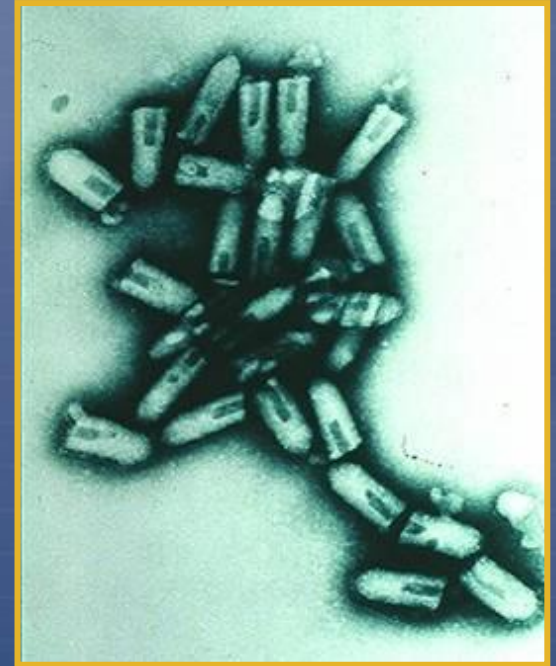


Vesicular Stomatitis



Vesicular Stomatitis Virus

- RNA Vesiculovirus
 - Family Rhabdoviridae
 - Major serotypes
 - VSV-NJ and VSV-I
- Affects horses, cattle, swine, camelids, humans
 - Sheep and goats resistant
- Closely resembles exotic vesicular diseases including FMD*****



Importance



History

- Early 1800s
 - Horse illness resembling VSV
- 1927: Virus identified
- 1950s: Human infections recorded
- 1982-83: Outbreak in western U.S.
 - Previously, epizootic waves typical
 - Now an annual occurrence in U.S.

Geographic Distribution

- Western hemisphere
 - North, Central, and South America
- Emergence in eastern hemisphere?
 - 2009: Bahrain, Laos (suspected)
 - 2009: Pakistan (limited regions)
- Southwest U.S.
 - Outbreaks in warmer regions
- Southeast U.S.: enzootic cycle

Morbidity/ Mortality

- Morbidity
 - Range: 5 to 90%
 - Most animals seroconvert
- Mortality
 - Higher in adults
 - Death rare in cattle and horses
 - *****

Transmission

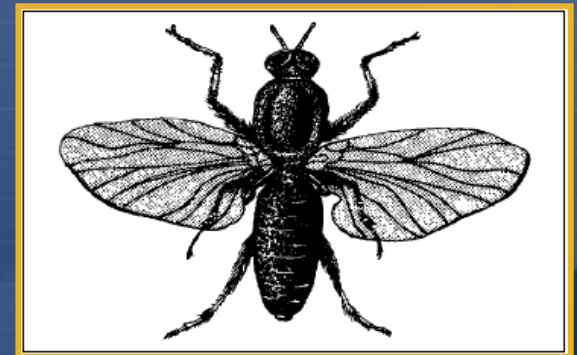
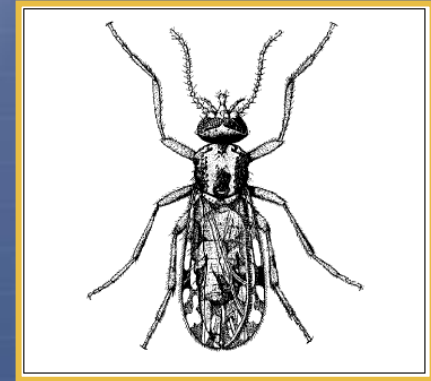


Animal Transmission

- Vectors
 - Sandflies
 - Blackflies
 - Seasonal outbreaks
- Direct contact
 - Infected animals
 - Contaminated objects

– *****

Sandfly



Blackfly

Human Transmission

- Direct contact
 - Infected tissues, vesicular fluid, saliva
- Insect bites
 - Blackfly, sandfly
- Aerosol
 - Laboratory settings
 - *****

Disease in Animals



Clinical Signs

- Incubation period
 - 3 to 5 days
- Fever and vesicles that resemble FMD
- Horses severely affected
 - Oral lesions
 - Drooling, chomping, mouth rubbing, lameness
 - Coronary band lesions



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Clinical Signs

- Cattle, pigs
 - Vesicular lesions
 - Oral, mammary gland, coronary band, interdigital region
 - Usually isolated to one body area
 - Salivation, lameness
- Recover within 2 weeks



	Foot & Mouth Disease	Vesicular Stomatitis	Swine Vesicular Disease	Vesicular Exanthema of Swine
Clinical Signs by Species	All vesicular diseases produce a fever with vesicles that progress to erosions in the mouth, nares, muzzle, teats, and feet			
Cattle	Oral & hoof lesions, salivation, drooling, lameness, abortions, death in young animals, "panthers"; Disease Indicators	Vesicles in oral cavity, mammary glands, coronary bands, interdigital space	Not affected	Not affected
Pigs	Severe hoof lesions, hoof sloughing, snout vesicles, less severe oral lesions: Amplifying Hosts	Same as cattle	Severe signs in animals housed on concrete; lameness, salivation, neurological signs, younger more severe	Deeper lesions with granulation tissue formation on the feet
Sheep & Goats	Mild signs if any; Maintenance Hosts	Rarely show signs	Not affected	Not affected
Horses, Donkeys, Mules	Not affected	Most severe with oral and coronary band vesicles, drooling, rub mouths on objects, lameness	Not affected	Not affected

Post Mortem Lesions

- Gross lesions
 - Erosive, ulcerative lesions
 - Oral cavity, nostrils, teats, coronary band
- Histopathology
 - Degeneration of epithelial cells



Differential Diagnosis for Vesicular Stomatitis Virus

	Cattle	Swine	Sheep	Horses
FMD	x	x	x	
Swine Vesicular Disease		x		
Vesicular Stomatitis Virus	x	x	x	x
Vesicular Exanthema of Swine		x		
Chemical burn	x	x	x	x
Thermal burn	x	x	x	x
Rinderpest	x			
IBR	x			
BVD	x			
Malignant Catarrhal Fever	x			
Bluetongue	x		x	
Contagious Ecthyma			x	
Lip/Leg Ulceration			x	
Foot Rot	x		x	

Sampling

- Before collecting or sending any samples, the **proper authorities should be contacted**
- Samples should only be sent **under secure conditions** and to **authorized laboratories** to prevent the spread of the disease

Clinical Diagnosis

- Vesicular diseases are clinically indistinguishable!
- But, symptoms in horses are suggestive
 - Salivation and lameness
- VSV vs. FMD
 - VSV less contagious
 - VSV lesions generally found in one area of the body



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Laboratory Diagnosis

- Virus isolation
- Viral antigen detection
 - Vesicular fluid or epithelium
 - ELISA, complement fixation, virus neutralization
- Antibody tests
 - Paired serum samples
 - ELISA, complement fixation, virus neutralization

Treatment

- No specific treatment available
- Supportive care
 - Fresh, clean water
 - Electrolytes if necessary
 - Soft feeds
- Antibiotics for secondary infection
- Good prognosis
- Production animals may suffer losses

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Disease in Humans



Clinical Signs in Humans

- Incubation period: 1 to 6 days
- Influenza-like symptoms
 - Headache, fever, retrobulbar pain, malaise, nausea, limb and back pain, oral vesicles (rare)
- Self-limiting disease, supportive care
- Recovery can be prolonged
- Death is rare

Diagnosis in Humans

- Clinical diagnosis difficult
 - Flu-like illness
 - Many do not seek treatment
- Differentials include:
 - Coxsackie A group viruses
(Hand, foot and mouth disease)
 - Herpes simplex
- Diagnosis via serology

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Public Health Significance

- Low incidence of human illness
- Chance of infection when handling contaminated tissues
 - Biosafety level 3
 - Personal protective equipment
- Rarely causes vesicle formation
- Recover in 4 to 7 days

Prevention and Control



Recommended Actions

- IMMEDIATELY notify authorities
 - /
- Quarantine

Disinfection

- Easily inactivated
 - Area must be free of organic matter
 - Contact time of at least 10 minutes
- Disinfectants
 - Phenolic, halogen-based disinfectants
 - Soda ash, 2% iodophores
 - Chlorine dioxide, 1% chlorine bleach
 - 1% cresylic acid
 - Quaternary ammonium

Vaccination

- Vaccines used in some endemic regions of Central, South America
- Vaccines may be available during an outbreak
 - Efficacy is unknown
- Contact state veterinarian for availability information

Prevention

- Do not buy from positive herds for 3 months post-infection
- Avoid grazing at peak insect feeding hours
- Segregation and isolation necessary for controlling spread
- Sanitation
- Insect control programs