

**MJF COLLEGE OF VETERINARY AND ANIMAL SCIENCE,
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DEPARTMENT OF VETERINARY PATHOLOGY



PPR

Peste des petits ruminants

- OIE-Listed disease

- Synonym :
 - Pseudo-rinderpest
 - Goat Plague
 - Pest of Small Ruminants
 - Pest of Sheep and Goats
 - Kata
 - Stomatitis-Pneumoenteritis Syndrome
 - Pneumoenteritis Complex

- PPR is a highly contagious viral disease of sheep and goats, characterized by fever, oculo-nasal discharges, stomatitis, diarrhoea and pneumonia with foul offensive breath.

- Peste des petits ruminants virus – SS RNA
- Genus: **Morbillivirus**
- Family: **Paramyxoviridae**
- Other members of the family include RP, Measles virus, Canine distemper
- **Vaccination for RP can prevent PPR in ruminants**
- Serological cross-reactivity with RP in diagnostics

- Primarily a disease of goats and sheep
- Cattle and pigs seroconvert but do not develop or transmit disease
- Wild ungulates can be affected

- Direct contact
 - Nasal/ocular secretions
 - Urine, saliva, and blood
- Contaminated food or water
- Indirect contact
 - Fomites

- Virus reach to nasopharyngeal mucosa → binds to host CD150 on activated T cells, B cells and dendritic cells of tonsils and regional lymphnodes → Virus replication → Go in the blood → Viremia → dissemination to respiratory and alimentary mucosal cells → Virus replication causing focal necrosis, erosion, and fibrinous exudation (Pneumo-enteritis) → Infect lymph nodes and GALT → destructions of lymphocytes → Immunodeficiency → Secondary bacterial infection → Death from severe Pneumo-enteritis

- Incubation period: 2- 10 Days
- Peracute
- Acute
 - High fever
 - Serous nasal, ocular discharge becomes mucopurulent
 - Hyperemic gums, necrotic oral lesions
 - Profuse diarrhea, Dehydration
 - Emaciation
 - Rapid respiration, dyspnea
 - Abortion
 - Skin nodules around muzzle
- Subacute - asymptomatic disease







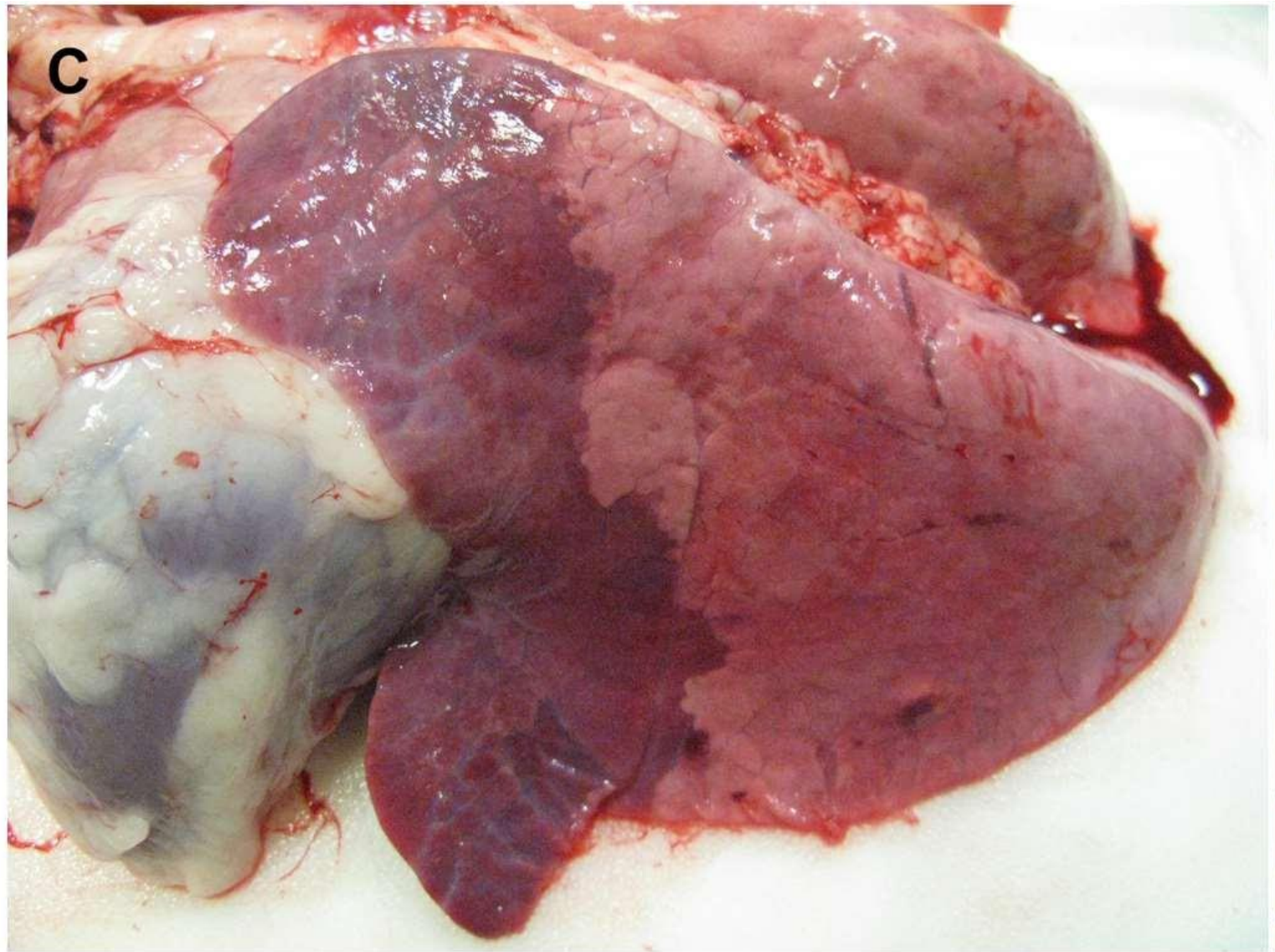




- Dehydrated, soiled, fetid carcass
- Serous or mucopurulent oculonasal discharges
- Inflammatory and necrotic lesions on oral cavity and GI tract
- Bronchopneumonia with consolidation and atelectasis – Cranio-ventral lobes
- Congestion and Inflammation of upper RT
- blood-tinged, frothy exudates in tracheas
- Congested, edematous and enlarged spleen and lymph node
- Hemorrhage and congestion of cecum, colon, rectum (zebra stripes)
- Swelling, swelling and erosion of vulval and vaginal mucosa





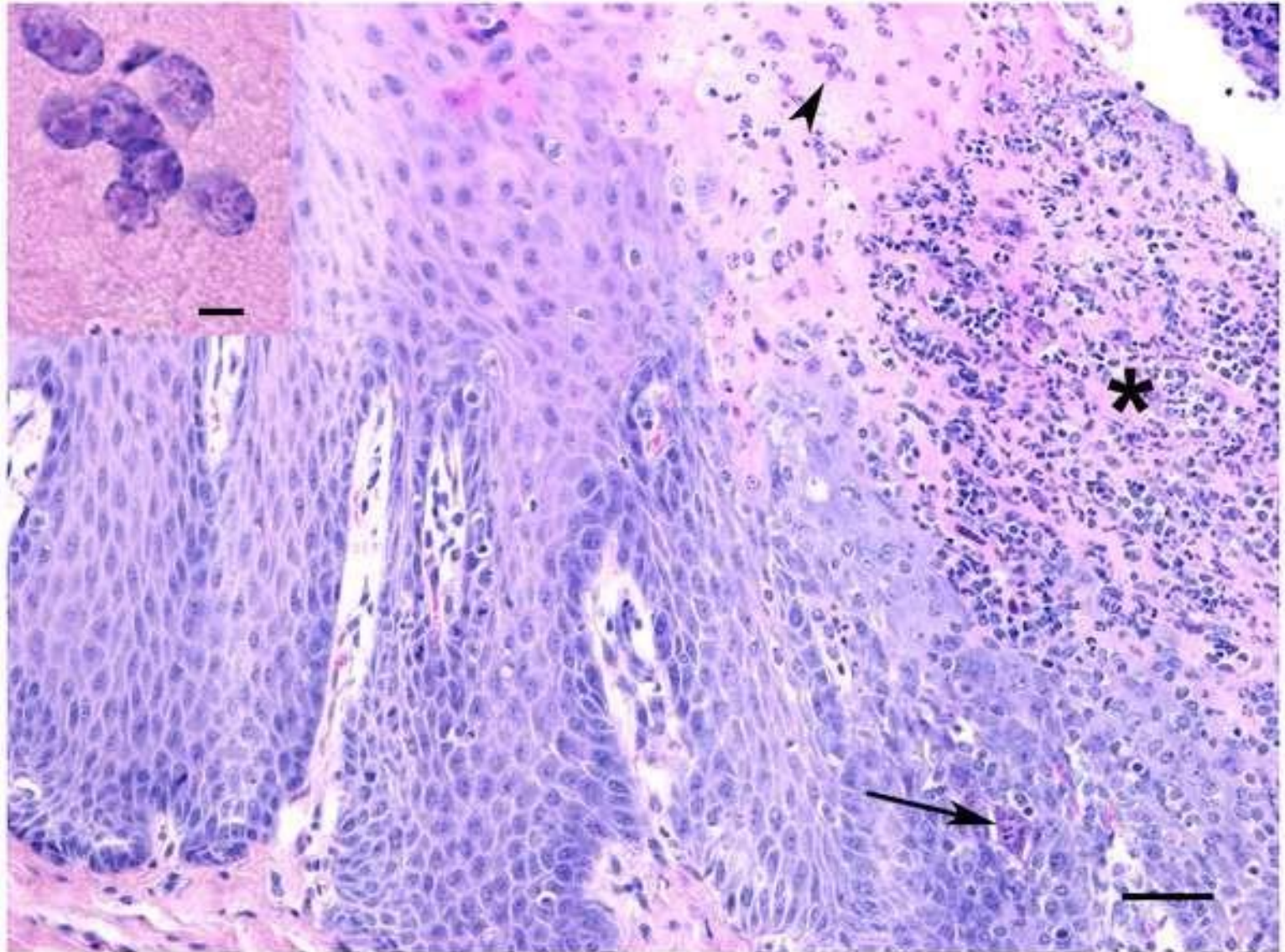








- Mild multifocal tracheitis, bronchitis and necrotizing bronchiolitis, and diffuse proliferative interstitial pneumonia
- Focal mucosal necrosis just above basal layer, extending to the surface
- Necrosis of intestinal crypts with resultant erosions , ulcers and inflammation
- Syncytia; intracytoplasmic and intranuclear eosinophilic inclusion bodies in infected epithelial cells



- Clinical signs
- Laboratory tests
 - Virus isolation
 - Agar gel immunodiffusion (AGID)
 - Enzyme-linked immunosorbent assay (ELISA)
 - Complement fixation test
 - Reverse transcription polymerase chain reaction (RT-PCR) tests
 - Serological tests
 - Virus neutralization tests



MCF

Malignant Catarrhal Fever

- OIE-Listed disease
- Synonym :
 - Malignant Catarrh
 - Malignant Head Catarrh
 - Gangrenous Coryza
 - Catarrhal Fever
 - Snotsiekte
- MCF is an infectious disease of domestic cattle, some wild ruminants, and occasionally pigs, characterized by lymphoproliferation, vasculitis, and erosive-ulcerative mucosal and cutaneous lesions..

- several viruses in the Genus Rhadinovirus / Macavirus (OIE) - lymphotropic
- **Subfamily: Gammaherpesvirinae**
- **Family: Herpesviridae**



- Four of which are associated with clinical MCF:
 - (1) Alcelaphine herpesvirus 1 (AiHV-1), carried by wildebeest (Connochaetes sp.)
 - (2) Ovine herpesvirus 2 (OHV-2), endemic in domestic sheep
 - (3) Caprine herpesvirus 2 (CpHV-2), endemic in domestic goats
 - (4) a virus of undetermined origin causing MCF in white-tailed deer (MCFV-WTD).

- Carrier species
 - Sheep, goats, wildebeest
- Susceptible specie
 - Domestic cattle (*Bos taurus* and *B. indicus*)
 - Domestic water buffalo (*Bubalus bubalis*)
 - American bison (*Bison bison*)
- **Mortality approaches 100%**

- AHV-1
 - Wildebeest calves
 - In utero
 - Contact with nasal and ocular secretions
 - Aerosols during close contact
 - Adult wildebeest
 - Cell-associated form - Rarely transmitted
- OHV-2
 - Respiratory (aerosol)
 - Transplacental rare
 - Contact with nasal secretions
 - Animal-to-animal rare - Dead end hosts

- Virus reach to nasopharyngeal mucosa → viral replication in small and medium-sized lymphocytes → infection of large granular lymphocytes (T-suppressor cell) → No suppression → lymphoproliferation (suppressor dysfunction) and necrosis → infiltration in various organs and vasculitis

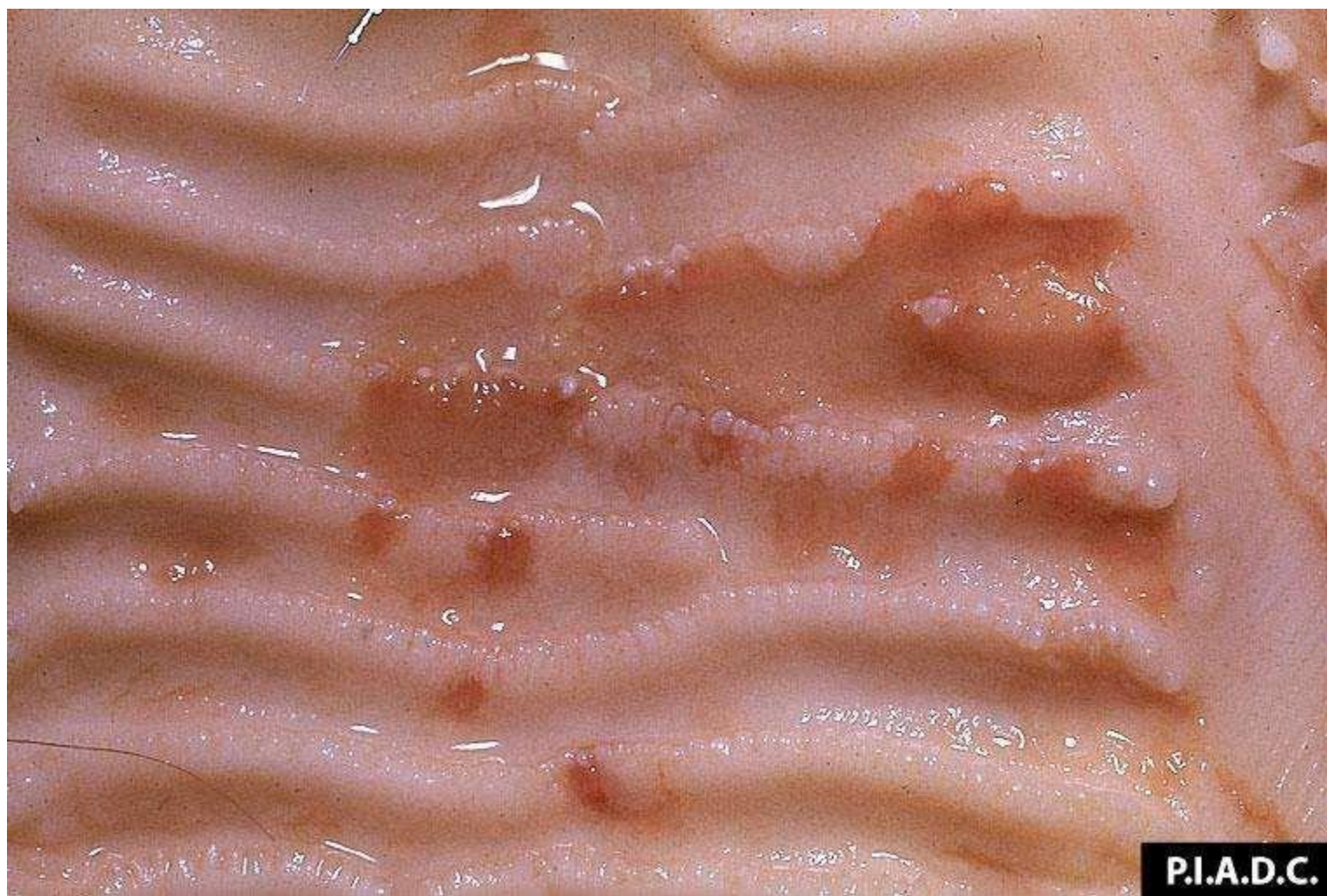
- Incubation period: 2- 10 Days
- Peracute – No signs
- Acute
 - High fever
 - Catarrhal to Mucopurulent conjunctivitis and rhinitis
 - Bilateral corneal opacity
 - Erosions in skin of muzzle, roof of mouth and cheeks
 - Diarrhoea
 - In mild disease skin lesions like ulceration and Exudation of skin in perineum, udder and teats
 - Nervous signs in later stages
 - Superficial enlarged lymph nodes
 - Swollen limb joints





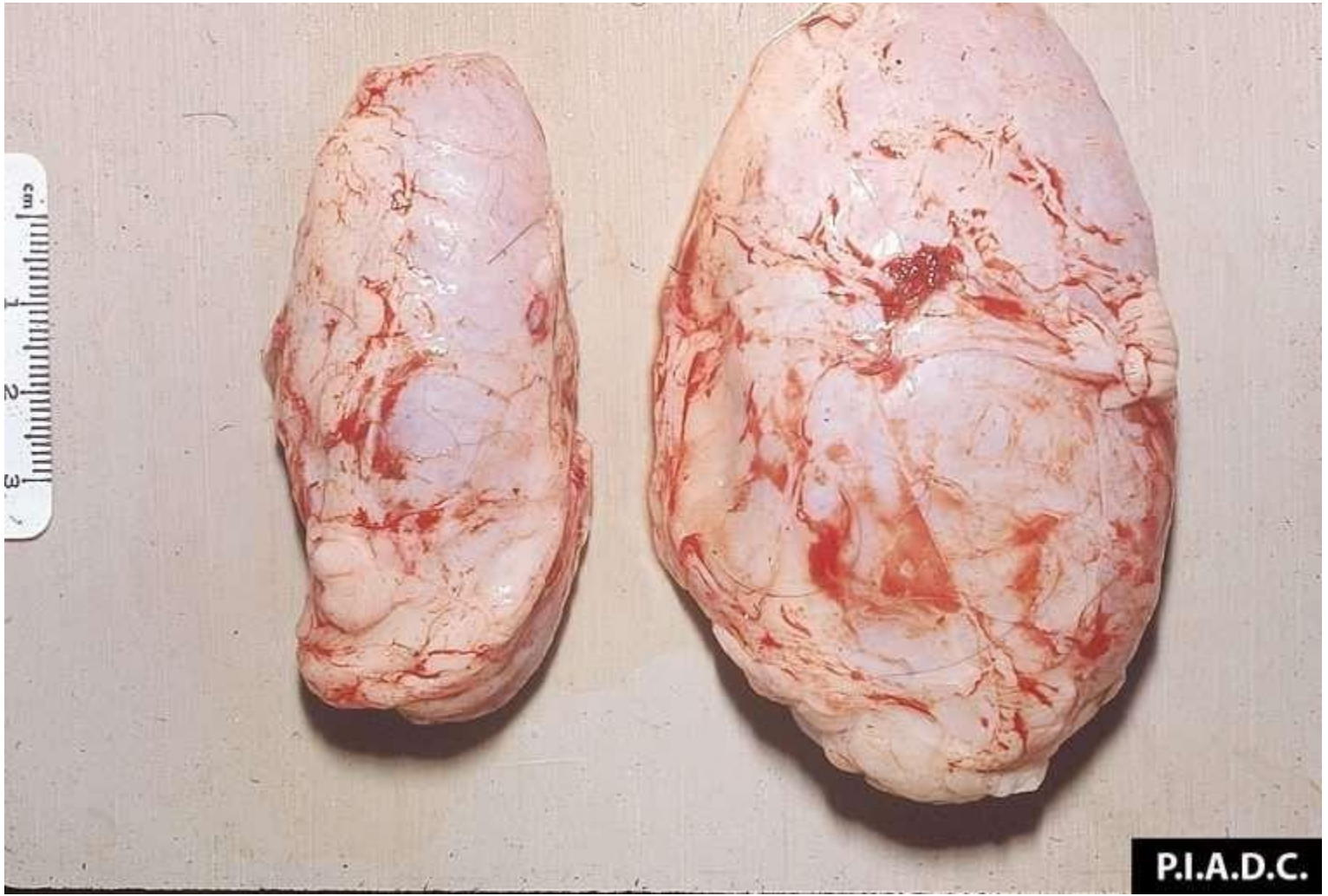
P.I.A.D.C.





P.I.A.D.C.

- Lymph nodes: Enlarged, edematous; characteristic lesion
- Mucosal surfaces of GIT: Hyperemia and edema, erosions and ulcerations
- Eye: Conjunctivitis, corneal opacity (starting at the limbus and progressing centripetally) and occasionally corneal ulceration
- Kidney: 2-4 mm, raised white foci in cortex infarcts
- Liver: Slightly enlarged and mottled
- Spleen: Enlarged with prominent lymphoid follicles
- Skin (base of horns and hooves, loins and perineum): Hyperemia to exanthema with crust formation and hoof wall
- CNS: Meninges wet, possibly with petechial hemorrhages

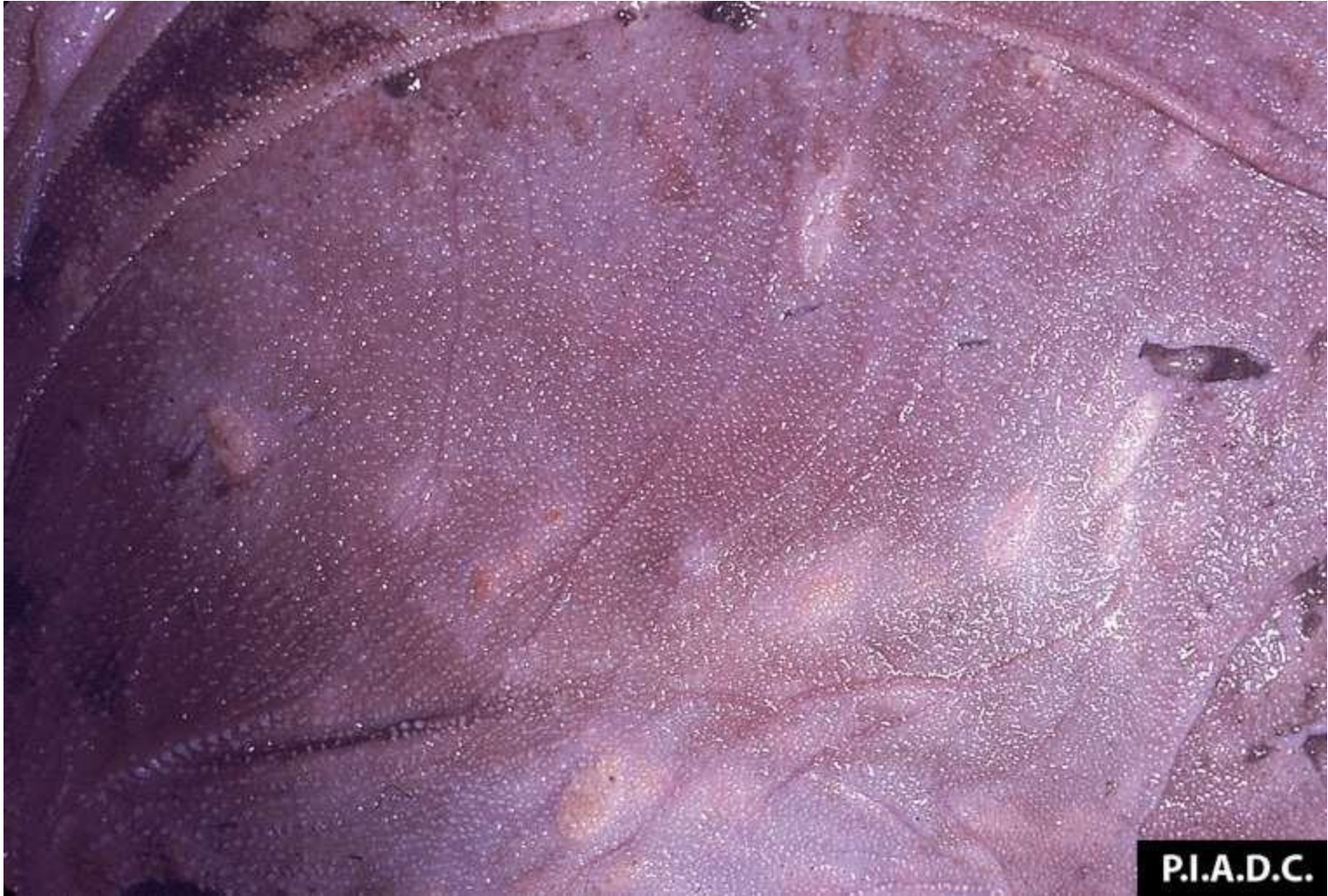




P.I.A.D.C.



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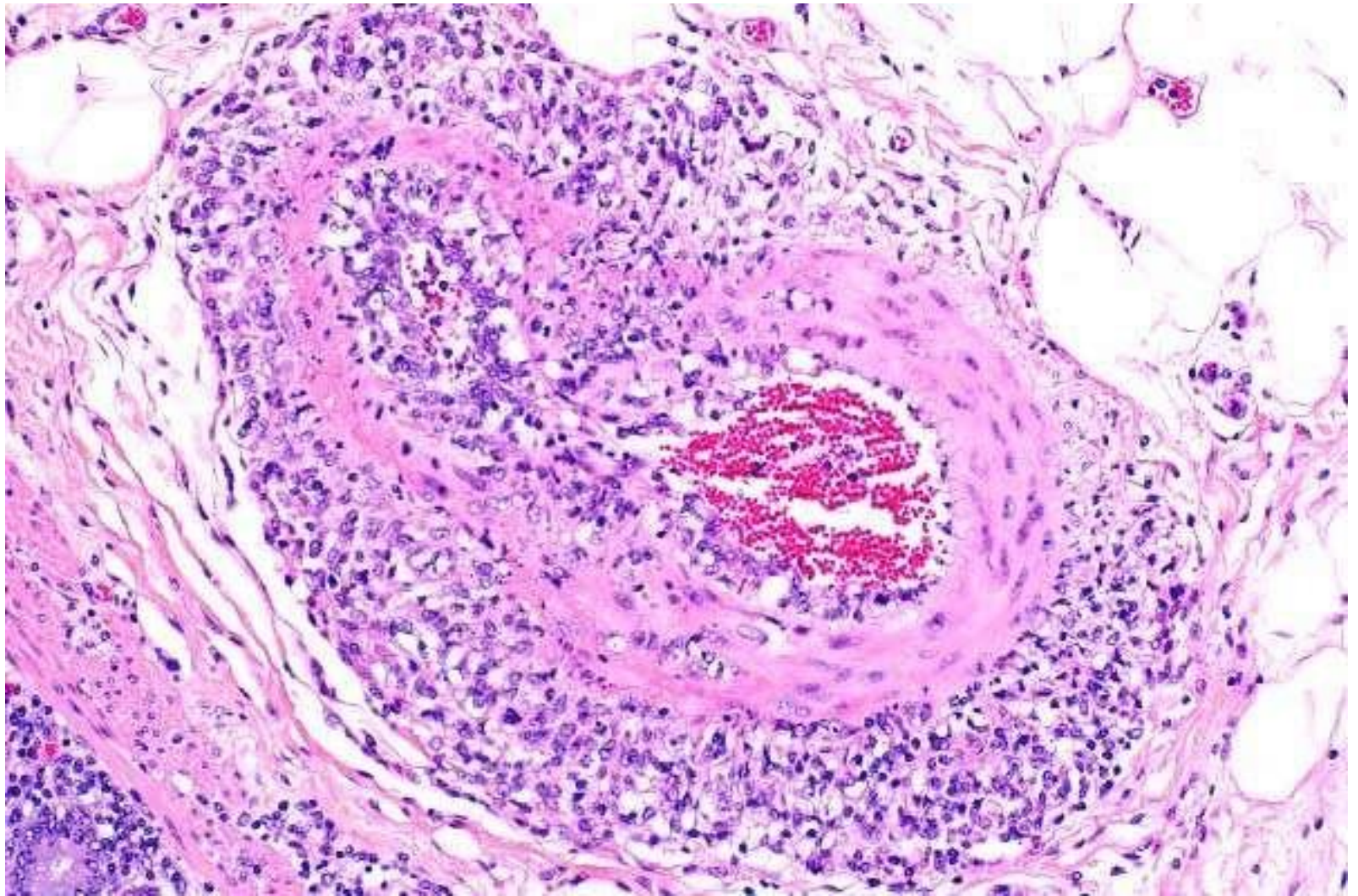


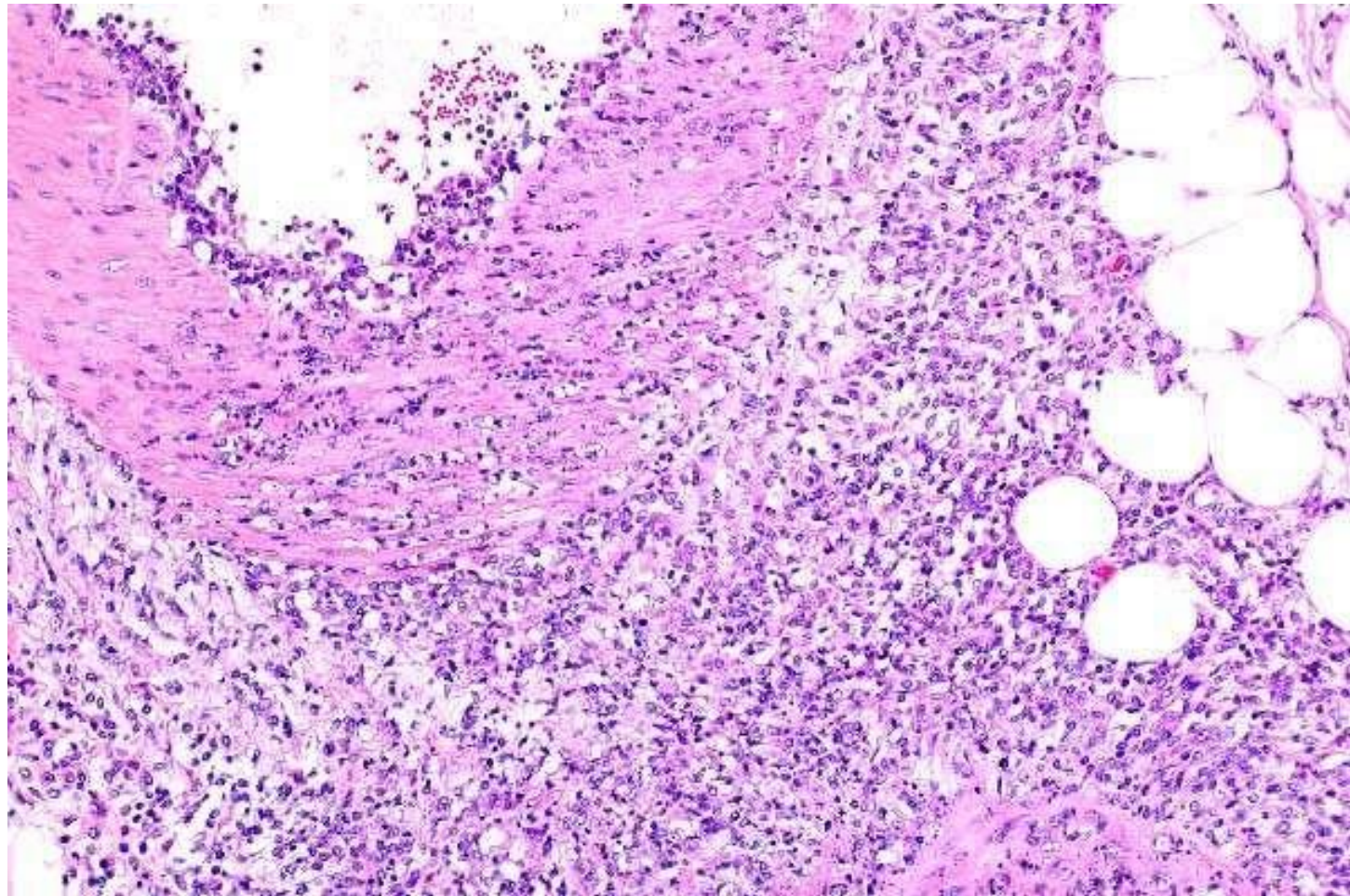
P.I.A.D.C.



P.I.A.D.C.

- Perivascular and intramural infiltrates of lymphocytes and lymphoblasts necrotizing **vasculitis**
- Lymphocytic infiltrate in kidneys, liver (periportal), GI mucosa, dermis, meninges, heart
- **Lymph node:** Active proliferation of lymphoblasts, especially in T cell-dependent areas of interfollicular and paracortical zones- Edema of medulla
- **CNS: Necrotizing arteritis**, plasma exudation into the meninges or Virchow-Robin space
- Skin and squamous mucosa of alimentary tract: Lichenoid infiltrate of altered and proliferating lymphoid population; necrosis and ulceration





- Histopathology
- PCR
- Virus isolation (AHV-1)
- Serology
 - AHV-1 antibodies in wildebeest
 - Immunofluorescence, immunoblot, VN, ELISA, immunocytochemistry
- OHV-2 antibodies in sheep
 - Immunofluorescence, immunoblot

Thank you