



## EPIZOOTIC LYMPHANGITIS

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### Definition

Epizootic lymphangitis is a contagious, chronic granulomatous disease of the skin, lymphatic vessels and nodes of the limbs, neck and chest of horses and other equid species. It is caused by a dimorphic fungus *Histoplasma capsulatum* var *farciminosum* and is responsible for significant morbidity with chronic weight loss and progressive debility in affected animals. The disease is common in various parts of Africa, the Middle East, Russia, and Asia. It is a foreign animal disease, (not known to occur in the United States), as such it is a reportable disease to a state and/or federal animal health officials. Epizootic lymphangitis is an OIE non-listed disease even though it is of significant socioeconomic importance in countries in which it is endemic, some of which engage in international trade of animals and animal products. Its host range has infrequently been known to include camels, cattle and dogs.

### Causal Agent

*H. capsulatum* var *farciminosum* exists in two phases, a mycelial or saprophytic form in nature and a yeast or pathogenic phase that exists in animal tissues. The organism can survive in dust and soil for extended periods of time, especially under warm moist conditions. It is highly resistant to the actions of physical and chemical agents.

### Clinical signs

Four forms of epizootic lymphangitis are described. Two or more forms of the disease can occur concurrently in the same animal.

#### Cutaneous or skin form

- Most commonly encountered form of epizootic lymphangitis
- Following the introduction of the mycelial or yeast phase of the fungus through a wound, broken, or abraded skin, the organism spreads via the lymphatics to the regional lymph nodes, in some cases involving the internal organs.



- The initial lesion is usually a chancre-like papule that develops along the course of a superficial lymphatic vessel, eventually becoming a pyogranulomatous nodule that ulcerates.
- The lesion undergoes alternate periods of discharging and partial healing before finally closing over with scar formation. It can take two to three months for this to occur.
- Although the commonest sites of lesions are the forelimbs, neck and chest, lesions may be distributed over the entire body in advanced cases of the disease.
- Severely affected equines exhibit anorexia, deterioration in condition and lameness in cases of joint involvement.
- Mortality rate is 10-15% depending on secondary bacterial infection

#### **Ocular form**

- Less frequently observed and very rarely becomes generalized
- Most common in donkeys
- Granulomatous proliferation of conjunctival sac that protrudes out of medial lacrimal puncta; this can lead to blockage of lacrimal duct
- Blepharospasm, conjunctivitis and ocular discharge
- Swelling of the eyelids
- Extension to periorbital tissues where it results in a granulomatous reaction
- Frequent complications in advanced cases, corneal ulceration, panophthalmitis and myiasis

#### **Respiratory form**

- Lesions usually confined to upper respiratory tract
- Papules/nodules develop on nasal mucosa; these ulcerate giving rise to granulating ulcers
- Lesions may extend to the trachea, bronchial tree and the lungs
- Mucopurulent nasal discharge, coughing and dyspnea in advanced cases of the disease

#### **Subclinical carrier**

- Animals that have recovered from the disease spontaneously or following treatment
- Characterized by fibrocalcified skin lesions at previous sites of cutaneous infection.



<b>Differential diagnosis</b>	<ul style="list-style-type: none"> <li>● Glanders – “farcy” or skin form</li> <li>● Ulcerative lymphangitis (<i>Corynebacterium pseudotuberculosis</i>)</li> <li>● Sporotrichosis (<i>Sporothrix schenckii</i>)</li> <li>● Lesions caused by <i>H. capsulatum</i> var <i>capsulatum</i></li> <li>● Strangles</li> <li>● Sarcoids</li> <li>● Fungal granulomata</li> <li>● Cutaneous lymphosarcoma</li> <li>● A differential for the ocular form of the disease is lacrimal Habronemiasis</li> </ul>
<b>Incubation period</b>	The incubation period is variable and can range from a few weeks to as long as six months.
<b>Risk factors</b>	<ul style="list-style-type: none"> <li>● Warm, moist climatic conditions</li> <li>● Dissemination of the disease facilitated by: <ul style="list-style-type: none"> <li>– introduction of infected animal(s) into a naïve population</li> <li>– horses closely congregated together</li> <li>– presence of large populations of biting flies</li> <li>– climatic conditions conducive to dust storms</li> </ul> </li> </ul>
<b>Transmission</b>	<ul style="list-style-type: none"> <li>● Principal route of transmission of <i>H. capsulatum</i> var <i>farcinosum</i> is by entry through open wounds, broken or abraded skin</li> <li>● Source may be yeast form in infective discharge or mycelial form from the environment</li> <li>● Indirect spread of infection through the use of contaminated fomites, e.g. harness, buckets, hands and apparel of handler</li> <li>● Mechanical transmission by biting flies, <i>Musca</i> and <i>Stomoxys</i> spp., that have fed on discharging lesions</li> <li>● Ticks could potentially be involved in transmission</li> <li>● Inhalation of fungal spores during dust storms</li> </ul>
<b>Diagnostic sampling, handling and testing</b>	Specimen of choice for confirmation of a provisional clinical diagnosis of epizootic lymphangitis is pus preferably aspirated from an unruptured lesion or a biopsy sample from an affected lymph node or skin lesion. No particular handling or storage conditions are required in transporting specimens to a laboratory.



**Recommended action if epizootic lymphangitis is suspected**

Diagnosis is most frequently based on:

- Microscopic visualization of the yeast form of the organism in pus as exudate or in macrophages in tissue biopsy specimens.
- Culture can be attempted but it takes four to eight weeks for development of colonies.
- Serum agglutination test; titers  $\geq 1:80$  considered positive for infection.
- Histofarcin skin test, providing a sensitivity of 90% and a specificity of only 69%.

- In countries in which the disease is not endemic, suspect cases of epizootic lymphangitis should be tested and if confirmed infected, euthanized, and strict biosecurity measures implemented to prevent establishment and spread of the infective agent.
  - In the United States suspect cases should be reported to a state and/or federal animal health official.
- In endemic countries, culling of infected animals is neither practical nor economically feasible. The principles of basic hygiene, wound management, infection control and treatment should be applied in such cases.

**Specific control measures and biosecurity issues**

- Control of epizootic lymphangitis in countries in which the disease is not widely established is usually through elimination of infection by culling affected equids, and application of strict biosecurity measures to prevent spread of the infectious agent.
- Control strategies in large endemic regions will depend on disease prevalence, methods of husbandry, attitude, and capacity of equid-owning community to bear costs involved.
- Owners need to realize the importance of cleaning and disinfection in reducing spread of the disease, and the significance of contaminated fomites in transmission of infection.
- Immunization through use of killed or live attenuated vaccines has had some success in endemic countries.
- Control measures utilized in endemic countries, such as vaccination, are neither available nor recommended in the United States, at this time.

**Zoonotic concerns**

Rare cases of human infection with *H. capsulatum* var *farciminosum* have been known to occur.



**Additional  
Resources**

- [Epizootic Lymphangitis](#)
- [Epizootic lymphangitis in horses: a review of the literature al-Ani FK. Epizootic lymphangitis in horses: A review of the literature. Rev Sci Tech 1999 Dec;18\(3\):691-699.](#)

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**Supported and reviewed by:** AAEP Infectious Disease Committee