PS 1-024

DIAGNOSTIC ACCURACY OF IL-2 AS A BIOMARKER FOR THE DIAGNOSIS OF LATENT TUBERCULOSIS

Yuan-Hsin Chu. *Department of Infection Control, Jen-Ai Hospital, Taiwan, ROC*

Purpose: The introduced interferon-gamma release assays (IGRAs) provide more-accurate diagnosis of *Mycobacterium tuberculosis* infection than conventional skin tests but do not differentiate between latent and active disease. It has been reported that *M. tuberculosis*-specific T-cell response in patients with a non- replicating *M. tuberculosis* infection may be characterized by several cytokine secretions, including interleukin-2 (IL-2). We herein evaluate IL-2 as biomarkers for the diagnosis of latent tuberculosis infection (LTBI).
Methods: A PICO [P: (LTBI OR latent tuberculosis infection*); I: (interleukin 2 OR cytokine); C: reference standard; O: diagnos* accuracy] was formulated and engaged with the Boolean operator "&" to search Cochrane Library and PubMed. Five systematic review (SR) were filtered out of 23 searching results in PubMed. One most relevant and latest published (July 2014) SR/ Meta-Analysis was included for critical appraisal: All searched studies were included and excluded according to inclusion criteria (such as definition of active TB, LTBI, and control group) and exclusion criteria (such as numbers of true-positives, false-negatives, true-negatives, and false-positives with a cut-off point of IL-2 were not available). Two reviewers independently screened all titles identified in the database searches and extracted data from all of the included studies. The quality of the studies was assessed using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool.
Results: The pooled estimates of IL-2 for LTBI diagnosis were as follows: sensitivity, 0.81 [95 % confidence interval (CI), 0.60 to 0.92]; specificity, 0.95 (95 % CI, 0.90 to 0.97); positive likelihood ratio (PLR), 15.2 (95 % CI, 8.1to 28.4); negative likelihood ratio (NLR), 0.20 (95 % CI, 0.09 to 0.47). AUC was 0.96 (95 % CI, 0.94 to 0.98). The Deeks' funnel plots showed no asymmetry indicate no publication bias.
Conclusions: According to the meta-analysis, IL-2 is a valid marker for the diagnosis of LTBI. When there is no definite gold standard for the diagnosis of LTBI, IL-2 release assay in addition to IGRAs can improve the ability of IGRAs to identify individuals with LTBI (Level 1). It is possible to hypothesize that in the presence of active tuberculosis, the frequency of effector T-cells (TEM) is higher than central memory T-cells (CEM) in peripheral blood mononuclear cells. TEM has a limited lifespan and secrete IFN- γ alone, while CEM is predominant in latent infections and secrete interleukin IL-2 or IFN- γ and IL-2 simultaneously. Therefore, memory cells can be distinguished according to their differential cytokine secretion.

PS 1-025

ASSESSMENT OF DIAGNOSTIC ACCURACY OF RAPID AND POINT-OF -CARE TESTS FOR SYPHILIS SCREENING

Min Chien Huang. *Department, Jen-Ai Hospital, Taiwan, ROC*

Purpose: Timely diagnosis and treatment of syphilis is crucial to reduce morbidity, and onward transmission to sexual partners and newborns. Syphilis point-of-care tests (POCTs) may reduce morbidity and ongoing transmission by increasing the proportion of people rapidly treated. Here we evaluate diagnostic accuracy of syphilis rapid and POCTs.
Methods: We used "syphilis AND point-of-care test*" as keywords to search Cochrane Library and PubMed and found one relevant SR/Meta Analysis involves 33 articles in which data was extracted from. In the SR, critical appraisal was undertaken using quality assessment of diagnostic accuracy studies (QUADAS) and standards for the reporting of diagnostic accuracy studies (STARD) respectively, and a sensitivity analysis was conducted.
Results: Of 18 rapid and POCTs in global use were identified. The vast majority were immuno-chromatographic strip based assays with most tests being Determine (Abbott Diagnostics, UK), SD Biolines (Standard, South Korea), Syphicheck (Qualpro, India) and VisiTect (Omega Diagnostics, UK). Serum (1) and whole blood (2) samples against a Treponema pallidum (TP) specific reference standard point estimates with 95% credible intervals (CrI) for the sensitivities and specificities of popular tests were:

(1) serum samples: Determine: 90.04% (80.45, 95.21); 94.15% (89.26, 97.66). SD Bioline: 87.06% (75.67, 94.50); 95.85% (89.89, 99.53). Syphicheck: 74.48% (56.85, 88.44); 99.14% (96.37, 100). VisiTect: 85.13% (72.83, 92.57); 96.45% (91.92, 99.29). (2) whole blood samples Determine: 86.32% (77.26, 91.70); 95.85% (92.42, 97.74). SD Bioline: 84.50% (78.81, 92.61); 97.95% (92.54, 99.33). Syphicheck: 74.47% (63.94, 82.13); 99.58% (98.91, 99.96). VisiTect: 74.26% (53.62, 83.68); 99.43% (98.22, 99.98).

Conclusions: The equal performance of rapid and POCTs and laboratory-based treponemal tests indicates syphilis rapid and POCTs are valuable alternative. Based on the verified evidence of adequate diagnostic accuracy, it is concluded that rapid and POCTs are useful in resource-limited settings with poor access to laboratories or screening for syphilis (Level 1 evidence).

PS 1-026

DOES THE SUPERANTIGEN PROFILE OF *STAPHYLOCOCCUS AUREUS* STRAINS ISOLATED FROM PERSISTENT NASAL CARRIERS CHANGE?

J. Ho, M. Boost, M. O'Donoghue. *Squina International Centre for Infection Control, School of Nursing, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

Purpose: One third of the population is nasally colonised with *Staphylococcus aureus*. Three patterns of carriage are recognised: persistent, transient and non-carriage. Persistent carriers harbour the same strain over time and tend to carry a higher microbial load. One of the most important groups of virulence determinants in *S. aureus* is the superantigens, which include staphylococcal enterotoxins (SE). These are carried on mobile genetic elements that can be excised or acquired by a strain. This study determined whether the combination of superantigens carried by stable coloniser strains changes over time.
Methods: Nasal swabs were collected on two occasions over a three-month period from 499 catering service workers to define nasal carriage status. All swabs were enriched in brain heart infusion broth and cultivated on *SaSelect* (Bio-rad). *S. aureus* was confirmed by latex agglutination and amplification of *femA* gene. The polymorphic region of the *spa* gene was sequenced to identify true persistent carriers. The presence of staphylococcal enterotoxin genes A to U was detected by PCR. The number of SE genes present in both samples was determined by correlation coefficient using SPSS. The SE profile of both samples as compared to determine changes over time.
Results: Eighty two food handlers (16%) were identified as true persistent carriers. Of these subjects, the number of SE genes on both occasions ranged from two to nine and was highly correlated ($r = 0.289$, $p = 0.009$). Nasal isolates from persistent carriers were more likely to harbour SE genes (OR $= 32.6$ 95% CI $4.5 - 236.6$ $p < 0.001$). However, the same superantigen profile was only observed in 15.8% of these individuals.
Conclusions: This study revealed that the same persistently colonised strain may acquire different superantigens at different times, confirming the mobility of these mobile genetic element-borne genes. Knowledge of *spa* type alone may not be a good predictor for virulence.

PS 1-027

A SUCCESSFUL EXPERIENCE OF A REGIONAL TEACHING HOSPITAL IN NORTHERN TAIWAN THAT USING THE PDCA APPROACH TO SHORTEN THE PRELIMINARY REPORT TIME OF BLOOD CULTURE

Hui-Fang Wu, Yueh-Man Liu, Chiu-chen Chu chen, Hui-Chen Yu, Tsui-Fang Hu, Pai-Ling Chang . *Department of Medical Laboratory, Tao Yuan General Hospital, Ministry of Health and Welfare, Taiwan*

Purpose: Shortening the preliminary report time of blood culture allows the physician makes proper use of antibiotic treatment to the patient's symptoms early, thereby reducing the drug resistant strains, medical expenses and the rates of inpatient's nosocomial infection. The time in our hospital was for an average of 76.2 hours in January, 2014, we hope to reduce it within 48 hours by applying PDCA approach.
Methods: About P (plan), we planned to prepare smear directly when the blood bottle was positive, increase the frequency of loading bottles, execute the personnel training and increase the descriptive text in the reports. About D (do), we completed the staff training. We modified the procedures to stipulate the time of handling positive blood bottles, and the frequency of loading bottles. About C (check), we could find these data by checking the blood culture machine, LIS and SMS system. About A (action), the result of