CLASS 15:VIRAL DISEASES-FOOT AND MOUTH - BACTERIAL DISEASES-ANTHRAX, HAEMORRHAGIC SEPTICEMIA AND BLACK QUARTER - METABOLIC- TYMPANITES, KETOSIS AND MILK FEVER. MASTITIS AND ITS CONTROL.Foot and Mouth Disease

FMD – Highly communicable disease – cloven footed animals

Causative organism : family : Picornaviridae

Genus : Apthovirus

Smallest of the Animal virus : 7 types virus : O,A,C Asia I, SAT 1,2,3

Transmission : Direct contact : Thro water : manure : Pasture and cattle attendant

Symptom : Incubation period 2 – 5 days : Temperature $40^{o}C$

Drooling of saliva : Loss of appetite

Vesicles in Tongue : gum : inter digital space, udder & teat . Rough coat with long hair, panting. The animal looses appetite and body weight milk production reduced. Lamness on account of painful foot lesions.

Treatment : Nil. External application of anti septics contributes to the healing of ulcers and wards off attacts by flies

Antibiotics may be administered to counter bacterial infections.

Prevention : Thorough disinfection of shed, utensils, clothes of attendants.

Control : Vaccination – polyvalent – once – 4months or varies with type of vaccine

Hoechst 3ml .oil adjuvant : IVPM – 20 ml calves – 40ml adults.

Rinderpest : Most destructive of the virus disease

Causative organism : Virus, Family, paramyxoviridae

Genus : Morbillivirus

X-Breed and Pure bred – Highly susceptible

Transmission : Virus found notably saliva, discharge from eyes, nostrils, urine and faeces.

Incubation period of the disease 3-7 days 4 – 6^{th} day – Temperature $40\text{-}41^{o}C$

Symptom: Loss of Appetite : Lachrymation : dryness of muzzle, arching of back.

Shooting diarrhoea : Ulcers in the mouth 7 – 9 day – ulcers in the lips and Gums

Death – 10^{th} day after on set of symptom

Prevention and Control : Segregation of affected animal periodical and routine. Disinfection of shed.

Control : Vaccination 1.TCRV 2. GTV – Immunity – 3 years 1 ml s/c – Neck

Treatment : Antibiotics and Astringent : Fluid therapy

FROM 1.3.1998 TAMIL NADU PROVISIONALLY DECLARD FREE FROM RINDER PEST – INTENSIVE VACCINATION PROGRAM CONDUCTED

ZERO SURVEILLANCE BEING UNDERTAKEN.

THE SAME VIRUS AFFECTING SMALL RUMINANTS (SHEEP AND GOAT) DISEASE IS CALLED- PPR – PESTE DES PETITS RUMINANTS.

ANTHRAX : Peracute disease affecting cattle, sheep, horses and pigs. **man is susceptible but is not a primary host-wool sorters disease.**

The disease is always fatal in animals

Causative organism : Bacillus Anthracis – Bacterial Disease - sporulation occurs outside the body. spores highly resistant and not killed by heat, light & disinfectant

Symptoms : Peracute – death occurs with in minutes and animal collapses with convulsions

Acute : high rise of temperature : shivering Abdominal pain ; before death blood Oozes out of rectum and nostrils.

All the orifices usually exudate dark tarry blood which does not clot. Death is suspected for anthrax

carcass should not be opened.

Spleen is enlarged 10-15 times its normal size.

Diagnosis : Sudden death : acute bloat : exudation of blood – orifices

Blood smear – presence of large blue rods which pink capsule.

Control : Annual vaccination

A live spore vaccine prepared from a virulent uncapsulated strain of B.Anthracis dose 1ml.

Prevention : Hygiene and sanitation – the carcass of the animals suspected of dying due to anthrax should never be opened. The carcass is burnt of buried in a deep pit and lime is applied.

ANTHRAX

Synonyms : Splenic Fever

Etiology : Bacillus anthracis is a grasn, positive, non motile spore. Forming bacterium of relatively large size (4 to 8µ x 1 to1.5µ) the bacilli grow in chain formation, but may occur singly or in pairs. They from spores after discharge from on infected animal or an opened carcass. The spores are resistant to heat, chemical disinfectants and prolonged drying. Anthrax bacilli have remained viable in soil stored for 60 years in a rubber stoppered bottle.

Transmission : Infection gains entrance to the body by ingestion inhalation or through the skin. It is generally considered that mode of infection is by ingestion of contaminated food or water. Inhalation infection is thought of be of minor importance in animals although the possibility of infection through contaminated dust must always be considered. "Wool sorter's disease" in man is due to the inhalation of anthrax spores by workers in the wool and hair industries. Spread of the organisms with an area may be accomplished by streams, insects, dogs and other carnivores, and wild birds and by faccal contaminate from infected animals.

Clinical findings. : The disease occurs on i. Peracute ii. Acute iii. Chronic and iv. Cutaneous form.

Peracute form: Characterized by its sudden onset and rapidly fatal

i) staggering, difficult breathing, trembling.
ii) Collapse after a few convulsive morements.

Acute form

i. Rise in body temperature (107^0F)
ii. Period of excitement followed by depression.
iii. Respiratory or cardiac distress
iv. Staggering, convulsion and death

v. Bloody discharge from the natural body openings.

Chronic form

Local lesions confined to tongue and throat is absent mostly in pigs but occurs occasimally in cattle, horses

Cutaneous form (or) Localised form

i. characterized by swelling in various parts of the body
ii. Anthrax organism lodged in wound (or) abrasions of the skin.

Human beings.

1. Man may develop localized lesions (Malignant) from contact with infected blood (or) tissue.
2. Acquire fatal pneumonia (wool sorters disease) from inhalation when handling animal by products.
3. Occasionally man develops "Acute meningitis". From systemic involvement, (or) intestinal anthrax from consumption of meat.

Necropsy finding:

i. A carcass suspected for 'Anthrax' should not be opened
ii. Blood smear should be subjected to microscopical examination.
iii. Striking absence of rigor mortis and the carcass undergoing rapid gaseous decomposition.
iv. All natural orifices usually exude dark, blood which does not clot
v. Gross enlargement of spreen

Diagnosis

Microscopic examination of blood smears

a. The organisms is stained by "Polychrome methylene blue".

b. Giemsa stain to demonstrate encapsulated bacilli.

ii. observation of death of guinea pig or mice (experimental animal within 48 hours following inoculation of blood (or) tissue suspension.

Differential diagnosis:

i. Lightning stroke may be confused with anthrax
ii. Acute lepto spirosis,
iii. Anaplasmosis (Gall sickness)
iv. Acute poisoning from bracken fern, sweet clover lead.

Treatment

i. Antibiotics and anti anthrax serum are commonly in treatment
ii. Penicillin - 5 million units twice daily
iii. Streptomycin - 8 to 10 g daily in 2 doses - cattle
iv. Oxytetracycline (5 mg/kg) parentally in the treatment of clinical cases after vaccination in cattle.
v. Anti anthrax serum intravenously in doses of 100 to 250 daily is effective in conjunction with an antibiotic. It is too expensive for routine use.

Prevention: Vaccination - Periodically in endemic area. The vaccine consists of living attenuated strains of the organisms with low virulence but capable of forming spores have been most successful.

Control:

i. Hygiene is the biggest single factor in prevention of spread of the disease.
ii. Careful disposal of infected material in most important

a. infected carcasses should not be opened.
b. Burned (or) buried together with bedding and soil contaminated by discharges.
c. Burial should be atleast 6 feet deep with an ample supply of quick lime

added.

iii. All suspected cases and in contact animals must be segregated .

iv. Disinfection of premises, hides, bone meals, wool hair requires special care.

v. Disection with 5% lysol require to be in contact with spores for at least 2 days.

vi. Strong solutions of formalin or sodium hydrosole (5 to 10%) are probably most effective.

Black quarter :

Acute infectious disease but not contagious - inflammation of muscle, severe toxaemia.

Causative organism : Bacteria – Clostridium chauvoei – gram positive

Anaerobic spore.

Young stock mostly affected – 6months – 2years disease out break which the onset of rainy season.

Symptom : Animals may die with out showing symptom obvious sign – crepitant swelling in hind and fore quarters which crackles when rubbed due to gas in the muscle.

Lameness – Fever – twitching of muscle - affected region is hot and painful but becomes cold and painless.

skin over affected area – dry, hard and dark

Diagnosis : affected part is black or dark red - characteristic rancid smell.

Control: Hygiene and prophylaxis control.

Prevention : vaccination – before onset of rainy season – 5ml –polyvalent s/c (clostridium sp.).

Antibiotics like penicillin and tetracycline may be given.

Haemorrhagic septicaemia (HS)

Causative Org : Bacteria – Pasteurella multocida

Symptoms : i. Acute form : Septicemia

ii. Sub acute form : edematous swelling

iii.Chronic form : with pulmonary infection

Acute High temperature 106^{o}F rapid and Difficult breathing discharge from nostrils and watery faeces dehydration, prostration and death.

Sub acute swelling in the throat, neck, dewlap and Brisket extending upto fore lines

Tongue : Swollen and protruded out

Laboured breathing with stretorous sound

Chronic form : Painful with thick and blood discharge from nostrils.

Treatment : injection of sulphadimidine

Prevention : Vaccination once 1 year – before – rainy season

Control : Isolation – Routine hygiene and sanitation

Mastitis – Inflammation of the udder – physical and chemical changes in milk – major economical loss to dairy industry – due to reduced milk production.

cause : Bacterial origin mainly – Str.agalactiae, Staphylococcus, Coryne bacterium, E-coli.

Transmission: Infection accurs via the teat canal – contaminated environment – skin of udder, milking equipment, milker etc.

Symptoms : Hot, Swollen, painful udder with purulent yellow secretion.

Rise in body temperature enlargement of udder and cessation of milk secretion.

Milk secretion becomes blood stained and may contain pus.

quarters may be completed affected.

In some severe cashes animals may die or toxaemia.

Diognosis : early detection is important by physical examination of the udder.

Many kits are available for diagnosing the disease.

Treatment : Effective drugs of available for treatment

Control: Hygenic measures are important.

a. Animals diagnosed positive should be milked at last.

b. Milkers should wash their hands before milking and should use well washed white overalls.

c. A separate clean cloth for each cow is used for washing the udder with a disinfectant.

d. The first stream of milk from each quarter should not be allowed to drop on floor but collected in a separate container. Milkers should not wet their hands with first stream of milk.

e. Normal milk-room hygiene including washing of milk containers and equipment should be practised.

Milk fever : (parturient paresis, metabolic disease in cows soon after calving

cause :Serum calcium levels fall in cows after calving as a result of failure to mobilize calcium reserves and of the development of negative calcium balance in late pregnancy.

symptoms: Disease flares up with in 72 hours of calving initially the cows show excitement, incoordination of movement muscular tremors in limbs and head, lying in recumbent position with her head directed towards flank. In final stages subnormal temperature, dilatation of the pupil, impalpable pulse, coma and death.

Diagnosis of the disease is based on the occurrence of milk fever in recently calved animals.

Treatment & Control : Dramatic recovery by intravenous administration of 300-400 ml calcium borogluconate withVitamin D3 injected intramuscularly. Continued mixing of ½ liter of supernatant lime water for cow may reduce the incidence.

Ketosis : Acetonaemia – disturbance of carbohydrate metabolism in high producing dairy cattle – hypoglycaemia and apperance of ketone bodies.

Causes : Disease is caused by deranged metabolism of carbohydrate and volatile fatty acids resulting in reduced level of sugar in blood (hypoglycemia), increased level of ketones in blood (ketonemia) and in urine (ketonuria)

Symptoms : Cardinal signs in digestive and nervous type of ketosis usually appear in good milkers from 7 days to six weeks after calving. Loss of appetite, rapid loss of weight and marked reduction in the milk yield observed in digestive type of ketosis. In nervous type symptoms include depression, a starring expression, walking, in cricles, treading with the feet, incoordination of movements, convulsions, sudden falling on the ground with wide expression of bulged eyes. Respiration becomes shallow emanating fruity odour on the breath.

Diagnosis : Examination of ketone bodies in the urine helps in diagnosing the disease besides the symptoms noticed.

Control and Treatment: Intravenous administration of 500-1000 ml of 40 per cent glucose, Repeat for 5 days. Cases not responding to glucose therapy, intramuscular injection of 100-200 mg of hydrocortisone or 50 to 200 mg of prednisolone acetate. Concentrate feeding with good fodder during dry period in high yielding cows, ½ to one kg maize or cholam made as gruel mixed with ¼ kg of jaggery or molasses daily to be given to cows nearing parturition.

Bloat : (TYMPANY); is a disease of ruminants in which rumen and reticulum is over distended with the gases of fermentation.

Cause : Excess intake of fresh legumes and feeding of high grain ration lead to frothy bloat. Obstuction to normal expulsion of gases from rumen by choking the oestophageal passage by corncob, turnip and sugar beet cause free gas bloat.

Symptoms : Acute form of tympany results in sudden death before rendering any aid to the affected animal. In acute cases, the distension of the rumen occurs quickly, the flank and the whole abdomen is enlarged. On percussion the left flank produces a drum like sound, Initially the animal frequently gets up and lies down, kicks at belly and even rolls. Breath becomes difficult and is evidenced by oral breathing, protrusion of tongue and salivation. When the distension of abdomen becomes extreme, the animal exhibits uncoordinated movement, inability to stand, falls all of a sudden. Collapse and death occur quickly. In chronic tympany, the distension of abdomen and intra-abdominal pressure are not serious. The gas is 'free' but retained because of obstruction of the pasage thereby preventing normal eructation of gases.

Diagnosis - of tympany is easy by the characteristic symptoms of distension of abdomen and distress by the affected animal.

Control and Treatment : in per acute cases puncture the rumen with a sharp knife or with a trocar and canula to expel the gases. Administer orally oil of turpentine 60 ml well mixed with one litre of groundnut oil or gingelly oil or cocounut oil. After six to eight hours administer powdered ginger 30 grams, Asafoetida 30 gram, well mixed to jaggery. Fresh legumes should be wilted and then fed to stallfed animals. Feed dry roughages before turning the cattle to luxuriant pasture to avoid bloating.