Letters to the Editor

Legionella pneumophilia Serogroup 1 Antigen Can Be Detected in Sputum Samples by an Immunochromatographic Assay

The NOW immunochromatographic test (ICT) (Binax, Portland, Maine) for detection of Legionella pneumophilia serogroup 1 antigen was recently reported (P. C. Wever, D. W. Notermans, I. I. Tulevski, J. K. M. E. Schattenkerk, and M. D. de Jong, Letter, J. Clin. Microbiol. 41:2265, 2003) to be positive in bronchoalveolar lavage fluid from a patient with Legionnaires' disease. In order to test if the ICT could be used on sputum samples, we collected repeated samples from a 75-year-old man with previous myocardial infarction, who turned out to have legionellosis. Five days after onset of illness, he was admitted with a right-sided community-acquired pneumonia (CAP) and a Fine’s score of 120. He was initially treated with cefuroxime, and on day 2 from admission, when he was tested ICT positive in a urine sample, the treatment was switched to ciprofloxacin monotherapy. The patient was intubated and received mechanical ventilation between days 2 and 8 and between days 9 and 13, and the antibiotic treatment was discontinued on day 22. He improved and was discharged from the hospital on day 38. Sputum samples were collected on days 1, 8, 13, and 20, after which he was unable to expectorate sputum. On days 5 and 10, endotracheal secretion samples were taken. Routine bacterial cultures were negative, but the first sputum sample was culture positive for Legionella spp., which was identified as L. pneumophilia serogroup 1 at the Legionella reference laboratory, Uppsala University Hospital, Uppsala, Sweden. Legionella culture of the sputum sample from day 8 and of both endotracheal secretion samples was also performed, with negative results. When the four sputum samples and two endotracheal secretion samples were tested with ICT, they all produced positive results, without any manipulation prior to testing. The patient also remained ICT positive in five urine samples taken at the same times as the lower respiratory tract specimens from day 5 to day 20. When two sputum samples, one endotracheal secretion sample, and three urine samples were retested after a period of freezing, all remained ICT positive.

As a pilot control study, ICT was tested on frozen sputum and urine samples from five hospitalized patients with CAP and a median Fine’s score of 115 (range, 46 to 191). All samples produced negative results. The patients had well-established CAP causes: i.e., blood and sputum cultures positive for Streptococcus pneumoniae (n = 2), blood and sputum cultures positive for Haemophilus influenzae, complement fixation test and sputum PCR positive for Mycoplasma pneumoniae, and microimmunofluorescence test and sputum PCR positive for Chlamydia pneumoniae.

ICT applied on sputum samples has promising potential for clinical use, as Legionella culture is limited by a low sensitivity (1) and Legionella PCR has been complicated by the risk of intermittent contamination of some commercial DNA extraction kits (A. van der Zee, M. Peeters, C. de Jong, H. Verbakel, J. W. Crielaard, E. C. J. Claas, and K. E. Templeton, Letter, J. Clin. Microbiol. 40:1126, 2002). Because of its speed and ease of performance, ICT can be used for bedside examination. Further studies are needed to investigate the clinical usefulness of the assay applied to sputum samples. As urine excretion of Legionella antigen has been suspected to be delayed (1), it would be interesting to investigate if sputum samples will be ICT positive earlier than urine samples in the course of Legionnaires' disease.

(The present study was part of a prospective study of pneumonia etiology approved by the ethics committee of the Örebro County Council [868-1999].)

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