Abstract (poster session)

Assessment of malaria identification methods in clinical blood samples
M.J. Coyne, G.T. Spence, B. Jones, C.L. Alexander* (Glasgow, UK)

Objectives: This study describes a comparison of three malaria identification methods; microscopy, antigen detection and PCR at the Scottish Parasite Diagnostic and Reference Laboratory (SPDL) over a two-year period. In addition, the sensitivity of two commercial antigen detection kits is assessed. Methods: Blood from 57 cases were subjected to a) microscopy (thick and thin films), b) antigen detection (Binax Now and OptiMal commercial kits). PCR was performed using a nested approach on blood from a further 11 cases for the identification of Plasmodium species. Travel history and clinical symptoms, where available, were recorded. Results: 17 of the 68 bloods were positive for microscopy and malaria antigens (25%). Microscopy was positive in 2 bloods which were antigen negative using both kits. 7 of the 11 samples subjected to PCR in addition to microscopy and antigen detection were PCR positive. All PCR positive samples were positive by antigen detection, however only 5 were microscopy positive. The 2 microscopy negative, PCR positive samples were only positive using Binax, not the Optimal antigen kit. 4 samples were microscopy, antigen and PCR negative. Comparison of both antigen detection kits demonstrated identical results in 12 of the 24 positive samples. Variation was observed; 5 samples were only antigen positive by Binax (3 x P.falciparum, 1 x P.ovale and 1 P.vivax) whereas 4 samples were positive by OptiMal only (3 x P.malariae, 1 x P.ovale and 1 P.vivax). 7 of these 9 samples were microscopy positive. Travel history was available for 12 cases: P.falciparum, P.malariae and P.ovale (Africa n=9); P.vivax (Pakistan n=3). Clinical symptoms were only provided for 7 cases, the most common being fever (n=6). Conclusion: PCR is more sensitive than microscopy alone for the detection of Plasmodium species. This is of particular importance when examining samples with low parasitaemia which can result in the absence of positive microscopy. Variation between microscopy and antigen detection supports the benefit of performing several tests rather than a single test. Travel history is consistent with Plasmodium species endemic to particular regions. Imported cases of malaria in Scotland are being assessed and validation of real-time PCR/sequencing is on-going to replace nested PCR.