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Lecture title: **Meat Hygiene: Judgment on Bacterial Disease Part I**

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Summary:

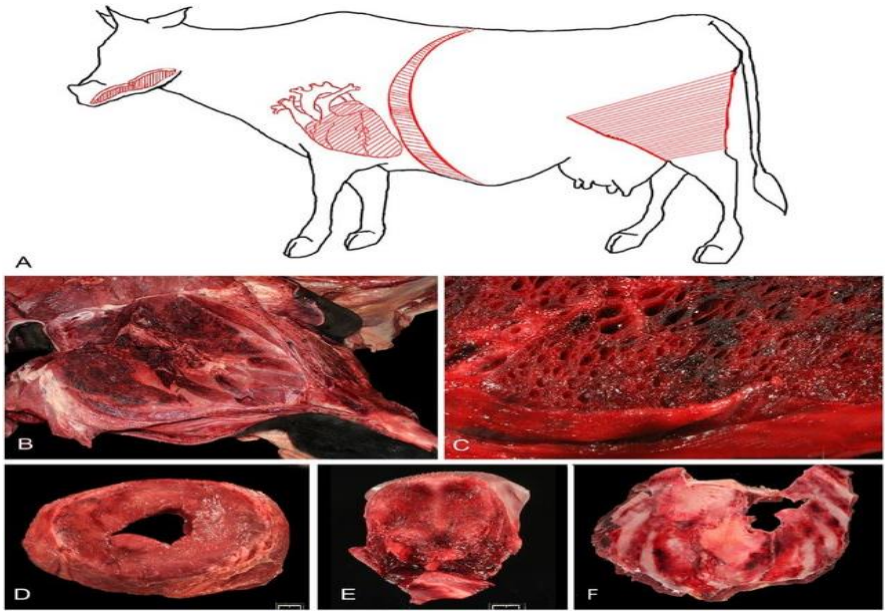
Black quarter (blackleg)

It is caused by *Clostridium. chauvoei.*

Black quarter is an acute infectious disease of cattle and sheep manifested by severe inflammation of the muscle with high mortality.

Post-mortem findings:

- lying on one side with affected hind leg stuck out.
- bloating of carcass and blood-stained frothy exudates from the nostrils and anus.
- dark red to black muscle of the loin, back or leg.
- sponge-like bubbly appearance of the muscles with a rancid odor.
- yellowish, gelatinous subcutaneous tissue and associated gas bubbles.
- blood-stained fluid in body cavities .



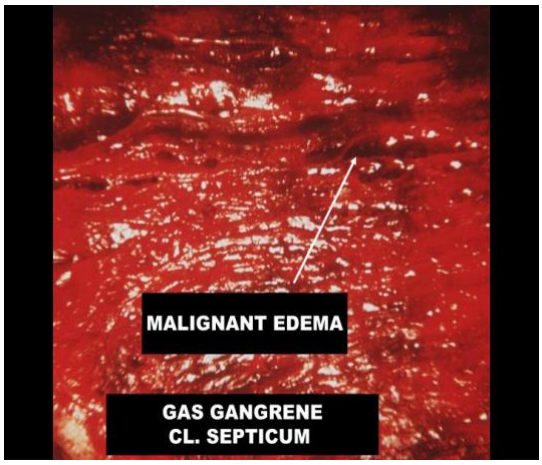
Gross lesions of blackleg in cattle. A. Most commonly affected sites in blackleg cases. B. Classic blackleg necrohemorrhagic myositis in the hindlimb. C. Necrohemorrhagic myositis in hindlimb skeletal muscle with prominent emphysema. D. Necrohemorrhagic myocarditis and fibrinous epicarditis. E. Necrohemorrhagic glossitis primarily affecting the ventral portions of the tongue. F. Necrohemorrhagic myositis of the diaphragm with rib impressions.

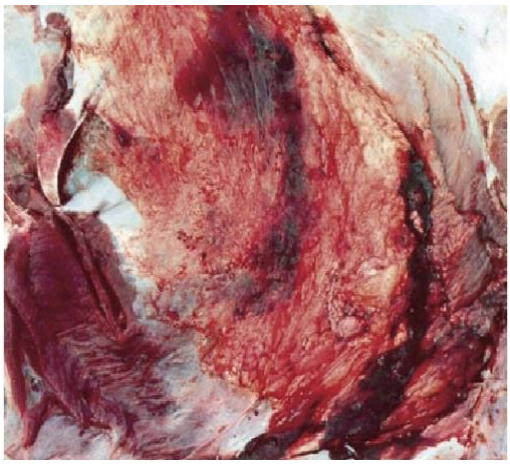
Judgement:
The carcass of an animal affected with blackleg should be condemned.
It is prohibited to slaughter and dress an animal diagnosed with this disease at ante-mortem examination.

Malignant edema:
It is caused by *Clostridium septicum*

Post-mortem findings:
- Gangrene of the skin in area of infection site
- Foul putrid odor is frequently present
- Gelatinous exudate in the subcutaneous and intramuscular connective tissue
- Subserosal haemorrhage
- Accumulation of serous fluid in body cavities
- Muscle tissue is dark-red but has little or no gas

Judgement:
Carcasses of animals affected with malignant edema are condemned.

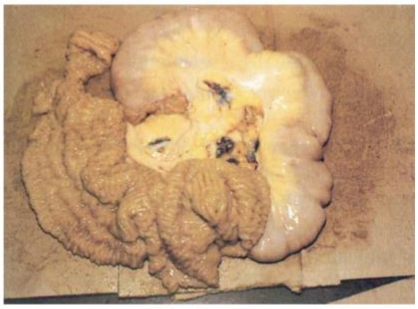




<u>John's disease</u> (bovine paratuberculosis)
Mycobacterium paratuberculosis
It is a chronic, infectious bacterial disease of adult wild and domestic ruminants such as cattle, sheep, and goats.It is characterized by gradual weight loss and chronic diarrhoea

Post-mortem findings:
• thickened and corrugated intestinal mucosa.
• enlarged cecal lymph nodes.

Judgement:
- The carcass of an animal affected with john's disease is approved when generalized systemic signs of disease are not present.
- Thin and slightly moist carcass should be held in the chiller and assessed after 24 or 48 hours. if the dryness and setting of the carcass improves during this time it can be released.
- A carcass with associated edema and emaciation is condemned.



Johne's disease. Thickened and corrugated intestin mucosa.

Top: Thickened intestinal mucosa caused by Johne's disease.
Bottom: Thin, pliable, normal intestine

Brucellosis

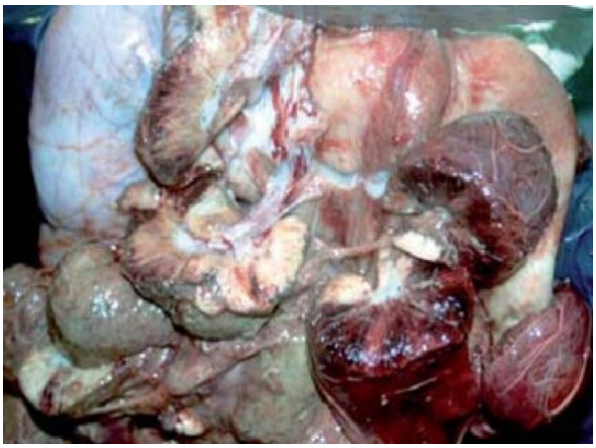
Brucellosis is an important zoonosis in particular in rural areas in developing countries and is an important occupational hazard for veterinarians, meat inspectors, farmers, animal health inspectors and butchers. Brucellosis of cattle is an infectious, contagious disease caused by *Brucella abortus*
characterized by abortion in late pregnancy and a high rate of infertility.
B. melitensis affects goats
B. ovis sheep
B. suis swine.
B. abortus may occur in horses

Post-mortem findings:
In cattle:

1. Occasional inflammation of testes and epididymis
2. Swelling of scrotum (one or both sacs)
3. Edematous placenta and fetus

In sheep:
• in chronic stage enlarged and hard epididymis, thickened scrotal tunics and frequently atrophic testicles.

Brucella abortus -infected aborted fetus with an. acute diffuse severe fi brinous pleuritis



Uterus from a Brucella abortus-infected cow immediately after abortion Several necrotic and haemorrhagic placentomes, characterising a severe and diffuse fi brinous-necrotising and haemorrhagic acute placentitis

Judgement:
Cattle and horse carcasses affected with brucellosis are approved (after removal of affected parts) .as Brucella bacteria remain viable for only a short period in the muscles after slaughter.In acute abortive form (after the miscarriage), cattle carcasses are condemned. sheep, goat and buffalo carcasses require total condemnation. Heat treatment may be recommended in some areas for these species due to economic reasons. Affected part of the carcass, udder, genital organs and corresponding lymph nodes must be condemned.

Salmonellosis in bovines:
S. typhimurium, S. Dublin, S. muenster and S. Newport
Salmonellosis is a disease which occurs in all animals and humans.
In animals, salmonellosis is characterized clinically by one of three syndromes:
a) peracute septicemic form
b) acute enteritis
c) chronic enteritis.

Post-mortem findings:
Septicemic form:
• absence of gross lesions in animals;
• submucosal and sub serosal hemorrhage.

Acute enteritis:
• severe necrotic enteritis of ileum and large intestine caused by Salmonella. typhimurium.
• enlarged, edematous and hemorrhagic lymph nodes
• thickened inflamed gall bladder wall
• fatty change of the enlarged liver

• subserous and epicardial hemorrhage.

Chronic enteritis:
• areas of necrosis in the wall of caecum and colon
• swollen mesenteric lymph nodes and spleen
• chronic pneumonia.

Salmonella organisms are present in the blood, liver, bile, spleen, mesenteric lymph nodes and in intestinal content. In the chronic form, bacteria is present in the intestinal lesions and less frequently in other viscera.

Judgement:
A carcass affected with salmonellosis is condemned.

<u>Haemorrhagic septicemia</u>

Pasteurella multocida type B
It is specific type of pasteurellosis distinct from of other forms of pasteurella infections.

Post-mortem findings:
• subcutaneous swellings characterized with yellowish gelatinous fluid, especially around the throat region, brisket and perineum;
• enlarged hemorrhagic lymph nodes
• hemorrhage in the organs
• pneumonia
• rarely, hemorrhagic gastro-enteritis
• petechial hemorrhage in the serous membranes, which is extensive in some cases.

Judgement:
The carcass of an animal affected with hemorrhagic septicemia is condemned.
If the disease is diagnosed on antemortem examination, an animal should not be allowed to enter the abattoir.Dressing of such a carcass would create potential danger for the spread of infection to other carcasses


Calf diphtheria
Fusobacterium. Sphaerophorus. Necrophorum
Calf diphtheria is an acute oral infection of calves less than 3 months old.
This agent also causes liver abscesses and "foot rot" in cattle.

Postmortem findings:
Inflammation and ulceration with large masses of yellow-grey material in the mouth, tongue, pharynx and larynx Often aspiration pneumonia.

Judgement:
Carcass of an animal affected with local lesions is approved.
Generalized diphtheric lesions associated with pneumonia or toxaemia require the carcass condemnation. The carcass is also condemned if lesions are associated with emaciation.

Tuberculosis

Mycobacterium bovis
it is a chronic disease of many animal species and poultry
It is characterized by development of tubercles in the organs of most species

Postmortem findings:

- Tuberculous granuloma in the lymph nodes of the head, lungs, intestine and carcass. These have usually a well defined capsule enclosing a caseous mass with a calcified centre.
- They are usually yellow in colour in cattle, white in buffaloes and greyish white in other animals.
- Active lesions may have a reddened periphery and caseous mass in the centre of a lymph node.
- Inactive lesions may be calcified and encapsulated Nodules on the pleura and peritoneum
- Lesions in the lungs ,liver, spleen, kidney
- Bronchopneumonia
- Firmer and enlarged udder
- Lesions in the meninges, bone marrow and joints

Judgement :
Carcass of an animal affected with tuberculosis requires additional postmortem examination of the lymph nodes, joints, bones and meninges. Carcasses are condemned where an eradication scheme has terminated or in cases of residual infection or re-infection
the carcass is approved if inactive lesions (calcified and/or encapsulated) are observed in organs and without generalization in lymph nodes of carcass.

Leptospirosis

(Leptospira spp.)
Leptospirosis is an important and relatively common disease of domestic and wild animals and humans.

In cattle, it is manifested by interstitial nephritis, anaemia and mastitis and abortion in most species.

Postmortem findings :

- Anaemia and jaundice
- Subserosal and submucosal haemormage
- Ulcers and haemorrhages in the abomasal mucosa
- Rarely pulmonary edema or emphysema
- Interstitial nephritis
- Septicaemia

Judgement :

Carcass of an animal affected with acute leptospirosis is condemned.
A chronic and localized condition may warrant an approval of the carcass.