

# GLANDERS

## A NATNA THLEN TU

Glanders hi mihring leh rana natna inkaichhawn theih (zoonotic) natna, *Burkholderia mallei* natna hrik in a thlen a ni. He natna hrik (bacteria) hi Gram negative, che thei lo(non-motile),tuamtu nei lo (non-encapsulated) leh spore siam thei lo a ni. A hming hmasa chu *Pseudomonas mallei* a ni.

### **Physical leh Chemical action B. mallei in a tawrhtheih dan**

Temperature: 55°C ah minute 10 chhung in an thi thei a.

Chemicals/Disinfectants: Disinfectants hman tlanglawn hrang hrang – iodine, benzalkonium chloride (1/2000), sodium hypochloride (500 ppm chlorine), 70% ethanol, 2% gluteraldehyde te hmang hian tihlum theih a ni.

Survival: Ni sa ah darker 24 chhungin a thi. Hmun hnawng leh tawp ah chuan kar 6 atanga thla engemaw chen an dam thei. Tuiah thla khat vel an dam thei.

## EPIDEMIOLOGY

### **Natna tuartute (Hosts)**

- Sakawr family(*Equidae*), mihring leh zawhte family (*Felidae*) leh ramsa thenkhat in an kai thei a. Enkawt vat loh chuan thihpui awlsam tak natna a ni.
  - Sabengtungin an haw ber a, mule (sabengtung leh sakawr thlahpawlh) in an haw nep deuh a, sakawr in tuar na lovin an benvawn thin.
  - Zawhte family, a bikin zawhte, sakei, sakeibaknei, in an tuar na em em a ni.
- Sanghawngsei, savawm, sihal, leh ui te pawhin an vei thei.
- Sahel ei chi ten an sahel ei atangin an kai thei.
- Kel leh beram ten an kai thei a, vawk leh bawng leh sava ten an kai thei lo thung.
- Glanders hi mihring leh ranah inkaichhawn theih a ni a, scientist pakhat in tunhnaiah a kai tih report a ni.

### **Natnahrik awmna/kaichhawn theihna (source) te leh inkaichhawn theih dan**

- He natna vei ran chil leh hnap siper leh vun pem in a tih bawlhhlawh eitur ei atangin awlsam takin a kai theih.
- Ran dah tawt lutuk leh inhnaihchilh lutukavangin inkaichhawn a awlsam.
- Hri vei si natna langchhuak lo ran ten a hri vei langchhuak a na te aiin natna an pu darh chak zawk.
- Vun pilh leh mucous membrane atangin hri a lut thei a, boruak a hri leng vel hip luh atang pawhin a kai theih bawk.

- Sakawr pa hri vein a nu a pawlin a kai thei a, a pui hri vein a note pai laiah a kaichhawng thei bawk.
- Ran thlunna leh tihfaina hmanrua atangin a kai theih.
- Tho ten he natna hi an pu darh thei.

### ***A thlenna (Occurrence)***

Ran enfiah (test), a hri vei apiang suat leh ran lakluh khapna hmangin North America, Australia leh Europe ah he natna hi um bo ani tawh.

Asia khawmualpui ram then khat, Africa, Middle East leh South America ramah te he natna hi ala thleng zeuh zeuh a. April 2010 ah Bahrain ah a vawikhatna atan an report a, 2009 ah Brazil ah hmuh leh niin 2014/2015 velah Germany a hmun thenkhatah report a ni bawk.

### ***DIAGNOSIS***

Natna hrik kai atanga a lanchhuah hun hi ni reilote atnaga thla tam tak chung a ni thei. A tlangpuiin kar 2-6 a ni thin.

### ***Clinical diagnosis***

A natna hi a lanchhuah dan a zirin chi thumah then a ni – nasal, pulmonary leh cutaneous (farcy) glanders.

Natna tuar na deuhah chuan a chi thum hian an vei kawp thin a, a nasat dan azirin thawk chak (acute/subacute) leh thawk muang (chronic/latent) a ni thei. Nasal leh pulmonary forms te hi a thawk chak (acute) a, cutaneous form erawh chu a thawk muang (chronic) deuh. Acute case ah chuan chuan ni reilote atanga kar 1-4 velah an thi mai thin.

Sabengtung leh mule te hian acute form hi an vei tlangpui a, mule te hian sabengtung te ai chuan an tuar nep deuh. Sakawr te hian chronic form an vei tlangpui.

#### **Nasal form**

- Khawsik sang, chaw ei tui lo, thawhah leh khuhin a intan thin.
- Hnap rawng eng leh hring inpawlh te lo awmin, hnar bul velah te a lo khir a.
- Mittui leh mitek te a lo awm thin.
- Hnar chhunga bawk te chu a lo pilh (ulcer) a.
- Khabe hnuaia thalbe chu alo vung a, natna awm tirh lamah chuan a lo sak telh thin. A changin hnaiah lo insiam in sawr theihin alo awm thin.
- Hnar atanga natna lo lut chuan chuap lam te pawh a khawih tel thin a ni..

#### **Pulmonary form**

- Glanders natna zawng zawng deuh thawah hian thawkna lam kaihnawih hi a awm a, heng - khawsik, thawk buaina leh harsatna, na tak leh zing taka khuh (paroxysmal coughing) emaw khuh ro te hi a awm thin.
- Ran damlo te chu an chuap ah bawk leh hnai te a lo awm a, ran thenkhatah chuan bronchopneumonia te a lo awm thin.
- Thenkhatah chuan natna a langsar lo hle a, thawkna lama harsatna chhete neiin khawsikin a zui a, zawimuangin an taksa a chau telh telh thin. Khawthalo leh zun tamna te pawh a awm thin a, chung chuan taksa chhiatna lam zawi zawi in a thlen thin bawk.

### **Cutaneous form (Farcy)**

- Langsar lote in rei tak chung alo insiam a, chu chuan zawi zawi in chhiatna nasa leh zual a thlen thin.
- A tirin khawsik, thawk nuam lo, khuh leh thal be vung a lo awm a.
- Bawk leh durh te vunah alo awm thliah thluah a, a lo keh a, a lawng a, chumi atang chuan tuihnang eng deuh a chhuak tuam tuam thin.
- Heng lawng te hi a dam har em em a, a tui pur a, a ro chi a awm ve zeuh zeuh.
- Ran thenkhat chuan ruh chuktuah vung na em em an nei a. Tilmu tuam tu pawh a vung thin. Taksa hmun hrang hrangah durh leh bawk te hi a awm thluah thluah a, mal chung, chawn leh dul ah te an tam zual.

Glander cutaneous form vei te hi chu rei tak chung tha takin an awm thei a, mahse zawi zawiin chhiat lam panin an thi zui leh thin.

### ***Tisa a danglamna a thlen dan (Lesions)***

#### **Nasal form**

- Nasal glander ah hian lâwng hi hnar chung ah a lo tai darh a, harkaw pahnih daidangtu (nasal septum) te a lo pawp thin.
- Hnar chung te leh thawkna dawt (trachea, pharynx, larynx) a lâwng awm te chu “arsi zia” (stellate scar) angin an lo awm thin.
- Khabe hnuai thalbe chu alo vung a, a lo sak a. A changin a puak keh a, a lo tui pur thin.

#### **Pulmonary form**

- A tirah chuan chuap ah bawk te reuh te te, haemorrhage in a kualkhung emaw chuap timur khawngna emaw leh pneumonia a lo awm a.
- Chung bâwk te chuan hnai lo siam in, zawi zawiin hnar lamah alo chhuak thin a ni.
- Thin, la leh kal ah te pyogranulomatous nodules a lo insiam bawk thin.

### **Cutaneous form (Farcy)**

- Vun hnuaiah bawk a lo insiam a, ke leh dulah te, chung bawk te chu a lo keh hnu in tuihnang eng an lo paihchhuak thin.
- Chung bawk keh atanga lawng lo insiam te chu an dam maithei a, anih loh vek pawhin an chheh vel vunah an tai darh thin.
- Thin leh la te pyogranulomatous nodules a lo insiam thin.
- Til vun vung (orchitis).

### ***Natna dang Glander nena ngaihpawlh theih te***

- Strangles (*Streptococcus equi*)
- Ulcerative lymphangitis (*Corynebacterium pseudotuberculosis*)
- Botryomycosis
- Sporotrichosis (*Sporotrix schenckii*)
- Epizootic lymphangitis (*Histoplasma farciminosum*)
- Tuberculosis (*Mycobacterium tuberculosis*)
- Trauma and allergy

### ***Laboratory Diagnosis***

- Sample te chu uluk taka tuam a, hmun vawt/fridge a dah a, vur nena pack a thawh chauh tur a ni.
- Sample lak tur – Tisa them (lesions), khak/hnap, vun pilh atanga smear lak.
- Thisen (serum) sample chu thianghlim taka lak tur a ni (aseptically).
- Lesions thar lam atanga sample lakah chuan natna hrik te hi tam tak hmuh theih a ni a, a hlui deuh tawh erawh chuan hmuh tur a awm meuh lo.
- Duhthusamah chuan, sample te hi vun durh leh bawk la pilh lo leh tih bawlhhlawh loh a tang a lak a tha ber.

### **Procedures**

#### *Natna hrik enfiah dan*

- Morphology
  - Methylene blue emaw Gram stain hmanga en fiah.
  - Gram negative, che thei lo (non-motile),tuamtu nei lo (non-encapsulated) leh spore siam thei lo.
- Cultural characteristics
  - He natna hrik hi bouak tel (aerobically) leh glycerol awmna media ah a to duh.
- PCR leh real time PCR

#### *Serological tests*

- Complement fixation test

- Enzyme-linked immunosorbent assays - plate and membrane ELISA
- Immunoblot assays
- A dang te - Rose Bengal plate agglutination test (RBT)

#### *Test for cellular immunity*

- The mallein test

## **PREVENTION AND CONTROL**

### ***Sanitary prophylaxis***

- A natna laka kan him theih nan a natna hriat chhuah ran te, rinhleh test vat te, ran screen zung zung te, positive nia hriat tih ral zung zung leh ran lakluh leh lakchhuah chungchang strict taka kalpui a pawimawh ber.
- He natna hi mihringah kaichhawn theih a ni a, natna hri lenna hmuna bungrua leh thildang reng reng uluk tak leh fimkhur taka thenfai leh tih thianghlim thin tur a ni.

### ***Medical prophylaxis***

- A hri len thinna hmunah chuan antibiotic treatment pek thin tur a ni a, mahse hei hian natna benvawn thlenin natna hrik pu darhtu anih tir thei thung.
- Treatment pek an nih vat loh chuan natna chak tak zaa 95 lain a thihpui theih a ni.

## **REFERENCES AND OTHER INFORMATION**

- Brown C. & Torres A., Eds. (2008). - USAHA Foreign Animal Diseases, Seventh Edition. Committee of Foreign and Emerging Diseases of the US Animal Health Association. Boca Publications Group, Inc.
- Coetzer J.A.W. & Tustin R.C., Eds. (2004). - Infectious Diseases of Livestock, 2nd Edition. Oxford University Press.
- VALIDATION LIST N° 45. (1993) - Int. J. Syst. Bacteriol., 43, 398–399.
- Kahn C.M., Ed. (2005). - Merck Veterinary Manual. Merck & Co. Inc. and Merial Ltd.
- Spickler A.R. & Roth J.A. Iowa State University, College of Veterinary Medicine – Updated in February 2015 <http://www.cfsph.iastate.edu/DiseaseInfo/factsheets.htm>
- World Organisation for Animal Health (2019). - Terrestrial Animal Health Code. OIE, Paris.
- World Organisation for Animal Health (2019). - Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. OIE, Paris.