Influenza A and B Culture, Rapid Method

Test Highlight

Clinical Use

Diagnosis of Influenza virus A and B infection

Clinical Background

Influenza is caused by different influenza viruses, most commonly type A but also type B. The infection usually manifests as a respiratory illness lasting 7 to 10 days, but it may progress to rapidly fatal pneumonia. Effective anti-influenza drugs are now available, increasing the clinical importance of rapid diagnosis (i.e. within 2 days of the onset of symptoms).

In the past, laboratory tests have been primarily limited to epidemiological purposes because such tests were lengthy and relatively insensitive. For example, direct fluorescent antibody (DFA) tests are rapid (1 day turnaround time) but insensitive, while culture tests are most sensitive but slow (5-14 days). Antibody detection tests are impractical for diagnosis of acute disease. Direct antigen tests, however, can differentiate type A and B influenza in a timely manner, thereby assisting with treatment decisions.

The rapid culture and antigen detection method appears to overcome both limitations referred to above. Results are available within 8 to 24 hours of sample arrival in the lab and the sensitivity is greater than 95%, significantly better than conventional culture, the current gold standard. Specificity is 100%.

Method

In this culture method, a mixed monolayer of mink lung cells (strain Mv1Lu) and human adenocarcinoma cells (strain A549) is inoculated with patient specimen. After 6 hours of incubation, one duplicate culture well is fixed and incubated with both influenza A and B monoclonal antibodies and then strained with FTIC-conjugated goat and anti-mouse antibody. If positive on fluorescent microscopic examination, results are reported as positive for influenza A or B virus. If negative, a second duplicate culture well is processed after 20 hours of incubation and examined microscopically. Results are reported as negative or positive for influenza A or B virus.

Interpretive Results

A negative result suggests the absence of influenza A and B virus, while a positive result indicates the presence of influenza A or B virus as specified.

Specimen Requirements

- 2 ml refrigerated fluid (1 ml of nasopharyngeal aspirate in 1 ml of M4 virus transport medium)
- Less desirable alternatives include a throat swab, nasopharyngeal swab or throat washings in 1 or more ml of refrigerated M4 transport medium
- Use only cotton, rayon or Dacron swabs on plastic shafts. Do not use calcium alginate or wooden shafts that may inactivate virus. Alternative transport media include viral transport medium (VTM), viral-chlamydial transport medium (VCTM) and viral-chlamydial-mycoplasma transport medium (VCMTM).

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