

E024

2-hour Educational Workshop

The impact of diagnostics on clinical tuberculosis management

Biomarkers

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Many patients with tuberculosis are either never diagnosed or are treated empirically after a prolonged symptomatic phase which leads to morbidity and mortality. In part, this is due to tuberculosis being a great mimic of other infectious and non-infectious medical conditions. Further, it may be difficult to distinguish active disease from latent infection or previous tuberculosis. If the organism is not identified, it is very hard to be sure that the patient is initially responding to treatment or has drug resistant disease. An emerging but important problem is the inability to know if prophylactic therapy or new vaccination programmes are effective since the time course of the development of active infection is measured over decades. For all these reasons, there is great interest in the development of novel biomarkers in tuberculosis.

This talk will review the current and potential future biomarkers for tuberculosis which is an exciting area that seems likely to provide a future step-change in the management of this global infection. To date, the main biomarkers used in infection are skin tests which rely on delayed hypersensitivity reactions and interferon assays. Such tests have limitations in terms of sensitivity and ability to distinguish different forms of infection. Initial interest in biomarkers focused on single biological markers but these do not provide sufficient specificity. After reviewing the topic, I shall focus on current interest in defining multiple biomarkers for the diagnosis of tuberculosis. There has been diverse interests in transcriptomics, metabolomics and proteomics to define disease. More recently, biomarkers based on miRNA have been investigated. Proteomics is particularly attractive as there is the potential to develop tools such as dipsticks which are suitable for use in resource-poor areas. Biomarkers may focus on either parasite derived signals or the host response and ultimately a combination may be most useful.