

## Septicaemic melioidosis: Best approach to diagnosis

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Myriad of clinical presentations and difficulties faced with laboratory diagnosis often delay the diagnosis of melioidosis. This has led to higher mortality of upto 50% in resource constrained settings, whereas early diagnosis and better sepsis management reduces the mortality to 10%. The gold standard for the diagnosis of melioidosis is culture from clinical specimens. This is, however, time-consuming and may not be easily available in endemic regions. Simple, rapid and reliable diagnostic tests for melioidosis will help identify cases earlier, leading to improved outcomes, given the delay of culture and identification techniques. The diagnostic yield in melioidosis often relies on the nature of clinical specimen and the corresponding bacterial load, blood containing lowest CFU/ml and respiratory secretions such as sputum with higher bacterial load.

We analysed 200 cases of laboratory confirmed melioidosis including 57 (29%) that presented with features of sepsis. Of these 57 cases, 45 (79%) were bacteremic. Additional 12 patients presented with deep organ abscesses and pulmonary melioidosis. Nearly 50% of patients of total cases of bacteremic melioidosis had features of sepsis. The mean time to positivity was  $28.3 \pm 9.03$  hrs. EDTA blood specimen from a subset of the bacteremic cases were tested for PCR and all were negative while all the blood culture fluids were positive.

We also analysed the usefulness of different culture methods and PCR in the diagnosis of melioidosis, emphasizing on those patients whose blood cultures are negative. Clinical specimens (n=525) obtained from patients presenting with clinical symptoms suggestive of community-acquired pneumonia, lower respiratory tract infections, superficial or internal abscesses, chronic skin ulcers and bone or joint infections were tested for the presence of *Burkholderiapseudomallei* using conventional culture (CC), enrichment culture (EC) and PCR. Detection rates of *B. pseudomallei* using CC, EC and PCR were 3.8%, 5.3% and 6% respectively. Diagnostic sensitivities and specificities of CC and PCR were 71.4, 98.4% and 100 and 99.4% respectively in comparison with EC as the gold-standard test. An increase of 1.6% (95%CI: 1.08-4.32%) in the case detection rate of melioidosis was observed in the study population when EC and/or PCR were used in adjunct to the conventional culture technique.

In conclusion, blood cultures provide better diagnostic yield when the patients present with features of sepsis. However, given that good number of localized melioidosis also manifest with sepsis, access to tissue specimen and performance of enrichment culture and / PCR would increase the diagnostic yield.

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