Acute Tick-Borne Disease Testing Algorithm

Clinical suspicion of tick-borne disease based on patient characteristics:
- Illness during tick season: fever, chills, headache, muscle aches, joint pain, neck pain, skin rash, Bell's palsy, heart rhythm disturbances, hypotension, jaundice, sepsis
- Known tick exposure
- Environmental exposure (outdoor activities, wildlife)

Based on geographic exposure, consider the following tick-borne pathogens (choose all that are appropriate):

At risk for Rocky Mountain Spotted Fever (states with the highest incidence include North Carolina, Oklahoma, Arkansas, Tennessee, Missouri, Arizona, and the tribal Southwest)
- SFGP / Spotted Fever Group Antibody, IgG and IgM, Serum
  - Consider empiric treatment while awaiting test results

At risk for Lyme disease, ehrlichiosis, anaplasmosis, babesiosis, and Borrelia miyamotoi disease (BMD)
- Endemic areas for Lyme disease, anaplasmosis, babesiosis, and BMD include the Northeastern and Upper Midwestern United States, into Canada
- Ehrlichiosis is most frequently reported from the Southeastern and South Central United States

LYME or ELYME Results
- Perform LYME / Lyme Disease Serology, Serum (Enzyme-Linked Immunosorbent Assay)
- For patients with exposure to ticks in Europe, consider ELYME / Lyme Disease European Antibody Screen, Serum
- If systemic symptoms are present (eg, fever, chills, sepsis) also perform TKPNL / Tick-Borne Panel, Molecular Detection, PCR, Blood
- Consider collecting baseline serology (TICKS / Tick-Borne Disease Antibodies Panel, Serum) if patient presents with >7 days of symptoms

TKPNL Results
- Report as negative
- If short disease duration, consider follow-up specimen for repeat testing in 2-3 weeks if clinically indicated

LYMWB / Lyme Disease Antibody, Immunoblot, Serum (performed automatically when LYME result is positive or equivocal)
- ELYM / Lyme Disease European Antibody Screen, Serum (performed automatically when ELYME result is positive or equivocal)

NEGATIVE
- Report as negative
- If short disease duration, consider follow-up specimen for repeat testing if clinically indicated
- In immunocompromised patient, consider PBOR/R / Lyme Disease, Molecular Detection, PCR (for CSF, synovial fluid, or fresh tissue samples)
- PBORB / Lyme Disease, Molecular Detection, PCR, Blood

POSITIVE
- Treat as appropriate

POSITIVE OR EQUIVOCAL
- Report as negative
- If neurologic or joint symptoms, consider PBOR/R / Lyme Disease, Molecular Detection, PCR for CSF, synovial fluid, or fresh tissue samples
- OR
- LNBAB / Lyme CNS Infection IgG with Antibody Index Reflex

NEGATIVE
- Treat as appropriate

POSITIVE
- Report as negative
- If short disease duration, consider follow-up specimen for repeat testing if clinically indicated

NEGATIVE
- Report as negative
- If short disease duration, submit follow-up specimen for repeat testing in 2-3 weeks if clinically indicated

POSITIVE
- Treat as appropriate

NEGATIVE
- Report as negative
- If the PCR panel, PCR tests for the individual organisms and/or smear for Babesia species can be ordered based on the suspected organism(s).
- PCR testing of blood may be useful for detection of Babesia microti (patients with exposure to ticks in Minnesota or Wisconsin).

See Lyme Neuroborreliosis Diagnostic Algorithm for more information.

The TKPNL includes PCR tests for Babesia species, Anaplasma phagocytophilum, Ehrlichia species, and Borrelia miyamotoi.

In place of the PCR panel, PCR tests for the individual organisms and/or smear for Babesia species can be ordered based on the suspected organism(s).

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