoglycemia (ketosis).  
Hypomagnesaemia -Laminitis or foot rot -Late stage of impaction -FMD

***(II)-Lateral recumbency*** and the head is reflected on the shoulder toward the flank region as in case of → hypocalcaemia (Milk fever).

***(III)-Arched back and abduction of hind legs*** → colic or urine retention.

***(IV)-Abduction and rotation of the elbow outward*** → traumatic pericarditis.

***(V)-Curvature of the long bone*** → rickets in young animals or osteomalicia

***(VI)-Sternal or lateral recumbency*** → downer cow syndrome.

## **2- Body Condition:**

*-Thin or emaciated body condition as in case of :*

-Heavy infestation by intestinal parasitism, -Heavy infestation by external parasitism, Zinc, copper and Vit. A deficiency, Long period of anorexia or dehydration.

*-Good body condition as in case of:*

-Good management and good feeding practice

## **3- Tremors and Convulsion: as in case of:**

-Fear or excitement.      -Hypothermia      -Strychnine poisoning

-Hypocalcaemia      - Hypomagnesaemia.

-Vitamin – E and selenium deficiency      -Organ phosphorous poisoning.

-Tetanus and febrile conditions or hyperthermia.

## **4- General appearance and Behavior: as**

-Vigorous licking of the skin as in heavy infestation by external parasites.

-Excessive aggression as in rabies.

-Head pressing “as in ketosis or brain disease.

## **5- Defecation, Eating , Urination and Respiration:**

Will be discussed later.

## **Physical Examination of Large Ruminants**

### **(1)- Palpation:**

1-May be external palpation which may be direct by using of hand or indirect by using of probe as in case of deep wound.

2-It may be internal as in case of rectal palpation for:

-Examination of the rumen.      -Pregnancy diagnosis -Examination of the urinary bladder & kidneys.

### **Types of Palpation:**

**1-Resilient** → as normal palpation of healthy rumen.

**2-Doughly** → as palpation of the rumen on case of impaction, abscess or edema.

**3-Emphysematous:** as in → subcutaneous emphysema. or ruminal tympany

**4-Firm** → as palpation of normal superficial lymph node.

**5-Hard or solid:** as palpation of bone.

**(II) Percussion:** Percussion is of low value in large ruminant due to large thickness of the skin but generally it may be:

**1-Resonante** → as percussion over gas containing organ.

**2-Tympanic** → as percussion over Para nasal sinuses or tympany

**3-Dull** → as percussion over heart or impaction.

**(III) Auscultation:** may be: 1-**Vesicular** sound as normal sound of the lungs.

**2-Lubb. Dupp.** As normal sound of the heart.

### **Body Temperature in Large Ruminants**

Taking of body temperature is one of the most important points which should be taken during examination of diseased animal

1-Body temperature is taken from rectum by using of blunt pull thermometer.

2-If body temperature was not be taken from the rectum, it may be taken from vagina in which the temperature is more than that of rectum by 0.5°C or from the axial in which the temperature is less than that of the rectum by 1.0°C.

3-Normal range of body temperature of the large ruminant is :

**-In adult animal** → 37.5 – 39.2°C.    **-Up to one year** → 37.8-39.6°C.

## **How to take the body temperature of animals**

- 1- Control the animal.                      2- Move the tail to the side.
- 3- Put the thermometer gently into the anus, as far as possible.
- 4- Hold the thermometer at an angle so that it touches the wall of the rectum. Keep a firm grip on the thermometer, if the animal defecates or coughs the thermometer could come out or go into the rectum.
- 5- Hold the thermometer in place for half a minute.
- 6- Remove the thermometer and wipe it if necessary and read it. Do not touch the bulb as this could change the reading.

## **Clinical Significance Of Body Temperature:**

**(I)-Hyperthermia:** Which means that elevation of body temperature than normal due to physical agent.

*Examples:* 1) Heat stasis                      2) Sun stroke

**(II)-Hypothermia:** \*Which means that lowering of body temperature than normal level. *Examples:*

- Hemorrhage, dehydration and anemia.    -Diseases of the brain.
- Prior to death except in case of tetanus & hypomagnesaemia.
- Exposure to cold weather for long period especially in newly born animals.
- Impaction, tempany and parturient paresis due to circulatory collapse.

## **(III)-Fever:**

Fever means that elevation of body temperature than normal level due to infectious, surgical or chemical causes.

-Fever mainly occurs in three stages as the following:

***A-Increment stage:*** - Stage of elevation of body temperature.

***B-Fastigium or acne stage:*** Stage of maximum elevation of temperature.

***C-Decrement stage;*** Stage of lowering of body temperature to its normal level.

### **Etiology Of Fever:**

***A-Septic or infectious*** causes: due to bacterial, viral or protozoa infections.

***B-Aseptic or chemical causes:*** as due to vaccination as vaccine of BCG against TB or other sensitivity test or due to surgical tearing of the tissues.

### **Signs Of Fever:**

- 1- Elevation of body temperature than normal range.
- 2- Congested mucous membrane. 3- Tremors in early stage.
- 4- Increase the respiratory and pulse rate.
- 5- Systemic disturbances according to the affected systems.
- 6- Dry muzzle – dullness.
- 7- Anorexia and ruminal stasis or tempany.

### **Treatment of Fever:-**

- 1- Physical lowering of the body temperature by cold bath or cold fomentation.
- 2- Placing the animal in good ventilated place.
- 3-Administration of antipyretic or analgesic drug as Novalgin, Vetragin, Novacid in the dose about 1 ml. / 10 kg bwt. Intravenous or intramuscularly rout
- 4-Using of anti-inflammatory drugs have a good masking effect on the fever as Dexamethason, Phenylbutazon.
- 5- Administration of broad spectrum antibiotics as Oxytetracycline preparations or penicillin streptomycin preparations until recognizing the main cause of the fever.
- 6-Multivitamines, tonics or fluid therapy depend upon the physical conditions of the animal.

## **Taking of Pulse in large Ruminants**

Taking of pulse is very important in examination of animal because it gives good view about heart or circulatory system in general. There are considerable points which should be taken during taking of pulse:

### **(1) Site of Taking of Pulse:**

1-Pulse as we know should be taken from an artery and this artery should be: Superficial and medium sized artery .and Pass in adherent to solid structure as bone or tendon to be easily to be palpated.

2-Pulse taking in large ruminants from:

-Middle coccygeal artery.    -Facial artery        -Median artery.

**N.B.:** Taking the pulse from middle coccygeal artery is preferable because we can take the pulse and respiratory rate at the same time but it's not preferable due to it's small pulse due to it's small artery and presence of fecal contamination at these area.

\*If the pulse wave can not be detected because of restlessness of the animal, generalized muscle tremors or obesity .....etc. the heart rate (beat) are counted with the aid of stethoscope if necessary.

### **(II)-Pulse Rate:**

1-Pulse rate means that the numbers of pulse wave per minutes.

2-Normal pulse rate in the:

*Cattle → 55-80 p.w./min.    Calves → 100-120 p.w./min.*

3-*Tachycardia as in case of:*

-Toxemia, septicemia – Hypomagneseima.

-Hyperthermia, febrile conditions.

-Fear and excitement and pain conditions.

4-*Bradycardia as in case of:*

- Hypothermia and prior to death.      -Traumatic reticulitis.
- Brain diseases.                              -Weakness – Prior to death.

**(III)-Pulse Rhythm:**

1-Pulse rhythm means that it's the time interval between successive pulse waves.

2-In cattle the pulse rhythm is regular.

3-Irregular pulse rhythm as in case of:

- Myocardial forms of vitamin E-selenium deficiency.
- Convalescence stage of pneumonia or febrile and toxemic conditions.
- Myocarditis or a trial fibrillation.

**4) Pulse Amplitude:**

1-Pulse amplitude means that it's the degree of digital pressure that required for obliteration of pulse waves.

2- Decrease the pulse amplitude as in myocardial weakness.

3- Increase the pulse amplitude as in valvular stenosis – tetanus.

3-Jugular vein pulse (JVP) which may be: *True* as in case of traumatic or non traumatic pericarditis or tricuspid valve insufficiency.

*False*: as in lean or emaciated animal.

**How you can differentiate between : False J.V.P. / True J.V.P.?**

By application of digital pressure over the jugular vein in the jugular furrow to obliterate the pulse wave in the middle or lower third of the neck so if the pulsation remain presented this is indication of that the pulsation not originated from the jugular vein and mean s that this pulsation is false jugular vein pulsation but if it is disappeared after the digital pressure this indicated that this pulsation originated from the jugular vein and mean that this pulsation is pathological or true jugular vein pulsation as in case of traumatic percarditis

## **Respiration in Large Ruminant**

**(I) Type:** 1-Respiration in large ruminants is *abdominal respiration*.

2-Abnormal type may be:

***-Wholly thoracic as in case of:***

-Peritonitis    -Reticuloperitonitis.    -Impaction or tympany.

***-Wholly abdominal:***

-Traumatic pericarditis. -Severe pneumonia or pleurisy. -Fractured rib.

**(II)-Rate:**

***1-In adult:- 10-30 Resp. cycle / min. In calves: 15-40 Resp. cycle / min.***

2-Respiratory rate can be detected clinically by:

-Observing the movement of the flank region.

-By using of stethoscope.    -Placing hand in front of the nostrils.

3-Abnormal rate may be:

***A-Hyperpnoea or polypnoea ( $\uparrow$  in rate) as in case of:***

-Fear and excitation or pain conditions.

-Febrile diseases or hyperthermia.

-Pulmonary or cardiac diseases.

-Anemia as compensatory to anemic hypoxia.

***B- Oligopnoea ( $\downarrow$  in rate) as in case of:***

-Brain diseases – Uremia. -Obstruction of the upper respiratory tract.

**(III)-Respiratory Rhythm:**

1-Means that the time interval between 2 successive respiratory cycle.



2-As we know respiratory cycle consists of inspiration, expiration and pause (normally expiration is slightly longer than inspiration).

3-Abnormal respiratory rhythm may be:

***A-Prolonged inspiration as in case of:***

-Stenosis or obstruction of the upper respiratory tract.

***B-Prolonged expiration*** → occurs when normal lung collapse not takes place as in case of: -Pulmonary emphysema. -Pulmonary edema. -Fractured rib. Parasitic bronchopneumonia -Chronic interstitial pneumonia.

**(IV)- Respiratory Depth or Amplitude.**

1-Means that the strength of respiratory movement and it's may be:

***2-Increased [labored respiration] as in case of:***

-Stenosis or obstruction of upper respiratory tract. -Fever – Pulmonary edema or Emphysema.

***3-Decreased [shallow respiration] as in case of:***

-Pain condition. -Traumatic pericarditis. -Pneumonia, pleurisy – Acidosis. -Tempany or impaction.

### **Superficial Lymph Nodes in Large Ruminants**

***1-Preescapular or superficial cervical lymph node:*** in the anterior aspect of the scapula slightly dorsal to shoulder J.

***2-Prefemoral or precrural lymph node:*** in the anterior aspect of the femur slightly dorsal to stifle joint.

***3-Sub-maxillary lymph nodes:*** they lie behind the intermaxillary space near to the angle of the jaws.

***4-Supramammary lymph node:*** they are situated in the premium at the base of the udder and can be palpated by both hand from the upper 1/3 of the udder and directed toward the perineum.

*5-Superficial inguinal lymph nodes:* situated at the base of the scrotum.

**6-Pharyngeal lymph nodes:** A-Retropharyngeal L.n. → Posterior to the pharynx.  
B-Sub-parotid or Parapharyngeal L.n. → under the parotid salivary gland .

### **Normal Characters of The Lymph Node:**

*1-Size* → lymph nodes vary greatly in large animal but generally it's larger in young animals than adult.

*2-Consistency* → Firm on palpation.

*3-Surface* → Lobulated in larger L.n. but generally the surface is smooth.

*4-Temperature* → Take the normal skin temperature.

*5-Pain* → Painless on palpation.

*6-Skin* → Movable freely over the surface of examined lymph node.

*7-Movement* → Mobile in relation to the neighboring tissues.

### **Abnormalities of Lymph Node:**

1-The lymph node may be enlarged and inflamed as in case:

-Blood parasites –Actinobacillosis. -3 days fever [ephemeral fever].

-Caseous lymphadenitis (corynebacterium) or edematous skin disease.

-Mastitis

### **Mucous Membranes in Large Ruminants**

1-Examination of the visible mucous membranes is of great importance to know the general health condition of the animal.

2-Examination of mucous membrane is preferred than examination of the skin because of:

-Thinner epithelium      -Lack of hair.      -Clear color.

### **Types of visible mucous membranes:**

- Conjunctival mucous membrane      -Oral mucous membrane
- Nasal mucous membrane              -Vaginal or scrotal membrane

### **Normal characters of mucous membrane:**

- Pale rosy in color, shining and free from any abnormal lesions or discharge.

### **Abnormalities of the mucous membrane:-:**

**A-Color:** *1-Pale color as in case of:* -Anemia except hemolytic one.

- Heavy infestation by parasites.    -Dehydrated or debilitated animal.

*2-Congested as in case of:* Febrile disease.    - Hyperthermia

- Conjunctivitis      - Trauma      -Obstruction of jugular V.

*3-Cyanosed as in case of:* -Brain disease.

- Carbon monoxide poisoning    -Cardiovascular or respiratory diseases.

*4-Yellowish or Icteric as in case of:*    -Jaundice.    - Leptospirosis

- Liver diseases      - Fascioliasis              -Hemolytic anemia

- Hypophosphatemia.

*5-Petechial hemorrhage as in case of:-*

- Septicemia.

## Respiratory System in Large Ruminants

### (I)-History Taken About Diseases of Respiratory System

- 1-Has the animal cough?
- 2-Has there been a nasal discharge (serous, mucoid, or stained with blood).
- 3-Has the animal wheeze?
- 4-Is the breathing more rapid?
- 5-Has the animal dyspnoea?
- 6-Ask about previous illness and medication? (Past history)
- 7-Has the animal sneeze?

### II)-Manifestations of Respiratory Diseases in large Ruminants:

#### 1-Dyspnoea: (difficult respiration):-

##### \*Manifestations of dyspnoea:

-Mouth breath. -Dilated nostrils. -Pumped anus -Abnormal respiratory rhythm or type -Extension of head and neck -Cyanosis of mucous membrane

##### \*Diseases associated with dyspnoea:-

-Stenosis of upper respiratory tract, -Bronchopneumonia -Bronchitis  
-Impaction, -Pulmonary odema and congestion, -Traumatic pericarditis

#### 2-Cough as in case of :

-Bronchitis, -Parasitic pneumonia, -Interstitial pneumonia (viral pneumonia) -  
Pericarditis, -Pneumonia (bacterial pneumonia), -Pleurisy

\*Inducing of cough by closure of nostrils or pressure on larynx or tracheal rings.

**3-Epistaxis (bleeding from nostrils) as in case of :-**

-Trauma            -Pulmonary hemorrhage, -Rhinitis            -Anthrax            -High  
blood pressure.

**4-Sneezing:**

-Rhinitis        -Aspiration pneumonia        -Inhalation of irritant smoke.

**5-Nasal Discharges as in case of:**

-Bacterial pneumonia, -Chronic bronchitis - IBR(Infectious Bovine  
Rhinothoracitis), -Gangrenous pneumonia. -Rhinitis

-Pyogenic infection of Paranasal sinuses.

**Nasal discharge may be:**

-Serous (in early stage of diseases or mucoid in late stage or after secondary  
bacterial infection).

-Contain gas bubbles.

-Copious (acute diseases or scanty in chronic form of disease).

-Unilateral (in unilateral affection of upper respiratory tract) or bilateral in  
affection of lower respiratory tract.

-Tinged with blood        -With bad odor as in case of neglected case of infection or  
in gangrenous pneumonia

### **6-Abnormal Respiratory Sound (stridores) as in case of:**

- Choke.      -Laryngeal paralysis (roaring sound with inspiration)
- Soft palate paralysis (roaring sound with expiration)
- Fractured nasal bone (roaring sound with both expiration & inspiration)

### **7-Involuntary Movement Of Nostrils as in case of :**

- Laryngeal edema.                      -Dyspnoea

### **8-Abnormal resp. rate, type, rhythm or depth:-**

(Mentioned before)

### **Methods of Examination Of Respiratory System**

- (I)-Examination of the nasal region & paranasal sinuses.
- (II)-Examination of the larynx, pharynx and trachea (area of throat).
- (III)-Examination of the lungs and pleura (chest).
- (IV)-Special methods of examination.

### **(I)-Examination Of Nasal Region & Paranasal Sinuses:**

- 1-Signs of health of the muzzle:    -Moist muzzle.
  - Free from nasal discharge.              - Free from of any lesion
- 2- Nasal discharge. 3- Movement of nostrils. 4-Abnormal sounds are mentioned before

**5-Expired air:** Can be examined by holding a paper in front of the nostrils to determine it's strength and to detect are there unilateral obstruction or not.

Expired air: has acceptable or aromatic odor but it's may be offensive as in case of:-Gangrenous pneumonia. -Neglected cases of stomatitis.

-Accumulation of nasal discharge in the nasal cavity, -Ketosis (Acetone odor).

### **6-Paranasal sinuses (maxillary and frontal sinuses).**

\*Can be examined by:

**A-Inspection:** - To determine any abnormalities at the area of sinuses.

**B- Palpation:**-To determine temperature, pain, swelling or fracture.

**C-Percussion:** Normal sound is → tympanic

-Abnormal sound is → dull as in case of in paranasal sinusitis or empayemia.

### **(II)-Examination of Larynx, Pharynx And Trachea (Throat)**

Examination the area of throat occurred by:

**A-Inspection:** - To determine any swelling at the area of throat which may be inflammatory or non-inflammatory.

**B-Palpation:**-To determine the nature of any swelling either:

#### **1-Inflammatory as in case of:**

-Actinobacillosis. -Inflammation of retropharyngeal LN. -Pharyngitis.

#### **2-Non-inflammatory as in case of:**

-Choke -Goiter -Pharyngeal edema

-Internal examination of the pharynx, larynx and trachea can be occurred by using of endoscope to detect any lesions in the mucous membrane or lumen.

**C-Auscultation of trachea:** Normal sound is → resembling to “*CH*” letter

-Abnormal sound may be:

***1-Dry rales*** as in case of → Acute bronchitis.

***2-Moist rales*** as in case of → Chronic respiratory inflammations.

***3-Harsh sound*** as in case of → Early stage of pneumonia.

### **(III)-Examination of the Lungs & Pleura (Chest)**

1-Inspection to determine any abnormal respiratory types rate.. . etc.

2-Palpation: to determine the existence of pain as in case of fractured ribs or pleurisy.

3-Percussion: is of low value in large ruminant because of thick skin.

4-Auscultation: area of percussion and auscultation.

\*Normal auscultation of the lung: is vesicular sound (VF)

\*The lung auscultation should be preceded by artificial hyperpnoea by exercising or walking the animal.

#### **Abnormal Sounds By Auscultation:**

**1-Dry rales as in case of:** -Spasm in bronchial muscles.

-Bronchitis – Early stage of pneumonia

**2-Mnoist rales as in case of:**

-Pulmonary edema –Bronchopneumonia

-Chronic bronchitis –Pulmonary hemorrhage.



**3-Crepitant rales as in case of:**

-Bronchiolitis                      -Interstitial pneumonia

**4-Emphysematous sound as in case of:-**

-Pulmonary emphysema                      – Pneumothorax.

**5-Frictional sound as in case of: -** -Pleurisy    -Pericarditis

**6-Absence (dull) sound as in case of:-**

-Tumor            -TB.            -Consolidation of lung            -Lung collapse.

**7-Grunting sound:-**

Grunting means that forced expiration associated with closed epiglottis and it is usually associated with painful conditions either in thoracic or in the abdominal cavity.

**(\* Pulmonary origin of grunting sound are:**

-Pleurisy, -Traumatic pericarditis. -Sever pneumonia, -Pulmonary emphysema

**(\* Abdominal causes of grunting sound are :**

1-Sever pain in urogenital organs as in                      -Vaginitis    -Urethritis

-Urolithiasis    – Cystitis            -Nephritis – Pyometria            -Peritonitis

2- Traumatic reticuloperitonitis., 3-Distended organs as: - Bloat    – Impaction

**N.B. Grunting sound:** Usually accompanied with chest or abdominal pain.

**Special Methods Of Examination Of Respiratory System:**

-X-rays, - Ultrasonography, - ECG, - Blood gas analysis

Endoscopies

## **Digestive System in Large Ruminants**

### **A-Manifestations of Alimentary Tract Disorders:-**

#### **(I).Abnormal prehension:-**

\*Prehension in cattle by using of the tongue

#### **\*Causes of abnormal prehension :-**

-Tetanus, -Trauma in the jaw or mandible, -Stomatitis, -Glossitis, -Foreign body in the mouth, -Actinobacillosis, -Actinomycosis, -Foot and mouth disease

#### **(II)-Abnormal mastication:-**

\*Problems in mastication in large ruminants are rare but some animal may drop the food from the mouth and other may retain the food in the mouth when there is problem in mastication.

#### **(II)-Pica:-**

\*Cases of pica in large ruminants are few and it is usually due to deficiencies and it may be manifested in the form of eating of abnormal or unusual diet of large ruminants, excessive licking or urine drinking

#### **\*Causes of pica:-**

-Rabies, -Actinomycosis, -Water deprivation, -Salt deficiency, -Lack of roughage, -Hypophosphatemia, -Ketosis (acetonemia)

#### **III)-Excessive salivation (sialosis):-**

\*Sialosis or excessive salivation resulted either from excessive production of saliva or problematic process of swallowing or deglutition or as a response of painful condition in the oral cavity.

**\*Causes of sialosis or excessive salivation:-**

-Hypomagnesaemia, -Esophageal obstruction, -Stomatitis, -Lead poisoning, -Foot and mouth diseases -Pharyngeal paralysis or pharyngitis, -Calf diphtheria, -Esophageal obstruction, paralysis or esophegitis.

**(IV)-Regurgitation of food:-**

\*Uncommon in large ruminants as the regurgitation is considered as a normal step of rumination, but when it occurred outside the mouth or involuntary it considered as abnormal.

**\*Causes of regurgitation:-**

-Megaesophegus -Oesophegitis -Pharyngeal paralysis, obstruction or pharyngitis  
-Hypomagnesaemia.

**(V)-Dysphagia:-**

\*Swallowing or deglutition means that transportation of masticated food from the oral cavity to the stomach through the pharynx and esophagus and any abnormalities in the swallowing process reflected on the animal in the form of dysphagia (painful and/or difficult swallowing).

**\*Causes of dysphagia:-**

-Esophageal diseases (obstruction, paralysis, inflammation, .....etc.).

-Pharyngeal diseases (obstruction, paralysis, inflammation.....etc.)

**(VI)-Abnormal shaped abdomen:-**

\*Abnormal shaped abdomen in large ruminants may be either by increased sized (distended) or reduction in the size of the abdomen.

**\*Causes of distended or increased sized abdomen:-**

- Abomasal displacement      -Tempany      -Ascitis or liver diseases.
- Impaction      -Urine retention      -Pyometria
- Normal after heavy meal or in the late stage of pregnancy

**\*Causes of decreased sized abdomen:-**

- Pyelonephritis      -Sever diarrhea      -TB. or liver abscess.
- Starvation, malnutrition or deficiencies

**(VII)-Constipation and tensmus:-**

\*Constipation occurred when there is reduction in the movement of alimentary tract resulting in passage of small hard amount of faecal matter.

\*Constipation may be associated with tensmus or straining or signs of pain specially when there are problems in the pelvic cavity, alimentary tracts organs or urogenital organs.

**\*Causes of constipation:-**

- Fever      -Tetanus      -Septicemic conditions
- Zinc poisoning      -Ruminal atony      -Traumatic reticulitis
- Lack of water      -Indigestion      -Ketosis (acetonemia)

- Abomasal impaction    -Hepatitis                      -Abomasal displacement (right)
- Ruminal impaction    -Tapeworm infestation

**(VIII)-Colic:-**

\*Signs of colic in large ruminants in the form of restlessness, kicking of the abdomen, or rising and laying down frequently are similar to that of horses but in horse are clearer than that in large ruminants.

**\*Causes of colic:-**

- Peritonitis    -Traumatic reticulitis
- Abomasitis    -Omasal or abomasal impaction
- Ruminal tympany    - Abomasal displacement
- Impaction (lactic acidosis)                                  -Hepatitis –Cystitis
- Traumatic pericarditis    -Urolithiasis.

**(IX)-Diarrhea or enteritis:-**

\*It is one of the most common problem in large ruminants and there are many factors that affecting in the type of diarrhea according to age of the animal, physical conditions of the animal, feeding system, aim of breeding, infectious agents(virus, bacteria, protozoa.....etc.) as well as physical causes of diarrhea .

**\*Causes of diarrhea in young calf:-**

- Coccidiosis                                  -Colibacillosis                      -Salmonellosis
- Sodium chloride poisoning

-Copper and vitamin A deficiency

-Lead, mercury and nitrate poisoning  
management

-Dietary scour due to bad feeding

-Rotavirus, Adenovirus or Enterovirus infection ( in the first week or in the first few days of the life).

**\*Causes of diarrhea in adult and growing cattle:-**

-Some case of lactic acidosis (ruminal impaction)      -Fascioliasis

-Salmonellosis      -Antibiotic induced diarrhea.      -Aflatoxicosis

-Parasitic gastroenteritis

**(X)-Ruminal atony and lack of rumination:-**

\* It is a condition which characterized by lack of ruminal movement and lack of rumination together with decrease of food intake and decreases the amount of faecal matter output

**\*Causes of ruminal atony and lack of rumination:-**

-Acidosis or alkalosis, -Vagal indigestion, -Abdominal pain

-Sudden change in the diet, -Ruminal tympany and impaction      -Traumatic reticulitis, -Prolonged oral use of sulphonamide and antibiotics.

**(B)-Examination of Oral Cavity, Pharynx and Esophagus**

\*Examination of the oral cavity, pharynx and esophagus should be done completely by the normal physical methods(palpation, percussion ..... ) to detect the normal and abnormal characters of each organs and to detect the main cause of

the mentioned manifestations as salivation, dysphagia, abnormal prehension and mastication .....etc.

### **C- Examination of The Abdomen (stomach)**

\*Inspection of the abdomen to detect the abnormal distension or decreased sized abdomen and to detect another manifestations of alimentary tract disorders that related to the abdomen as colic, lack of rumination, diarrhea, constipation.....etc.

#### **\*Physical Examination Of The Stomach:-**

##### **(I)-Rumen:**

1-It's the first and the largest part of the stomach represents about 80% of the total area of the stomach and it is presented on the left side of abdomen and it can be examined (inspection, palpation, percussion or auscultation) at the left sublumbar fossa.

3-Its capacity about 135 – 225 liters.

2-There is depression at the external surface of the rumen which corresponds to projection from inner surface. Called ruminal pillar which divides the rumen into 2 sacs (dorsal and ventral ruminal sacs).

3- **Palpation of the rumen:** \*Normally → “**Resilient**” palpation and abnormally as in case of :-

\***Doughy** palpation as in case of → Impaction.

\***Emphysematous** palpation as in case of → Tympany.

\***Painful** palpation as in case of → Peritonitis. -Traumatic reticulitis

4-**Auscultation of the rumen:** Normally “**Gurgling or Booming**” sound in the normal rate of 2-5 / 2minutes, the sound occurred due to the movement of the fluid and food particles in the rumen.

## **5-Abnormal auscultation of the rumen :**

**\*Increased ruminal sound** as in case of :- -Early stage of diarrhoea.

-Early stage of tympany -Vagal indigestion -Esophageal obstruction

**\*Decreased ruminal sound** as in case of :-

-Ketosis(acetonemia) -Febrile condition, -Vagal indigestion Mild  
impaction, -Abomasal displacement. - Simple indigestion, Traumatic reticulitis

**\*Absent of ruminal sound** as in case of :-

-Acute impaction. -Severe tympany -Abomasal impaction

-Diaphragmatic hernia -Late stage of vagal indigestion -Ruminitis.

-Sugar beet, arsenic or organophosphorous poisoning.

***6-Percussion of the rumen*** Normal percussion resembling to “**Resonant sound**”  
while abnormal percussion may be :

***\*Dull*** percussion as in case of → Impaction.

***\*Tympanic*** percussion as in case of → Tympany.

### **(II)-Reticulum:**

1-It follows the rumen and it is the smallest part of the stomach, represent about 5% of the total size of the stomach, it is the most cranially situated compartment of the stomach opposite to 6-8<sup>th</sup> intercostal spaces on the left side of the abdomen.

2-Normal auscultation of the reticulum is “**Swishing sound**”.

3-The sound present for few seconds and disappeared and reappeared again according to the ruminal movements and the sound disappeared in case of:-  
-Febrile condition -Severe impaction. -Traumatic reticulitis.

### **(III)-Omasum:**

1-It follows the reticulum and represent 8% of the total size of the stomach, lies on the right side of the medium plain of the body and rest on the abomasum.



3-It cannot be examined clinically because it's rested on the abomasum, so examine the other three compartments of the stomach which can gives of point of view about the healthy states of the omasum.

**(IV)-Abomasum:** 'True stomach' or "glandular stomach "

1-It's ressembling the monogestric stomach in mono-gastric animal. compressing about 7% of the total size of the stomach.and it's '**U**' shaped structure laying on the abdominal floor on the right side opposite to 7-9<sup>th</sup> ribs or intercostal spaces.

2-The sound called "***tinkling or high pitched metallic sound***"once per 15 minutes and can be stimulated by tactail percussion over the abdomen.

3-Absence of the abomasal movement as in case of:-

-Abomasal displacement (right or left) -Impaction- -Abomasal ulcers.

**N.B.** \*Examination of the intestine not available clinically because it occupyes small area of the abdominal cavity due to large capacity of the stomach. But we can take point of view about the intestinal healthy status by inspection as → Diarrhoea or Constipation.

**NB.** \*Animal can ruminat about 15-20 times per day each time varies between 2- 45 minutes and it is usually occurred in laying position as well as the young calf begines to ruminate after 6-8 months of age.

## **Urinary System in Large Ruminants**

### **Pointes of examination:-**

(A)-Manifestation of urinary disorders.

(B)-Physical examination.

(C)-Special methods of examination.

### **(A) Manifestations of Urinary Disorders**

**1-Posture of urination:** Female cattle urinate by abduction of hind legs and raise the tail and urinate and male bull may protrude the penis outside the prepuce and may urinate during walking, eating . . . etc.

-Abnormal posture of urination may be associated with:

-Cystitis.

-Urine retention.

-Nephritis.

### **2-Frequency of urination:**

\*Normal frequency up to 9 times / day.

\*Frequency may be increased as in case of:

-Cystitis.

-Calculi (incomplete obstruction).

-Increase the fluid intake especially in winter.

-Injection of diuretic.

\*Frequency decreased as in case of:

-Dehydration.

-Urethral obstruction.

-Diarrhea.

### **3- Anuria & Dysuria:**

\*Anuria means that complete absence of urination which may be associated with painful urination (dysuria), while stranguria means that dripping of urine as in case of:

-Cystitis.      -Urethral calculi.      -Urethritis.

-Spinal cord trauma or pressure.      -Hemorrhage into urinary tract.

**4- Haematouria:** Means that, presence of blood in the urine as in case of:

\*Blood parasites.      \* Hypophosphatemia.      \*Pyelonephritis or cystitis

\*Trauma in the kidney or urethra.      \*Urolithiasis or urethritis.

\*False use of urethral catheterization.

**5- Pyuria:** Means that, presence of pus in the urine as in case of:

\*Inflammatory lesions in the      \*Pyelonephritis.

\*Abscess in the kidney, U.B. or urethra.

### **\*\*\*Physical Examination of The Urinary System**

#### **I- Palpation:**

##### **(I) Kidneys**

1-Palpation of kidney in large ruminant usually takes place by the rectal palpation. We can palpate the caudal pole of the right kidney and the left kidney can be palpated easily during this procedure in small and medium sized animals.

2-Normally left kidney its position varies according to the degree of fullness of the rumen as when the rumen is fully distended, the left kidney present ventral to the transverse process of 5 & 6<sup>th</sup> lumbar vertebrae. While when the rumen not distended, the left kidney lies ventral to transverse process of 1, 2 or 3<sup>rd</sup> lumbar vertebrae "*physiologically wandering kidney*".

3- Normally right kidney present ventral to transverse process of the 2, 3<sup>rd</sup> lumber vertebrae.

**\*\*\*Points of Examination :**

**A-Size: 1- Increased as in case of:**

- Neoplasm.
- Hydronephrosis.
- Acute nephritis.
- Pyelonephritis.

**2-Decreased as in case of :**

- Dehydration.
- Advanced chronic interstitial nephritis.

**B-Pain reaction:** Usually in acute conditions as nephritis.

**C-Lobulation::**

\*Normally the surface of the kidney in cattle lobulated, so abnormally loss of the lobulation may occurred in neoplasm, abscesses or hydronephrosis pyelonephritis or nephritis

**(II) Ureters**

1-Normal ureters are not palpated during rectal examination.

2-May be palpated as in:

- \*Pyelonephritis.
- \*Urine retention (calculi)

**(III) Urinary Bladder**

1-The urinary bladder lies under the rectum in male animal while under the vagina in female.

2-When the urinary bladder full, it extends further into the abdominal cavity.

3-The urinary bladder can be palpated from the rectum or vagina if necessary as in urethral catheterization.

4-Over distension of urinary bladder occurs in case of urine retention or calculi [in this case it should be palpated with care to avoid its rupture].

5-Palpation of the urinary bladder may be painful as in cystitis.

#### **(IV)- Urethra**

1-In female the external urethral orifice can be examined by using vagina speculum and its present at the floor of the vagina 8-10 cm. from the vagina.

2-Pelvic portion of the urethra can be examined rectally.

3-Sigmoid flexure is characteristic in male urethra and it's considered as the predilection sites of urolithiasis.

#### **NB:**

\*Animal can urinate about 12-15 liters per day or in the average of

1 ml./kg Bwt. / hour. For example if the animal body weight is 500 kg. so it can urinate  $1 \times 500 \times 24 = 12000$  ml (12 liters/day).

#### **\*\*\*Special Methods of Examination of Urinary System.:**

1-Urethral catheterization.

2-Ultrasonography.    3-X-ray    4-Urinalysis    5- Rectal examination

6-Kidney function test (urea and creatinine level).

## Skin in Large Ruminants

\*Skin is a stratified tissue consists of 2 major layers:-External epidermis.

-Internal dermis with sweat and sebaceous glands.

### Functions of the skin:

1-Protects the body from physical, chemical or biological invaders.

2- Plays a role in regulation of body temperature and electrolytes.

3- The main sensory organs.

4- Liberation of vitamin D3 after exposure to sunlight.

### Points of examination of the skin:

A-Inspection: 1-Skin coat to detect the presence of: . -Abnormal Color

-Ectoparasites -Appearance -Lesions or pruritis or burn.....etc.

2- Skin hair to detect presence of alopecia or symptoms of nutritional deficiency as in copper deficiency.

B-Palpation: to determine the skin elasticity and examine the sub-cutaneous tissue or detect the skin temperature and the nature of the presence lesions.

C-Special methods: Skin Scarping Test – Skin Biopsy – Ultraviolet rays examinations.

### A-Inspection Of The Skin

#### (I)-Color of The Skin Coat

1-It's difficult to see the skin coat color except in hairless area as udder, belly, and inner aspect of the thigh or ears.

2-Normal color is → grayish red.

3-Abnormal colors may be:

**-Pale** as in case of → Dehydration – Anemia.

**-Yellowish** as in case of → Jaundice – Haemolytic anemia.

**-Inflammatory** as in case of → Dermatitis or s/c inflammation.

## **(II)-Appearance of The Skin Coat:**

1-The skin coat of the healthy animal is shiny and smooth depend upon the activity of sebaceous and sweat glands.

2-Abnormalities may be indicated to the following diseases:

-Mange                      – Zinc or vitamin-A deficiency.

-Hyperkeratosis              – Dehydrated animals.

**(III)-Pruritis:-** Which manifested in the form of restlessness, and scratching of different parts of the body. As in case of:

-External parasites.   -Allergic condition.   -Dermatitis.   -Mange

## **B-Skin Lesions:**

### **(I)-Primary Skin Lesions:**

**1-Macules** as in case of → early stage of pox              –Tick bites.

**2-Vesicles** as in case of → Vesicular stomatitis or FMD

**3-Pustules** as in case of → Pastular dermatitis.

**4-Wheals** as in case of → Urticaria – Allergic conditions.

**5-Papules** as in case of → Eczema – Pox.

## **(II)-Secondary Skin Lesions:**

**1-Dandruff or scales** or pityriasis as in case of → -Mange –Vit. A deficiency  
-Ringworm.

**2-Crust or scab** as in case of: → - Pox –Dermatitis.

**3-Erosion or ulcers** as in case of → FMD –Ulcerative dermatitis –Burns.

## **C-Examination of Skin Hair**

\*The most common lesion of the skin hair is **Alopecia**, which means that localized or generalized loss of hair which may be due to:

**1-Infectious cause:** - Mange – Ring worm.

**2-Nutritional causes:** Vitamin A or zinc deficiency –Copper deficiency  
– Cobalt deficiency.

**3-Chemicals:** as Mercury or Selenium poisoning (selenosis).

**4-Physical** causes: as in case of burns.

**5-Follicular dysfunction** or acne disease.

**NB. Ectoparasites:** Can be detected by necked eye and indicated to skin diseases as fleas, ticks or lice.

## **D-Palpation of The Skin**



\*Palpation of the skin is important to examine skin temperature, skin elasticity and subcutaneous tissues.

**(I)-Skin Temperature:**

1-Skin temperature is usually within the normal range of the normal body temperature while the abnormal conditions of skin temperature may be :-

**2-*Generalized hotness*** of the skin as in case of:

-Febrile condition.

-Hyperthermia

**3-*Localized hotness*** as in case of: - Burns – Abscesses – Arthritis – Dermatitis or other localized inflammatory condition as localized hotness of the skin of the udder in case of mastitis.

**4- *Generalized coldness*** as in case of Hypothermia, Prior to death – Dehydration – Hypocalcaemia.

**(II)-Skin Elasticity:** 1-Skin elasticity can be determined by skin fold test by lifting or grasping a fold of the skin in the area of the neck or shoulder area and leave it then detect the needed time for returning the skin fold to its normal condition.

**2-*Normal time is* → 1-3 seconds.**

3-Increased time of the skin fold test as in case of:

-Dehydration

-Emaciated animals.

**N.B.:**\* Swelling of the Sub-cutaneous tissue may indicate to, Cellulitis or phlegmon due to:- 1- Injection of irritant drugs S/C as chloral hydrate.

2-S/C abscesses – Haematoma – Enlarged lymph nodes. S/C edema.