

PESTE DES PETITS RUMINANTS (PPR)

NATNA THLENTU — *Small ruminant morbillivirus* (SRM) (hming hmasa — *Peste des petits ruminants virus* (PPRV), family — *Paramyoviridae*, genus — *Morbillivirus*.

He virus hian serotype pakhat chauh a nei a, nimahsela nucleic acid sequencing tih chuan lineage pali (1-4) ah then hran theih a ni. Rinderpest virus te, measles virus te leh canine distemper virus te nen inzawmna hnai tak an nei a ni.

Physical leh Chemical action SRM/PPRV in a tawrhtieh dan

Temperature: A half-life hi 37°C ah darkar 3 emaw 56°C ah minute 2.2 a ni.

pH: pH 5.0 leh 10.0 inkarah an dam thei a; chuvangin pH <4.0 emaw >10.0 ah an thi thei a ni.

Disinfectants/chemical: Alcohol, ether leh sahbawn te hian an that thei a; disinfectants kan hman tlanglawn, e.g. phenol, sodium hydroxide 2%/24 hours te hian an thi thei bawk a ni.

Survival: Tisa vawt leh khal (frozen) ah chuan rei tak an dam thei a ni.

EPIDEMIOLOGY

Peste des petits ruminants (PPR) hi kel leh beram (small ruminants) eizawnna atana vulh tu te tana channa nasa tak thlen thei a ni a. Ran chaurau ten hri len ngunna hmun (endemic area) ami ran te nena an inawmpawlhin hri leng (outbreak) a thlen phah thin. He natna hi hmun dang atanga ran lakluh atanga inkai darh theih a ni a, thingtlang leh khawipui chhunga ran vulh tam vak lohna hmunah te pawh hmuh theih a ni.

- Ran vulh zaa sawmkua atanga zaa za (90-100%) in an inkaichhawng thei.
- Ran vulh zaa sawmnga atanga zaa za (50-100%) in an thihpui thei bawk.
- Natna inkaichhawn zat leh thihpui zat hi he natna len fo thinna hmun (endemic area) ah a hniam zawk a, ran puitlingin ran note aiin an tuar nep zawk bawk.

Natna tuartute (Hosts)

- Kel leh beram
- Sazuk chi hrang hrang leh ram lama tla chi small ruminants laichin ten he natna hrik hi an kai thei.
 - Heng ransa hrang hrang – gazelles, bushbuck, impala, springbuck, gemsbok, bharal, Sindh ibex, wild goats/bezoar ibex, Nubian ibex, Mongolian saiga antelope, Afghan Markhor goat, Barbary sheep leh Laristan sheep ah te hian natna report tawh a ni.
- Bawng leh sanghawngsei in natna kai ve thei bawk mahse an pu darh thei lo a ni.

Inkaichhawn theih dan

- Boruak a hrileng vel leh ran inhnaih lutuk a awm ten an inkaichhawng thei.
- Ran vulhna hmanrua leh bungraw thianghlim lo atangin an inkaichhawng thei bawk.
- Ruah tui tam laiin hri a leng duh hle a, khaw ro si vawt bawk si ah a leng duh bawk.
 - Kel phurh kual leh tla darh nasa lutuk in a hri an pu darh thei.

A natna thlenna (Occurrence)

He natna hi kum 1940 kum tir lamah Ivory Coast ah hmuhchhuah hmasak ber a ni a. He mi atang hian ram hrang hrang Africa, Middle East leh Asia ah a lo darh zau zel a, natna hmuhchhuah kawnga hmasawnna lo sang zelah kum 15 kal ta chhung khan heng ramah te hian report a ni ta reng a ni. He natna hi Europe ah kum 2016 (Georgia) leh kum 2018 (Bulgaria) ah report a ni.

DIAGNOSIS

Natna hrik kai atanga natna lanchhuah hun hi a tlangpuuin ni 4-6 a ni a, ni 3-10 thleng pawh a ni thei bawk.

Clinical diagnosis

He natna thawh chak zawng hi thil chi hrang hrang, heng – PPRV strain a zir te, natna tuartu a zir te leh ran hriselna a zir te in a inang lo thei a. Bawng a rinderpest (RP) nen he natna hian inanna tam tak an nei. PPR a hmuh thin RP a awm ve lo chu hmui kotlanga khir lo insiam thin te leh natna chawhnu lama pneumonia lo insiam thin hi a ni. A natna lanchhuah dan atang hian he natna hi diagnosed theih a ni a, amaherawhchu laboratory a finfiah a, natna chi hrang hrang nena hriat pawlh theih ho nena khaikhin zawahah chauh finfiah theih a ni.

NB: Bawng hian he virus an kai hian natna do theitu (anti-PPRV antibodies) an siam thei a. Mahse anmahniah natna a langchhuak lova, a natna an thehdarh lo bawk. Rinderpest um bo a ni tawh a, PPR leh RP a inan avang in, bawng a RP anga langchhuak natna apiang laboratory a finfiah anih phawt loh chuan PPRV a ngaih a him lo.

PPR natna vei damchhuak kel leh beram ten he natna do thei tu (antibody) damchhung daih an nei thin.

Peracute form

- A rang ber chi a ni a, kel ah a hluar hle.
- Khawsik sang tak an nei a, an zawi em em a, an thi zui mai thin.
- Peracute form hi an thihpui an nasa hle.

Acute form

- Khawsik sang tak ($40-41^{\circ}\text{C}$) an nei that a, an nguai a, an awm hle hle thei lova, chaw an ei peih lova, an hmui leh hnaphleng vel a rova, an vun alo khawro thin.
 - Khawsik hian ni 3-5 a daih thin.
- Hnap tui te chu lo hnangin a lo khal a, chu chuan an hnar kua hnawhin thawk harsatna an nei zui thin.
 - Ran a lo damchhoh hnu ah pawh ni 14 chhung lai hnap tui tla an nei thei.
- An khawsik atanga ni 4 hnu ah ha hni alo sen tuak a, a pilh a, chu chuan an chil thli a ti tla duah duah thin.
 - Ka chhung lo vungin a tawih a, a lo rimchhe hle thin.
- An mit te a lo vung a, a lo sen a, a lo berh thin.
- An nat rei deuh hnu ah kawthalo nasa tak, ek turil leh thisen pawlh kawthalo an nei thin.
- Bronchopneumonia a thlen thei a, khuh, thawk ri berh berh leh pumpui sep lawp lawp in an thaw thin.
- Note chhiat (abortion) a thlen thei.
- Ni 5-10 chhungin tui tlakchhamna, cherna, thawk that theihlohma, vawt tihna leh thihna a thleng thei.
- An damchhuak anih pawhin rei tak chhung an bawksawp thin.

Subacute form

- Ni 10-15 chhungin a natna a langchhuak thin a; natna kai atanga ni 6 hnu lamah khawsik leh hnaph tam tak hmuh thin a ni.
- Khawsik a lo tlahniam a, kawthalo in a zui a, a nasat viau chuan an taksa in tui tlachhamin an chau em em a, an mu bawksawp reng thin.

Tisa a danglamna a thlen dan (Lesions)

PPR in lesions a siam hi bawng a rinderpest nen a inang em em a, PPR ah chuan an hmui vel alo khir a, thawk lamah harsatna (pneumonia) an nei thin.

- Cherna, mit sen leh thak (conjunctivitis), kam leh hmui hnuai leh hahni pilh.
- Dang, thawkna dawt leh chawkawngah te lesions a lo awm thin.
- Pumpui (rumen, reticulum leh omasum) ah te lesions a awm meuh lo.
- Rilfang hnun (duodenum) leh rilfang tawp lam (terminal ileum) ah pilh leh sen tuak a lo awm thin.
- Ril pilh te, lawng te a lo awm a, a sen tuak thin.
- Rilpui ah thisen zam inhnawh tawt avangin Zebra tial angin a lo lang tuak thin.
- Hnar chhung leh thawkna dawt ah te pilh leh sen thliah thliah a awm a.
- Bronchopneumonia a awm deuh ngei ngei a.
- Chuap tuamt uung leh chuap a tui tling (hydrothorax) a awm thei.
- Thn leh la a lian a, a duk thin.

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- Taksa hmun hrang hrang a bê te a lianin a vung thin.
- Ran nu ah serh chhung lam pilh a awm fo bawk.

Natna dang PPR nena ngaihpawlh theih te

- Contagious caprine pleuropneumonia
- Bluetongue
- Pasteurellosis (also may occur as secondary infection to PPR)
- Contagious ecthyma
- Foot and mouth disease
- Heartwater
- Coccidiosis
- Nairobi sheep disease
- Mineral poisoning

Laboratory diagnosis

Samples

Ran damlaiah

- Mittui leh mit ek swab leh hnar leh ka chhung swab.
- Virus isolation, PCR leh haematology atan-
 - Whole blood in EDTA; a theih hram chuan an nat tirh ami.
- Serology atan – thisen var hri leng reh tawp lam ami pawh a lak theih.

Ran thi atangin

- Lymph nodes (a theih chuan mesenteric leh bronchial nodes)
 - La (spleen)
 - Chuap (lung)
 - Ril fang
- Heng te hi thaignhlim takin lak tur a ni a, freezer a dah a, vur nena pack a thawn tur.
Histopathology tur anih chuan 10% neutral buffered formalin hman tur.

Procedures

Natna hrik hriathran dan

- *Nucleic acid detection leh identification*
 - He method hi a sensitive leh specific avangin a rintlak a ni.
 - Reverse-transcription PCR (RT-PCR)
 - Reverse-transcription real-time PCR (RT-qPCR)

- *Imunocapture enzyme-linked immunosorbent assay*
 - Monoclonal antibodies (MAb)
 - Sandwich ELISA
- *Culture and isolation methods*
- *Agar gel immunodiffusion*
- *Counter immunoelctrophoresis*

Serological tests

- *Virus neutralisation test*
- *Competitive enzyme-linked immunosorbent assay*

PREVENTION AND CONTROL

OIE leh FAO tangkawp chuan kum 2030 ah chuan PPR hi kawng thum hmangin khawvel atanga hnawh bo an tum a, chung te chu, (1) the technical step-wise approach (Stage 1 to Stage 4), (2) Veterinary Services tih changtluna awmzenei taka kalpui, (3) kel leh beramte natna hri dang tih ziaawm a PPR natna punlun tur ven.

Sanitary prophylaxis

- Ran natna hri vei leh a bul hnaia awm te suat a, an ruang te hal hnua thuk taka phum bo.
- Hrilen tawhna hmunah chuan –
 - Natna hmuhchhuah vat a, suat a, hal hnua thuk taka phum tur.
 - Ran lakluh leh lakchhuah khap emaw khung hran (quarantine) tur.
 - Ran in leh a vel, ran vulhna hmanrua leh bungrua disinfectants hmanga uluk taka damdawi hmanga tih thianghlim.
 - Awmze nei taka hri danna (vaccine) pek tur a ni.
 - Ramsa leh ranvulh te en thli thlai.
- A hri len fona hmunah chuan –
 - Hridanna pek a tha ber (kel leh beram te hian vaccine pek an nih chuan an damchhungin natna dotheihna an nei tawh thin).
 - Kan ranvulh te leh ramsa te intlatpawlh lo tura en tlithlai reng tur a ni.
 - A theih chuan sahuan a ran te vaccine pek ve tur a ni.

Medical prophylaxis

- A enkawlna tur bik damdawi a awm lova, chuvangin natna dangin a tlakbuak tur ven nan a tul anga enkawlna pek mai tur a ni.
- Chuap lam natna an vei anih chuan antibiotics lam pek te pawh a tha.
- Attenuated PPRV vaccines te hi khawvel hmun hrangah tlanglawn taka lei theihin a awm a, hetiang vaccine pek hian an damchhung a veng thei.

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