Complete Summary

GUIDELINE TITLE

Tularaemia.

BIBLIOGRAPHIC SOURCE(S)

Finnish Medical Society Duodecim. Tularaemia. In: EBM Guidelines. Evidence-Based Medicine [Internet]. Helsinki, Finland: Wiley Interscience. John Wiley & Sons; 2007 Apr 3 [Various].

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse (NGC): This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- July 08, 2008, Fluoroquinolones (ciprofloxacin, norfloxacin, ofloxacin, levofloxacin, moxifloxacin, gemifloxacin): A BOXED WARNING and Medication Guide are to be added to the prescribing information to strengthen existing warnings about the increased risk of developing tendinitis and tendon rupture in patients taking fluoroquinolones for systemic use.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Tularaemia

GUIDELINE CATEGORY

Diagnosis
Prevention
Treatment

CLINICAL SPECIALTY

Family Practice
Infectious Diseases
Internal Medicine
Pediatrics
Preventive Medicine

INTENDED USERS

Health Care Providers
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

Evidence-Based Medicine Guidelines collect, summarize, and update the core clinical knowledge essential in general practice. The guidelines also describe the scientific evidence underlying the given recommendations.

TARGET POPULATION

Patients with suspected or known tularaemia

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

1. Evaluation of clinical picture
2. Serology (antibody titre)
3. Bacterial culture of secreting lesion (only at safety laboratory)

Treatment

1. Fluoroquinolones (e.g., ciprofloxacin)
2. Doxycycline
3. Streptomycin
4. Aminoglycosides

5. Consultation with infectious disease physician for severe symptoms

Note: Guideline developers considered but did not recommend beta-lactam antibiotics as treatment due to ineffectiveness

Prevention

Live attenuated vaccine (not currently available)

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The evidence reviewed was collected from the Cochrane database of systematic reviews and the Database of Abstracts of Reviews of Effectiveness (DARE). In addition, the Cochrane Library and medical journals were searched specifically for original publications.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

A. **Quality of Evidence: High**

Further research is very unlikely to change confidence in the estimate of effect

- Several high-quality studies with consistent results
- In special cases: one large, high-quality multi-centre trial

B. **Quality of Evidence: Moderate**

Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate.

- One high-quality study
- Several studies with some limitations

C. **Quality of Evidence: Low**

Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.

- One or more studies with severe limitations

D. **Quality of Evidence: Very Low**

Any estimate of effect is very uncertain.

- Expert opinion
- No direct research evidence
- One or more studies with very severe limitations

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

The levels of evidence [A-D] supporting the recommendations are defined at the end of the "Major Recommendations" field.

Aims

- Suspect tularaemia in patients with fever, lymphadenopathy, and an ulcerated skin lesion (see Picture 1 in the original guideline document) at the site of a mosquito bite or a scratch.
- Begin treatment on the basis of the clinical picture if the symptoms are typical and the point of time of the disease onset matches with tularaemia. Diagnosis can be confirmed with serology.

Transmission

- The most important reservoir host is the mole.
- The infection is transmitted by
    - Mosquitoes (most important)
    - Other blood-sucking arthropods (horse-flies, black flies, ticks)
    - Bites or scratches of a sick animal
    - Inhalation of infected aerosols
    - Ingestion of contaminated water or food
    - Ingestion of meat from an affected animal (even after freezing the meat)
- Incubation period is 1 to 14 days (mean 4 days)
- The use of tularaemia as a biological weapon is considered possible (Dennis et al., 2001). In that case, the bacteria would be spread as an aerosol and the infection would take place via the airways.

Symptoms

- Varying clinical manifestations:
    - **The ulceroglandular form** (75 to 85% of the cases) causes fever, a small infected skin lesion as well as swelling and tenderness of regional lymph nodes.
    - **The glandular form** (5 to 10% of the cases) causes fever and lymphadenopathy but no skin lesions.
    - **The typhoidal form** (5 to 15% of the cases) causes severe systemic symptoms (fever, fatigue, and weight loss) and possibly enlargement of the liver and spleen.
    - **The oculoglandular form** causes granulomatous conjunctivitis with regional lymphadenopathy.

    - **The oropharyngeal form** (2 to 4% of the cases) causes tonsillitis, pharyngitis, and cervical lymphadenopathy.
- Symptomless infection is common (about 50% of the cases).
- Rash (see Picture 2 in the original guideline document) has been reported in up to 20% of the patients.
- Pneumonia is seen in 15% of the ulceroglandular cases and in nearly all patients with other forms of the disease.
- Elevated liver enzyme values, enlarged liver
- Peritonitis, meningitis, and osteomyelitis are rare.
- C-reactive protein (CRP) increases moderately, erythrocyte sedimentation rate (ESR) to a lesser extent.
- Anaemia

Diagnosis

- Treatment is begun on the basis of the clinical picture.
- Diagnosis is confirmed by serology. The antibody titre rises first 10 to 14 days after onset of fever. The blood samples are taken 2 to 3 times, at 2-week intervals. A rise in the antibody titre is an indication of a recent infection. A 4-fold rise of the titre, or a single clearly elevated titre (1:160 with agglutination technique, 1:128 with microagglutination technique), is considered diagnostic.
- Francisella tularensis does not easily grow in an ordinary bacterial culture dish. The cultivation is associated with a risk of transmission to the laboratory staff, which is why the cultivation should take place in a safety laboratory. For these reasons, cultivation hardly ever comes in question in tularaemia diagnostics. If, however, the decision is made to take a sample for microbiological culture in suspected tularaemia, the receiving laboratory should be informed about the suspicion.

Treatment

- Fluoroquinolones are the recommended antibiotic therapy in mild and moderate cases (the dose of ciprofloxacin is 500 mg twice a day [b.d.] for adults). Alternatively, doxycycline (100 mg b.d. for 10 to 14 days, or 2 to 3 weeks after onset of symptoms), or streptomycin or aminoglycosides for 1 to 2 weeks can be used depending on the severity of the disease (Cerny, 1994; Jacobs, 1996; Russell et al., 1998; Scheel, Reiersen, & Hoel, 1992).
- If the patient has severe symptoms, an infectious disease physician should be consulted.
- Beta-lactam antibiotics are ineffective.
- Children are managed under the supervision of a paediatrician. Even if ciprofloxacin is not officially approved to be used in children, it has usually been used for children as well in verified cases of tularaemia. The dose is 20 to 30 mg/kg daily divided into two doses. The adult dosage must not be exceeded even if the dose calculation based on body weight would indicate a higher dose!

Prevention

- A live attenuated vaccine has been developed, but is not currently available.

Related Resources

Refer to the original guideline document for related literature.

Definitions:

Levels of Evidence

A. **Quality of Evidence: High**

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

Concise summaries of scientific evidence attached to the individual guidelines are the unique feature of the Evidence-Based Medicine Guidelines. The evidence summaries allow the clinician to judge how well-founded the treatment recommendations are. The type of supporting evidence is identified and graded for select recommendations (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Accurate diagnosis and appropriate treatment of tularaemia

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004 Aug 12 (revised 2007 Apr 3)

GUIDELINE DEVELOPER(S)

Finnish Medical Society Duodecim - Professional Association

SOURCE(S) OF FUNDING

Finnish Medical Society Duodecim

GUIDELINE COMMITTEE

Editorial Team of EBM Guidelines

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Author: Janne Laine

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

GUIDELINE AVAILABILITY

This guideline is included in a CD-ROM titled "EBM Guidelines. Evidence-Based Medicine" available from Duodecim Medical Publications, Ltd, PO Box 713, 00101 Helsinki, Finland; e-mail: info@ebm-guidelines.com; Web site: www.ebm-guidelines.com.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on September 2, 2005. This NGC summary was updated by ECRI on December 26, 2006, and on January 8, 2008. This summary was updated by ECRI Institute on July 28, 2008 following the U.S. Food and Drug Administration advisory on fluoroquinolone antimicrobial drugs.

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