Chlamydia trachomatis-Culture Technique in Diagnosis: Laboratory Service at Armed Forces Research Institute of Medical Sciences (AFRIMS)

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Abstract

Background: Genital infections due to Chlamydia trachomatis is the most common bacterial sexually transmitted diseases. Chlamydia trachomatis is known to cause urethritis, epididymis, proctitis, cervicitis, pelvic inflammatory disease, infant pneumonia and conjunctivitis. It can be a significant cause of morbidity in case of untreated cases. Traditionally, chlamydia infection has been diagnosed by detection of Chlamydia inclusions in tissue culture cells, direct antigen detection technique nucleic acid probes, ligase chain reaction and polymerase chain reaction. Initially, cell culture was considered to be a highly sensitivity and specificity assay for Chlamydia trachomatis.

Objective: To detect Chlamydia trachomatis for diagnosis in the clinical specimens from patients attending clinics in hospital and expected to contact sexual transmitted infections by cell culture technique.

Setting: Armed Forces Research Institute of Medical Sciences (AFRIMS)

Materials and Methods: Twenty-eight clinical specimens, including urethral, endocervical and ocular swab, obtained from Pramongkutkloa hospital and other hospitals in January through September 2003 were performed for isolation of Chlamydia trachomatis by cell culture technique. These specimens were shook vigorously on a vortex mixer for releasing elementary bodies from intact host cells and inoculated in monolayer of McCoy cell. Centrifuged the plate at 2000g for 1 hour at 30°C, then add growth medium supplemented with 2 (g/ml of cycloheximide and 0.6 mg/ml of glucose and incubate at 35°C for 72 hours. The monolayers are examined by Jone’s iodine staining to visualize the cytoplasmic inclusions under the inverted microscope. The presence of typical dark-brown inclusions surrounded by halo was considered as positive culture, due to consume glucose of Chlamydia trachomatis and produces glycogen which reacts with iodine.

Results: Sexually transmitted disease laboratory at AFRIMS for diagnosis of Chlamydia trachomatis remain using cell culture technique, gold standard method, because compared with other diagnostic tests, a major advantage of cell culture isolation is a specificity that approaches 100%. In addition, the centrifugation of specimens onto the cell monolayers of McCoy cell in our cell culture technique increases sensitivity.
However, the cell culture technique is technically difficult and requires 3-7 days to obtain a result, special transport media must be used, and transportation and storage temperature requirements are stringent. A total of 28 specimens in our laboratory diagnostic service included 20 urethral, 1 conjunctiva and 7 cervical swabs. Of these, 3 positive cultures were demonstrated (3/28) and one positive culture was found in each kind of specimen.

**Conclusion:** Cell culture technique for chlamydia is the diagnostic method of choice and is essential for the diagnosis of chlamydia in all medical situation. The laboratory diagnostic service for *Chlamydia trachomatis* at AFRIMS could provide useful sentinel data about changes in the prevalence of the infection if the number of clinical specimens are expanded.

**Key words:** *Chlamydia trachomatis*, McCoy cell, Inclusion body

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