Erysipelothrix rhusiopathiae

Clinical & Microbiological Overview of a Zoonotic Pathogen

Exam-Focused Quick Revision Guide

TAXONOMY & CHARACTERISTICS

Classification

Erysipelothrix spp. are small, slender, Gram-positive, non-spore-forming rods. Previously grouped with Corynebacteria, they now occupy the family **Erysipelotrichaceae**.

Major Species

The genus includes several species, with **E. rhusiopathiae** being the primary human pathogen, followed by **E. tonsillarum**.

Core Identification

Catalase-negative, non-motile, and facultatively anaerobic. A key diagnostic clue is **H_2S production** on Triple Sugar Iron (TSI) agar.

Microscopic Morphology

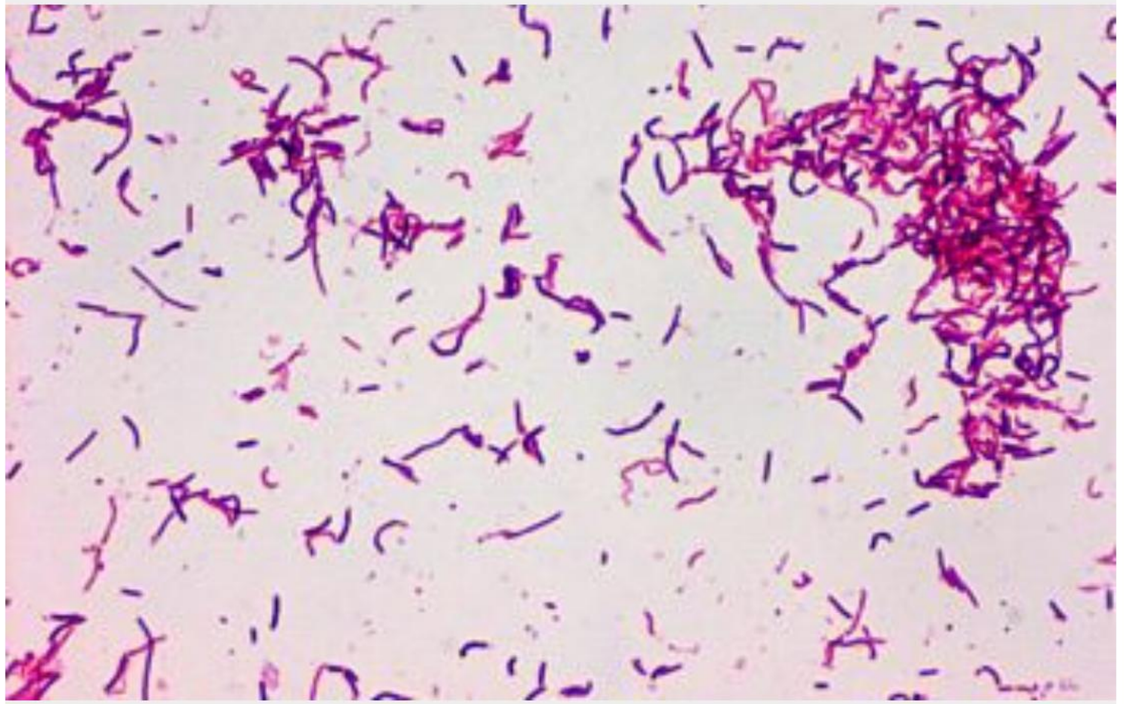
Slender rods that may form long, delicate filaments in older cultures, sometimes mimicking other species but distinguished by biochemical profiles.

LABORATORY MICROBIOLOGY

Morphological Features

- **Gram-Positive:** Slender rods (Bacilli).
- **Growth:** Small α-hemolytic colonies after 24-48 hours on blood agar.
- **Staining:** Pleomorphic nature; can appear filaments in clinical specimens.
- **TSI Agar:** Blackening of the butt due to H_2S production.

> **Crucial Point:** Intrinsic resistance to **Vancomycin** is a major diagnostic differentiator from most other Gram-positive bacteria.



EPIDEMIOLOGY

Reservoirs & Transmission

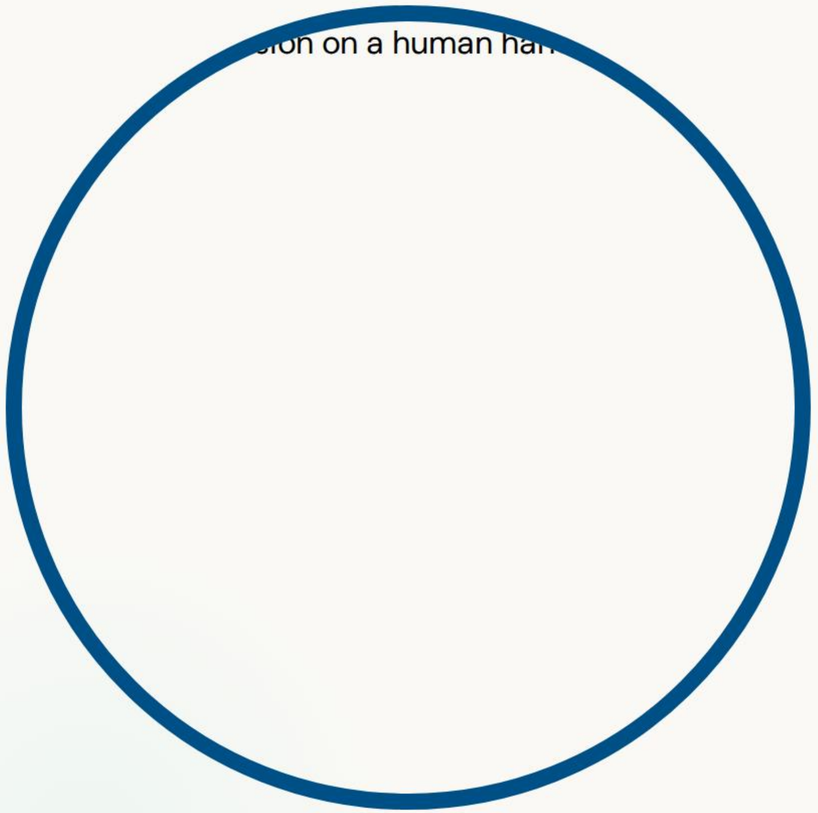
Erysipelothrix is a globally distributed zoonosis. Domestic swine are the principal reservoir (tonsils, lymphoid tissue, and feces).

Key Animal Carriers:

- Swine, Sheep, and Poultry (turkeys/ducks).
- Fish, Crustaceans, and Shellfish.

Occupational Risk: Most cases occur via direct cutaneous inoculation in fishermen, butchers, and veterinarians.

CLINICAL: ERYSIPELOID



Localized Cutaneous Infection

The most common human presentation, typically following minor trauma while handling animal/fish products.

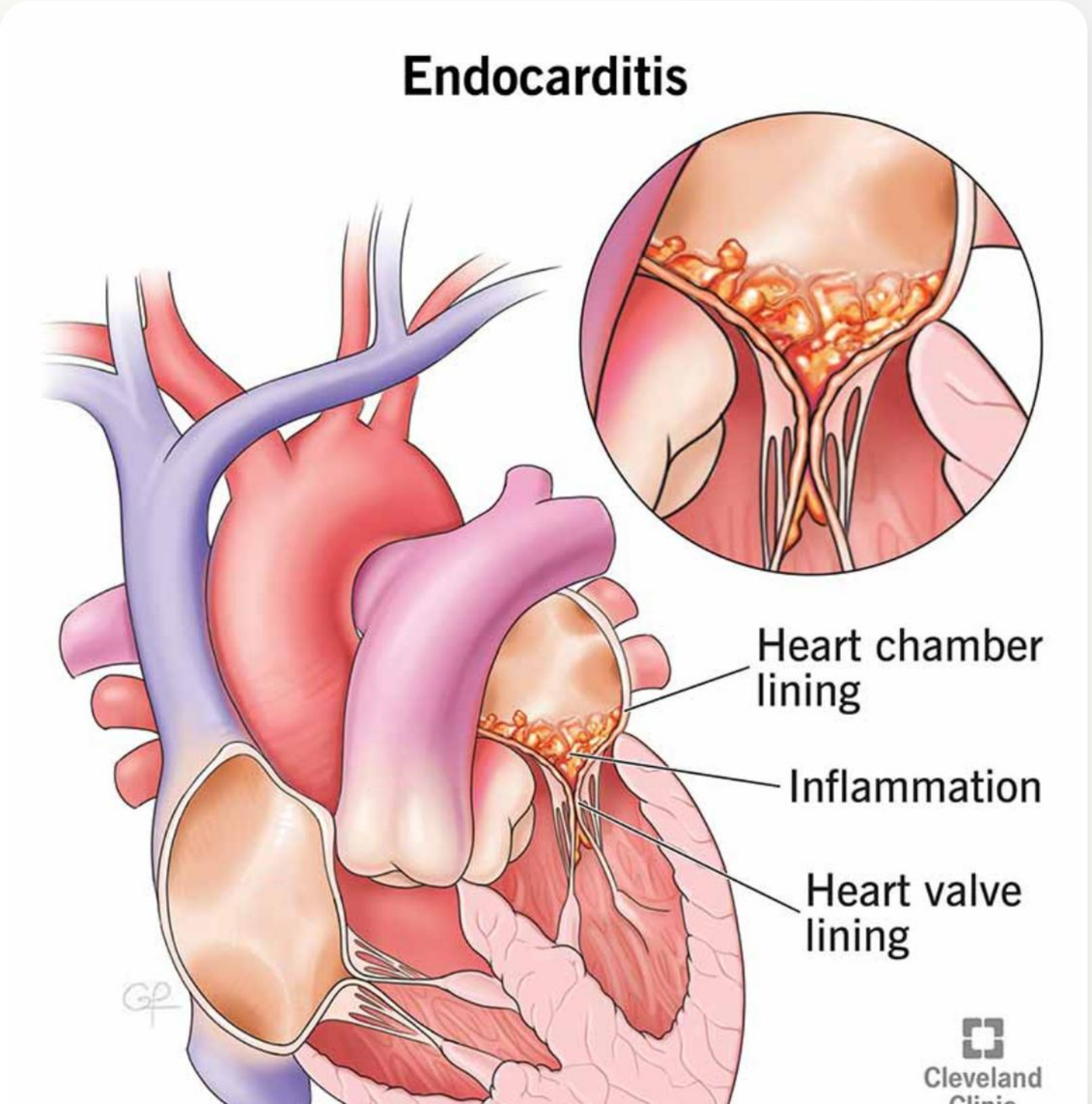
- **Appearance:** Well-demarcated, violaceous (purple) plaque with raised borders.
- **Sensation:** Intense burning or throbbing pain.
- **Course:** Usually self-limiting (resolves in 2-4 weeks).
- **Differentiation:** Lack of suppuration helps distinguish it from Staph/Strep cellulitis.

SYSTEMIC COMPLICATIONS

Invasive Disease

Systemic infection is rare but severe, often presenting as bacteremia without an obvious skin lesion in some cases.

- **Endocarditis:** Accounts for 90% of bacteremia cases.
- **Valve Predilection:** Strong affinity for the **aortic valve** (often native valves).
- **Mortality:** High fatality rate (approx. 40%) due to rapid heart failure.
- **Risk Factors:** Alcoholism, chronic liver disease, and immunosuppression.



DIAGNOSTIC APPROACHES

Specimen

Full-thickness **lesion biopsy** is preferred, as bacteria reside in the deep dermis. Swabs are often negative.

Biochemicals

Catalase negative and **H_2S positive**. Alpha-hemolytic colonies may be slow-growing (24-48h).

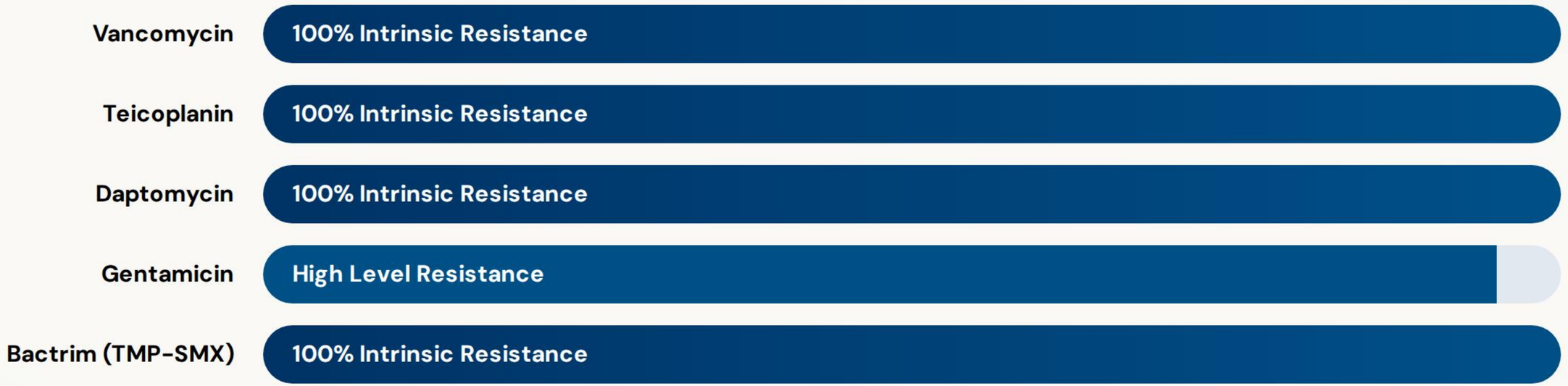
Molecular

MALDI-TOF MS is the gold standard for rapid identification. PCR/16S rRNA sequencing for confirmation.

DIFFERENTIAL DIAGNOSIS

Feature	Erysipelothrix	Listeria monocytogenes	Arcanobacterium
Hemolysis	α-hemolytic	Narrow zone β-hemolysis	Strong β-hemolysis
Catalase	Negative −	Positive +	Negative −
Motility	Non-motile	Tumbling motility (25°C)	Non-motile
H_2S Production	Positive ✓	Negative ✗	Negative ✗
Vancomycin	**Resistant**	Susceptible	Susceptible

INTRINSIC RESISTANCE



Note: Intrinsic glycopeptide resistance is a diagnostic hallmark of the Erysipelotrichaceae family.

TREATMENT STRATEGIES

Drug of Choice

- **Penicillin G** (Parenteral) or **Penicillin V / Amoxicillin** (Oral).
- **Ceftriaxone** is a highly effective alternative.
- Fluoroquinolones or Clindamycin for penicillin-allergic patients.

Clinical Scenarios

- **Localized:** 7-10 days of oral therapy.
- **Systemic/Endocarditis:** 4-6 weeks of parenteral β-lactams.
- **Empiric Therapy:** Must include β-lactams if Erysipelothrix is suspected (Vancomycin will fail).

EXAM CLINICAL PEARLS

90%

Percentage of systemic bacteremia cases that are associated with **Infective Endocarditis**.

80%

Incidence of **Congestive Heart Failure** in patients with Erysipelothrix endocarditis.

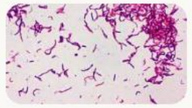
Top Exam Clues: Fishermen/Butchers + Violaceous hand lesion + Burning pain + Gram-positive rod + **Vancomycin Resistance**.

Any Questions?

Thank you for your attention. This presentation was curated for clinical and microbiological training.

Clinical Reference: Microregistrar Microbiology Guides
May 2026 Edition

IMAGE SOURCES



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