



Tikrit University  
College of Veterinary Medicine

# Lecture Title: GENERAL PATHOLOGICAL CONDITIONS

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**University of Tikrit**  
**College of Veterinary Medicine**  
**Dept. of Vet. Public Health/ Meat Hygiene Division**  
**Meat Hygiene Course**

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**GENERAL PATHOLOGICAL CONDITIONS**

**Fever (Pyrexia)**

Fever is an abnormal elevated body temperature. It may be classified as septic and aseptic according to the presence or non presence of an infection. In *septic fever* the infection is caused by viruses, bacteria, bacterial toxins, protozoa and fungi. *Aseptic* fever may be caused by a) tissue necrosis as seen in muscle degradation due to intermuscular injection of necrotizing substances, in rapidly growing tumours undergoing necrosis or lysis of burned tissue; b) by chemicals or surgery. In former by an administration of drugs and in latter by breakdown of tissue and blood. c) during anaphylactic reaction of antibodies to the foreign antigens.

**Antemortem findings :**

1. Chills and sweating
2. Dehydration
3. Elevated body temperature
4. Increased pulse and respiration
5. Depression and dullness
6. Anorexia

In septic fever the other signs may include

7. Diarrhoea and vomiting
8. Urinous or phenolic odour or breath
9. Shock, convulsions and coma

**Postmortem findings :**

1. Rigor mortis.
2. Putrefaction.
3. Congestion of subcutaneous blood vessels and carcass.

4. Enlarged lymph nodes.
5. Evidence of cloudy swelling of liver, heart and kidneys.

**Judgement** : Carcass is *condemned* When there are a clear signs of fever which is associated with presence of bacteria or bacterial toxins in the blood .If typical signs of fevered carcass are not seen carcass should be held for 24 hours after slaughter and re-examined.

**Differential diagnosis** : Hyperthermia. In hyperthermia the elevation of body temperature is caused by physical factors such as high environmental temperature or prolonged muscular exertion, particularly in humid weather.

### **Emaciation**

Emaciation is a common condition of food animals and is characterized by a loss of fat and flesh following the loss of appetite and starvation. It is associated with gradual diminution in the size of organs and muscular tissue as well as edema in many cases. The organs and muscular tissue appears thinner, moist and glossy.

Emaciation may be associated with chronic diseases and parasitic conditions such fascioliasis in cattle and sheep, neoplasms, tuberculosis, John's disease, and poor teeth and lack of nutrition. Emaciation is a postmortem descriptive term which should be differentiated from thinness.

### **Antemortem findings :**

1. Low weight
2. Wrinkled, dry leathery skin
3. Rough hair coat
4. Prominent bones and sunken eyes
5. Odema.

### **Postmortem findings :**

1. Serious atrophy of fat in the carcass and organs especially the pericardial and renal fat .
2. The fat is watery. Tranluscent or jelly-like and hangs from the intervertebral spaces.
3. Edema and anaemia may develop

**Judgement** : Animals affected with emaciation should be treated as "*suspects*" on antemortem inspection. Lean animals should be examined well to ensure that they do not have chronic infectious diseases such as tuberculosis and Jon's disease otherwise, the carcass and viscera must be completely condemned . On the other hand, a distinction must be made between emaciation and "*leanness*" (where serious atrophy is

sometimes seen in pericardial and renal fat . While the other fats in In the body are normal . Also, transporting animals over long distances may cause severe serious atrophy, but not any other changes in the muscles or internal organs

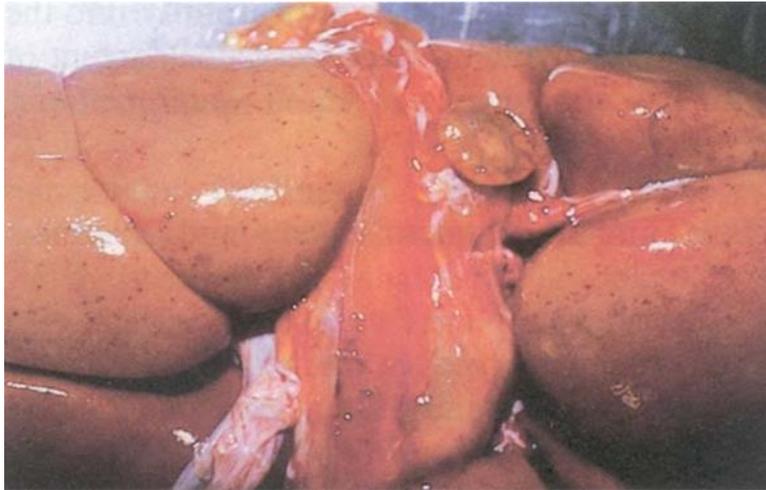
On postmortem examination it is important to assess and differentiate emaciation from leanness. In case of doubt, the carcass may be held in the refrigerated room and the general setting of the carcass should be examined the following day. If the body cavities are relatively dry, edema of muscle tissue is not present and fat is of an acceptable consistency. the carcass may be *passed* for food.

The carcass and viscera must be *condemned* if emaciation is due to chronic infectious disease.

Leanness (Poorness) is often observed in range bulls on poor quality pasture, high milking cows and young growing animals which have had protein deficient diet. The animals are physiologically normal and the reduced fat deposits of the animal carcass are normal in colour and consistency. The reduced muscle tissue is firm and of a normal consistency. The muscle colour is darker than normal, and fat tissue may still be present in the orbit of the eye.



Emaciated cow showing marked reduction of muscle mass



Serous atrophy of renal fat. Note petechial haemorrhages, seen frequently in septicemic diseases.



Hanging gelatinous fat between the spinal process

### **Edema**

Edema is the accumulation of excess fluid in the intercellular (interstitial) tissue compartments, including body cavities.

There are two types of edema:

1. Inflammatory edema (exudate)
2. Non-inflammatory (transudate)

*Inflammatory edema* shows yellow, white or greenish clear or cloudy fluid in the area of inflammation. *Non-inflammatory edema* is an accumulation of fluid in subcutaneous tissue, submucosae, lungs and brain.

Localized edema is noted after:

- a. The swelling of a leg of a cow in prolonged decubitus. This swelling is caused by obstruction of the venous outflow
- b. Interference with the lymph circulation of an organ or area by proliferation of tumours
- c. Inflammation or an allergic reaction

*Systemic or generalized edema* may occur secondary to congestive heart failure or is caused by low protein levels in the blood. The latter may be associated with:

- severe malnutrition
- gastrointestinal parasitic infestation
- chronic liver disease
- damage to the vascular endothelium by toxins and infectious agents

Anasarca is a form of edema of the subcutaneous tissues. Ascites is an accumulation of fluid in the peritoneal cavity. Hydrothorax is an accumulation of fluid in the pleural cavity. Hydrothorax may accompany traumatic pericarditis, ascites, cirrhosis of the liver and round worm infestation in sheep. Anasarca may be caused by toxæmic infection.

**Antemortem findings :**

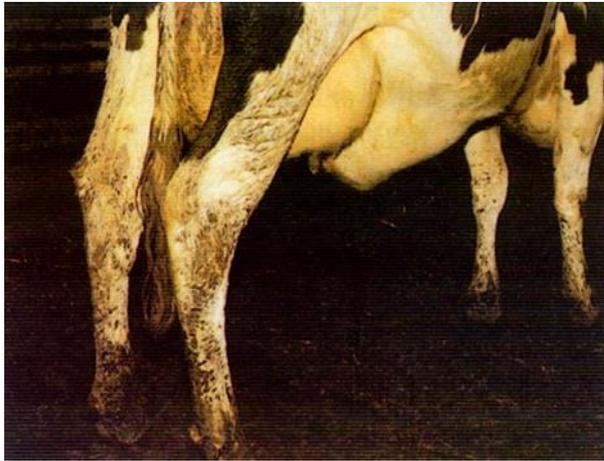
1. Depressed and drowsy
2. Swelling of the mandible, legs, shoulder, brisket and abdomen
3. Edematous tissue is cool upon touch and is of a firm, doughy consistency.

**Postmortem findings :**

1. Wet, sloppy musculature which pits on pressure
2. Accumulation of clear or faint yellow fluid in the thorax, abdomen and subcutaneous tissue

**Judgement:** Animals affected with generalized edema may be *condemned* on antemortem inspection. In less severe non-generalized cases, animals are treated as “*suspects*”. When making a judgement of a carcass affected with edema, it is important to know the underlying cause of the edema and also to know the significance of all other lesions found in the carcass.

The carcass may be *totally or partially condemned* depending on the extent and cause of the condition. The presence of localized edema necessitates *removal* of the affected area. The carcass is then *approved*. Edema associated with diseased conditions such as traumatic pericarditis, malignant neoplasm or septicemia requires *condemnation* of the carcass because of the primary condition.



Abdominal edema caused by liver disease.

### **Septicemia**

Septicemia is a morbid condition caused by the presence of pathogenic bacteria and their associated toxins in the blood. The positive diagnosis of septicemia can only be made by isolation of the causative organism from the blood stream. This is not practised on routine antemortem examination of animals in abattoirs; however, the evidence of septicemia is determined by the antemortem and postmortem findings.

#### **Antemortem findings :**

1. Depression
2. Changes in body temperature. The temperature is usually elevated but it can also be normal and subnormal during the terminal phases.
3. Difficult and rapid breathing
4. Shivering and muscle tremors
5. Congestion or petechial haemorrhages of conjunctivae, mouth and vulvar mucosae

#### **Postmortem findings :**

1. Enlarged edematous or haemorrhagic lymph nodes
2. Degenerative changes in parenchymatous organs (liver, heart and kidneys)

3. Congestion and petechial or ecchymotic haemorrhages in kidney, heart surface, mucous and serous membranes, connective tissue .
4. Splenomegaly
5. Inadequately bled-out carcass as a result of high fever
6. Blood stained serous exudate in abdominal and/or thoracic cavities.
7. Anaemia resulting from bone marrow depression and icterus may also be present.

One or more lesions may be absent. However if one significant lesion is present, such as, generalized acute lymphadenitis, the carcass must be condemned. All gross lesions in the carcass and organs must be considered before the animal is judged septicemic.

Septicemia is found in many infectious diseases including acute forms of salmonellosis, leptospirosis, and in anthrax in cattle.

**Judgement :** The animals, animal carcasses, offal and other detached portions of animals affected with septicemia are *condemned*. In borderline cases bacteriological examination should be done wherever possible.

### **Toxaemia**

The identification of toxaemia presents some difficulties on routine antemortem and postmortem examination. The gross lesions differ depending on the specific organisms and toxins involved. Also the clinical signs of toxaemia simulate a variety of other pathologic conditions.

Toxaemia is defined as the presence and rapid proliferation of exotoxin and endotoxin derived from microorganisms or produced by body cells in the blood-stream. Clinical signs and postmortem findings are similar to those of septicemia.

### **Antemortem findings :**

1. Normal or subnormal temperature. Fever may be present if toxaemia is due to microorganisms.
2. Confusion and convulsions
3. Abnormal changes in locomotion;
4. Moribund animal or evidence of pain (noted by grinding its teeth).
5. Animal is not able to rise or rises with great difficulty
6. Dehydration may also be present

### **Postmortem findings :**

1. Haemorrhage in organs

2. Normal or enlarged and edematous lymph nodes .
3. Areas of tissue necrosis
4. Emphysema in cattle
5. Rarely degenerative changes of parenchymatous organs (heart, liver and kidneys).

Toxaemia is frequently associated with:

6. Gangrenous mastitis
7. Metritis
8. Aspiration pneumonia
9. Old wounds and injuries
10. Diffuse peritonitis due to perforation of the reticulum or uterus.

All these signs may not be seen in every animal affected with toxaemia.

**Judgement** : If there is evidence of septicemia or toxaemia the carcass and the viscera should be *condemned* and the implements used during inspection and the hands and arms of the inspector should be washed and disinfected. The primary lesions causing septicemia or toxaemia including metritis, mastitis, pericarditis, enteritis and others, should be observed and recorded as causes of condemnation. Comatose or moribund animals should be condemned on antemortem examination.