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Role of Selective and Nonselective Media for Isolation of *Burkholderia pseudomallei* from Throat Swabs of Patients with Melioidosis

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Role of Selective and Nonselective Media for Isolation of *Burkholderia pseudomallei* from Throat Swabs of Patients with Melioidosis

Melioidosis, caused by the gram-negative bacillus *Burkholderia pseudomallei*, is endemic in southeast Asia and northern Australia. Isolation relies on culture; the isolation of even a single colony of *B. pseudomallei* from any body site is indicative of disease. Throat swabs form a routine part of screening in our practice and may be the only culture positive for *B. pseudomallei*; swabs are directly plated onto Ashdown's medium and are then inoculated into enrichment broth. The purpose of this study was to compare the sensitivities of selective and nonselective enrichment broths for the isolation of *B. pseudomallei* from throat swabs.

Two throat swabs were taken from patients with suspected melioidosis presenting to Sappasithiprasong Hospital, Ubon Ratchathani, in northeast Thailand between June and November 2004. Each cotton-tipped swab was applied to the fauces and pharynx separately. Both swabs were plated directly onto Ashdown's agar containing gentamicin (5 mg/liter) (1) and then placed into either Trypticase soy broth (TSB) or modified Ashdown's broth containing colistin (50,000 U/liter) and crystal violet (SCBT) (4). To take account of any effect of the order in which throat swabs were taken, the first swab was inoculated alternately into TSB or SCBT. Primary agar plates were incubated at 37°C in air and examined after 24 and 48 h. Broths were subcultured onto Ashdown's agar after overnight incubation at 37°C in air, and the plates were incubated and examined as described before. *B. pseudomallei* was identified by standard methods (3).

Two throat swabs were taken from 99 patients with culture-confirmed melioidosis during the 6-month study period. Twenty-five patients had positive cultures on at least one of Ashdown's media, TSB, and/or SCBT (overall sensitivity, 25.2%). SCBT was positive in 24 patients (sensitivity, 24.2%); this was more sensitive than both TSB ($n = 10$; sensitivity, 10.1%; $P = 0.0001$ [McNemar's test]) and Ashdown's agar ($n = 13$; sensitivity, 13.1%; $P = 0.003$). Ten patients had *B. pseudomallei* isolated from SCBT only, and one patient had *B. pseudomallei* isolated from Ashdown's agar only. Sixteen of the 25 patients (64%) with positive throat swabs had lung involvement based on the presence of an abnormal chest radiograph consistent with infection, and 15 patients (60%) had sputum cultures positive for *B. pseudomallei*. Blood cultures were positive in 13 of 25 cases (52%). Two patients were positive on the basis of throat swab results (in SCBT only) alone; one had clinical and radiological evidence of pneumonia, and the other had ultrasonographic evidence of a splenic abscess.

Throat swabs are a simple test for melioidosis. A previous study demonstrated that in 4,535 subjects, the specificity of a positive throat swab was 100% with a sensitivity of 36%, with selective broth being more sensitive than Ashdown's agar (5). Based on this, we have adopted throat swabs as part of our routine screening. Their use is also supported by Australian guidelines (2). In this study, we found that the use of TSB, a nonselective broth, was inferior to the use of selective broth, probably due to overgrowth of commensal flora. Modified Ashdown's broth remains the standard for isolation of *B. pseudomallei* from throat swabs in patients with suspected melioidosis. The addition of direct plating of the swab onto Ashdown's agar is associated with a modest increase in sensitivity.

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