Vesicular Stomatitis (VS)

**Classic case:** Herd or group outbreaks of vesicular lesions, usually **cattle AND horses**; occasionally swine, camelids **REPORTABLE**

**Presentation:**
- Occurs seasonally in warm humid areas, primarily western hemisphere
  - Mexico, Central America, parts of So. America
  - Southwestern USA – outbreaks every year or two since 1995
    - New Mexico, Colorado, Texas
  - Endemic in feral pigs on Ossabaw Island, GA, USA
- Usually adults older than 1 year
- Cattle and equine most common; swine, South American camelids next
- Sheep and goats somewhat resistant
- Occasional **zoonotic disease** in humans

**Clinical Signs:** (C/S) **VERY similar to foot and mouth disease** (FMD)

<table>
<thead>
<tr>
<th>All species</th>
<th>Equine</th>
<th>Cattle and Pigs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early signs:</td>
<td>Often severe</td>
<td>Lesions primarily in one area of body</td>
</tr>
<tr>
<td><strong>Fever</strong></td>
<td><strong>Vesicles, ulcers:</strong></td>
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<tr>
<td><strong>Salivation, drooling</strong></td>
<td>Mouth, nares</td>
<td>Mouth, teats; snout</td>
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<tr>
<td>Discomfort, difficulty eating</td>
<td>Sheath, udder</td>
<td>Coronary bands</td>
</tr>
<tr>
<td>Rubbing lips, mouth</td>
<td>Coronary bands</td>
<td>Interdigital spaces</td>
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<tr>
<td><strong>Sheep/Goats</strong></td>
<td>Ventral abdomen</td>
<td>Lameness (often 1&lt;sup&gt;st&lt;/sup&gt; C/S in pigs)</td>
</tr>
<tr>
<td>Uncommon</td>
<td>Lameness</td>
<td>Secondary mastitis</td>
</tr>
<tr>
<td><strong>Humans</strong> – flu-like symptoms</td>
<td>- fever, headache, malaise, body aches; sometimes – vesicles mouth/nose</td>
<td>Drop in milk production</td>
</tr>
</tbody>
</table>

**Vesicles often missed - lesions quickly progress to ulcerated areas with crusty exudate**

**DDX:**

June 2014 – VS reported in Texas counties located along southern border; See [Info on 2014 outbreaks](#) and [maps](#) from APHIS
**Vesicular Stomatitis (VS)**

Extended version

<table>
<thead>
<tr>
<th>VS cannot be distinguished by clinical signs alone from:</th>
<th>Other ruleouts:</th>
<th>Bovine papular stomatitis</th>
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</thead>
<tbody>
<tr>
<td>Foot and mouth disease, Swine vesicular disease (SVD), or Vesicular exanthema of swine (VE)</td>
<td>Infectious bovine rhinotracheitis</td>
<td>Foot rot</td>
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<td>Bluetongue, Rinderpest</td>
<td>Contagious ecthyma</td>
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<td></td>
<td>Malignant catarrhal fever</td>
<td>Chemical or thermal burns</td>
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<td>Bovine viral diarrhea</td>
<td>Trauma - Plant awns in hay</td>
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<tr>
<td></td>
<td>Epizootic haemorrhagic disease</td>
<td>Phenybutazone toxicity</td>
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</tbody>
</table>

When VS is suspected -

**CONTACT VETERINARY SERVICES AND THE STATE VET ASAP!!!**

A foreign animal disease diagnostician (FADD) from Veterinary Services often performs or directs diagnostics – most important to differentiate from FMD, SVD, and VE

**Test of choice:** Identify virus or antibody

- Viral antigen - ELISA, Complement fixation (CF), Virus neutralization (VN)
  - **ELISA most commonly used**
- Virus Isolation – with follow-up testing to determine strain
  - Samples – vesicular fluid, swab of lesion, tags of epithelium
- Serum antibody testing – paired samples
  - ELISA, CF, VN
- PCR – not commonly used
- Samples sent to APHIS approved labs in secure containers
- **Take great care to avoid spread of organism**

*Older lesions caused by vesicular stomatitis on bovine tongue: eroded, denuded areas with loose epithelial edges;*
*Image courtesy of APHIS*
Vesicular Stomatitis (VS)

Rx of choice:
- Symptomatic care as needed; soft feed, bedding
- Antibiotics if secondary infection; mastitis treatment
- Analgesics if lame or very sore, especially horses

Prognosis:
- Excellent for life and return of function
- Economic losses potentially significant, especially in dairy cattle
- Mortality rare but does occur

Prevention:
- **QUARANTINE** farm:
  - Duration - 3 weeks past healing of LAST affected animal
  - Isolate affected animals on farm
- Proper barrier protection protocols - DVMs wear gloves, change between patients
- **Sanitation, disinfection**
  - Readily killed with common disinfectants
  - Organic debris must be removed; 10 minute contact time
    - Phenols, halogen based - best
    - 2% iodophors, 1% bleach
    - Quaternary ammonium (Roccal™ 1:200)
    - Soda ash, others
- **Insect control/exposure**
  - Avoid turnout during peak insect feeding times
  - Insecticide sprays, sheets, masks, etc
- Do not purchase animals from affected farms for 3 months post infection
- Vaccines available in some countries for outbreaks

Pearls: LOOKS just like FMD!
- VS is caused by a **virus**;
  - Family *Rhabdoviridae*, genus *Vesiculovirus*
  - Incubation period 2-8 days; recovery 2 wks
- Morbidity – variable, often 10-20%, rarely up to 90%; herd often 100% antibody positive

**Two serotypes:**
- New Jersey (NJ) and Indiana (IND)
- 3 subtypes of IND, 1,2,3

Transmission – **seasonal occurrence** suggests arthropod vectors important
- Insect bites
  - Black fly (Simulidae spp)
  - Sand fly (*Lutzomyia* spp)
  - Mosquito (Aedes spp)
- Direct contact
  - Saliva, vesicular fluid, affected epithelium, exudates
  - Contaminated fomites – including DVM hands!

Aerosol transmission has occurred in laboratory; **Zoonotic** - humans in close contact
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Extended version

LINKS WORTH A LOOK:

Vesicular Stomatitis from APHIS, United States Department of Agriculture (USDA)
VS Information and images - Colorado State University Extension Service
Vesicular stomatitis images and a powerpoint presentation - Center for Food Security and Public Health, Iowa State University
Vesicular Stomatitis from the OIE, the World Organization for Animal Health


My Notes: