

LUMPY SKIN DISEASE (LSD)

A NATNA THLEN TU

A natna thlentute thenhranna

Lumpy skin disease (LSD) hi lumpy skin disease virus (LSDV) in a thlen a, he virus hi *Poxviridae* family hnuaiia *Capripoxvirus* genus hnuaiia mi a ni. Sheeppox virus leh Goatpox virus te nen genus khat hnuaiiah an awm a ni.

Physical leh Chemical action LSD virus in a tawrhtheih dan

Temperature: 55°C/2 hr emaw 65°C/30 minutes ah an thi thei a. Vun bawk (nodules) -80 °C a dahthat atangin kum 10 hnuah pawh he virus hi nungchungin a lakchhuah leh theih a, infected tissue culture fluid 4°C a dahthat atangin thla 6 hnuah a nungchungin a lakchhuah leh theih bawk a ni.

pH: Alkaline emaw acidic pH ah emaw an thi thei a. pH 6.6-8.6 ah 37°C ah erawh chuan ni 5 chhung dah hnuah pawh an thihpui lem lo.

Chemicals/Disinfectants: Ether (20%) te, chloroform te, formalin (1%) te leh detergent dang, e.g. sodium dodecyl sulphate te an hua a.

Phenol (2%/15 minutes) te, sodium hypochlorite (2-3%) te, iodine compounds (1:33 dilution) te, Virkon®(2%) te, quarternary ammonium compounds (0.5%) te an haw bawk a ni.

LSDV tuarfei zia: LSDV hi an tuar a feiin an dam rei thei em em a, a bik takin vun khir rovah. Vun thi bâwk thliah thliahah (necrotic skin nodule) ni 33 emaw a aia rei an dam thei a, vun ro lutuk (desiccated crust) ah ni 35, leh ran vun dah rovah ni 18 vel an dam thei bawk a ni. Leilungah rei tak thi lovin an awm thei a. Virus te hi nisa leh detergents (lipid solvents nei) ah an thi thei na a, hmun thim leh kilkhawr, entirnan ran in chhung bal leh tawphnawh hmunah chuan thla tam tak chhung an dam thei thung a ni.

EPIDEMIOLOGY

- Morbidity rate hi 10 atanga 20% a ni a.
- Mortality rate hi 1 atanga 5% vel a ni.

Natna tuartute (Hosts)

- LSDV te hian bawng (*Bos indicus* leh *B. taurus*) leh Lawi (*Bubalus bubalis*) ah chauh natna an thlen thei a ni. Ethiopia a zirchiannaah chuan breed hrang hrang ah LSD natna thawh dan a in ang lo thei tih hmuhchhuah a ni a, Holstein Friesian emaw bawng crossbred ho te hi ramchhung bawng (zebu cattle) te aiin an morbidity leh mortality a sang zawk a ni.
- Nasa taka Africa a ram lama tla chi bawng ah serological survey neih anih hnuah wildlife reservoir an awm lova, chuvangin LSDV hi natna an thlenna bawng ah chiah an khawsa a ni.
- LSDV hi ran atangin mihringah emaw mihring atangin ranah emaw kaichhawn theih a ni lo.

Inkaichhawn theih dan

- Rannung atanga inkaichhawng ber nia rin a ni a. Eng rannungin nge thehdarh tlanglawn ber tih erawh chu hriat a ni lo. Heng rannung chi hrang hrang: thosi (e.g. *Culex mirificens* leh *Aedes natrionus*) te, tho mi seh thei (*Stomoxys calcitrans* leh *Biomyia faciata*) leh tuhrik pa (*Rhipicephalus appendiculatus* leh *Amblyomma hebraeum*) te hian an ti darh thei a. Heng rannung te hian an natna thlen theih dan hi ram hrang hrangah an tam dan a zir te leh an chaw ei leh khawsak dan a zirin a danglam thluah thei ang.
- Bawngpa he natna vei te hian an chi/baw (semen) atangin virus hi an tidarh thei a, amaherawhchu chutiang chi/baw atanga he natna kai erawh chu hriat ala ni lo thung.
- Boruaka tuihu leng (e.g. chil per) atanga natna kaidarh hriat ala ni lo baw, entirnan chaw leh tui bawng damlo chil perin a tih bawlhhlawh eiin.
- Zirchiannaah chuan ran te hi damlo vun khir emaw thisen hmanga natna inkaichhawn tir theih a ni.
- Vun leh vun innawkna atanga inkaichhawna erawh alo thleng anih pawhin vâng tak a ni.

Natnahrik awmna/kaichhawn theihna (source) te

- Vun bawk, pân khir leh vun khawro ah te hian LSDV te hi thahnem tak hmuh theih a ni a. Heng hmun atang te hian ni 35 emaw a aia rei thleng pawhin virus te lakchhuah (isolate) theih an ni.
- LSDV te hi thisen, chil, mittui, hnap leh baw (semen) atang te in lakchhuah theih a ni baw.
- LSDV te hi a chang changin thisen atangin natna an vei atanga ni 7 atanga ni 21 chhungin vun atanga hmuh theih aia tlemin hmuh theih a ni.
- Bawngpa chi (semen) atangin rei tak hnuah pawh virus hmuh theih a ni. LSDV te hi zirchianna atana natna vei tir bawngpa chi atangin ni 42 hnuah lakchhuah leh a ni.
- Bawng note in a pui hnen atangin placenta kaltlanga natna a kaichhawn hriat (report) pakhat chu a awm.
- LSD hian natna benvawn a thlen lova. Natna langchuak lovin rei tak taksa ah a awm ngai loh bakah natna laka taksa a dam hnuah he natna hi a langchuak nawn/thual leh tawh ngai lo a ni.

Natna thlenna hmun te

LSD hi African countries zawng zawngah deuh thaw chuan tlawnglawn taka hmuh (endemic) a ni a. 2012 atang khan Middle East te, south-east Europe te, the Balkans te, Caucasus te, Russia leh Kazakhstan ah te a lo tai darh a ni.

DIAGNOSIS

Zirchianna hnuuia virus an khawina hmunah chuan he virus hian taksaa natna a lanchhuah nan ni 4 atanga ni 14 chhung a duh a.

Natna lanchhuah dan

LSD natna hi ho lam tak atanga nasa tak in a langchhuak thei a. LSDV strain hrang hrang te hian natna an thlen danah danglamna an neih leh neih loh erawh chu hriat ala ni rih lo a ni.

- Khawsik 41°C aia sang hial pawh a awm thei.
- Bawngpui hnute nei laiah bawnghnute pekchhuah nasa taka tlakhniamna.
- Zawi ngawih ngawihna, chaw ei duhloh tawp na (anorexia) leh nasa taka cherna (emaciation).
- Hritlang, mitmu tuamtu vung/mit sen rem rum (conjunctivitis) leh chilthli far duah duah.
- Thal be vung.
- Vun bâwk (nodules) (2-5 cm diameter), a bik takin lu ah te, nghawngah te, bawp ah te, hnute bu ah te, serh ah te leh a bul velah te khawsik a awm atanga darkar 48 chhungin a lo insiam a. Heng bâwk te hi an bial a, an sak in an muk telh a, an rawn pawng chhuak thin a, vun, vun hnuuia tisa te leh a changin chumi hnuai leha tihrawl te pawh heng vun bâwk te hian a keng tel thin a ni.
- Vun bâwk lian te chu a lo thi (necrosed) a, chung ah te chuan ser alo awm thin a. Vun bâwk tê te erawh chu anmahniin an lo dam ve leh mai bawk thin.
- Bâwkah te tho leh rannungin in bawm in alo pun bawk thin (myasis).
- Ka chhung leh rilah te, thawkna dawt leh chuap ah te bawl (vesicle) te, pilh leh ulcer te a awm thei.
- Bawp leh taksa hnuai lam entirnan ir fual te, awm te, serh (scrotum, vulva) te lo vungin ran ten chet leh vah vel an lo peihloh phah thin.
- Bawng pa te chu reilote chhung emaw damchung atan emaw chi thlah thei lovin (infertility) an awm phah thei.
- Bawngpui rai lai ten no an chhiat phah thei a, thla engemawzat chu hur lovin an awm phah thei bawk

Natna dang LSD nena ngaihpawlh theih te

LSD nasa taka langchhuak (severe form) hi chu hriat hran awlsam tak ni mahse nasa vak lova langchhuak chi (mild form) hi chu a hnuuia mi te nen hian hriatpawlh theih a ni:

- Bovine herpes mammillitis (bovine herpesvirus 2) (pseudo-lumpy skin disease tia hriat lar bawk)
- Bovine papular stomatitis (Parapoxvirus)
- Pseudocowpox (Parapoxvirus)
- Vaccinia virus and Cowpox virus (Orthopoxviruses) – natna thleng zen zen lo
- Dermatophilosis
- Demodicosis

- Insect or tick bites
- Besnoitiosis
- Rinderpest
- Hypoderma bovis infection
- Photosensitisation
- Urticaria
- Cutaneous tuberculosis
- Onchocercosis

Laboratory Diagnosis

Samples

Natnahrik hriatfiah (identify) dan

- Polymerase chain reaction (PCR) hi man tlawm leh a rang thei ang bera LSDV hriatchhuah theihna a ni. Vun bâwk leh pân khir te, chil te, hnap tui te leh thisen te hi PCR hmang a LSDV hmuhchhuah nan hman theih a ni.
- Virus nung lai lakchhuah (virus isolation) zet a PCR hmang a enfiah leh chuan hun a duhrei bakah senso a tam a, amaherawhchu sample a virus nung lai zirchianna atan erawh chuan a tha hle.
- Electron microscopy hmangin poxvirus te hmuh theih a ni a, amaherawhchu eng genus leh species nge an nih thliarhran theih erawh a ni lo thung.

Serological tests

Thisen var endik atangin *Capripoxvirus* genus hnuai virus pathum te (Sheeppox virus, Goatpox virus leh LSD) hi thliarhran theih an ni lo.

- Virus neutralization
- Western blot
- Capripoxvirus antibody enzyme-linked immunosorbent assay

INVENNA LEH INKHUAHKHIRHNA

Europe leh western Asia a natna thleng mek atanga kan hmuh theih atanga chiang ta chu hlawhtling taka he natna khuahkhirha tirem tur chuan hma taka natna lo awm tantirha lo hmuhchhuah leh rang tak leh a tam thei ang ber invenna vaccine ran te lo pek vat ah a inngat a ni. Natna kai hrim hrim tihrem (total stamping-out) leh natna langchhuak chiah tihrem (partial stamping-out) an khaikhinnaah chuan natna tihrem naah kawngro an sut zawng a intluk tlang tih hriat a ni. Zirchianna chuan natnahrik (virus) lo luh hmaa vaccine lo in pek lawk hi a tangkai hle tih min hriattir a duh bawk a ni.

Sanitary prophylaxis

- Natna awmlohna ramah:
 - Ram pawn atanga bawng leh lawi te leh bawngsa leh bawngnhute atanga eitur siam leh a kawihhnawih thil lakluh kawngah khuahkhirhna dan siam tur a ni.
 - LSD natna lenna ram emaw hmun atanga 20 kilometers bialchhung ram te chu enfiah a, natna a taidarh lohnan fimkhur leh uluk taka hmalak tur a ni.
- Natna awmna ramah:
 - LSD khuahkhirhna hi natna lenna hmuna ran vahvelna khuahkhirhah te, natna vei leh langchhuak tih rem ah te leh vaccine pek that ah te a innghat a. Vaccine pekna tel lo chuan ran chetvelna khuahkhirh leh ran damlo tih hlum ringawt chuan awmzia a nei lo a ni.
 - Ran thi te uluk taka sawngbawl/hal ral a, ran in leh a vel te leh ran in kaihhnawih hmanrua te uluk taka tihfai (disinfect) thin tur a ni.
 - Tun dinhmunah chuan LSD natna pudarh thei rannung te tih remna hmanraw tha leh rintlak tak hmuh tur a awm rih lo.
 - LSD natna awm lohna hmun a ram emaw hmun emaw chantir leh dan hriat nan “OIE *Terrestrial Animal Health Code*” hi lo en ang che.

Medical prophylaxis

- “Homologous” LSDV live attenuated vaccine strain, entirnan “Neethling” LSD strain.
- “Heterologous” sheeppox or goatpox virus live attenuated vaccine strain.
- Taksaa vaccine dahna (inoculate) hmunah chuan thak emaw sen emaw alo awm a, khawsik leh bawngnhute pekchhuah tlahniam nen, chumi hnuah live attenuated capripox virus hmangin vaccine pek thin an ni.
- Tun dinhmunah chuan recombinant capripox vaccines siamchhuah thar lei tur a awm rih lo.

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