LITERATURE REVIEW OF *BRUCELLA* SPP. PATHOGENS

Jenna Hovind
Advisor: Dr. Lorna Ruskin
MLSP 6905 Capstone Project Presentation

How do Minnesota brucellosis cases compare to worldwide endemic cases?

- Brucellosis – acute and chronic infections
- Endemic to Middle Eastern and Central Asian countries, the Mediterranean, Central and South America
- Minnesota cases from laboratory transmission and unpasteurized, non-domestic dairy

Literature Review / Background

- *Brucella* spp. and reservoirs
- Transmission and risk factors
  - Ingestion (unpasteurized dairy), inhalation, contact with membranes
  - Contact with livestock and secretions, laboratory
- Brucellosis signs & symptoms
- Laboratory diagnosis
  - Gold standard: culture isolation
- Challenges as an intracellular pathogen
- Worldwide significance

Materials & Methods

- Literature review of peer-reviewed scientific articles, textbooks and documents from CDC and MDH
- Case studies from CDC and MDH, infections in Indiana and Minnesota
- Compare case studies to endemic brucellosis experience

Case Studies

2006

- 2 microbiologists infected in workplace
- Indiana subculture sent to Minnesota reference laboratory
- Genotyping linked blood culture isolates to laboratory specimens

2021

- MN community outbreak from soft cheese orig. in Mexico
- 3 known infected

Results

Year	Number of Cases Reported	Determined Source of Infection (per cases)
2019	4	(3) Unpasteurized camel milk, Africa (1) Unknown
2018	2	(2) Unpasteurized camel milk, Africa
2017	3	(3) Unpasteurized milk, Africa and Mexico
2015	4	(1) Unpasteurized camel milk (2) Hunting feral swine (1) Pig slaughterhouse worker

Table 2. Reported cases of brucellosis in Minnesota per year, for the years 2018, 2017 and 2015. The total number of cases for each year correspond to a breakdown of the sources of infection. Predominant sources are unpasteurized milk from outside the country.[15]

Discussion / Conclusion

- Minnesota brucellosis
  - Acute, not chronic
  - Sources different from endemic countries
- Risk factors for contracting brucellosis
- Prevention strategies
  - Vaccination
  - Livestock eradication is key
  - Laboratory prevention measures
- Rare but still important to study and track

Study Limitations / Next Steps

- More cases, more data
- Greater detail per case
- Data from surrounding states
- Permissions to patient files

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