Diagnostics and biomarkers

PO - (8356) - ANGIOPGENIC AND ANGIOSTATIC FACTORS IN THE SALIVA OF MALARIA PATIENTS

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Background: Malaria mortality is associated with exaggerated host responses to inflammatory factors such as C-X-C motif chemokine 10 (CXCL10) and host biomarkers such as angiopoietin 1 (Ang-1) and angiopoietin 2 (Ang-2). The aim of this study was to determine saliva levels of CXCL10, Ang-1 and Ang-2 and compare with plasma levels with regard to their potential as biomarkers in malaria which may be useful for further development of highly efficient non-invasive malaria detection methods.

Methods: case control study involving 213 (119 malaria and 94 non malaria) subjects aged 1 - 16 years. Haematological determination was done using Haematology Analyzer. Plasmodium Lactate Dehydrogenase/Histidine Rich Protein-2 (pLDH/HRP-2) Antigen rapid diagnostic test (RDT) were performed. Plasma and saliva levels of CXCL10, Ang-1 and Ang-2 were measured among the study participants using Elisa kit. Data was presented as mean ± standard error or median and interquartile range (IQR). A p-value < 0.001 was considered statistically significant.

Results: There was decreased plasma levels of Ang-1 and increased plasma levels of CXCL10 and Ang-2 in individuals with malaria compared to those without malaria (Ang-1, p<0.009; Ang-2, p<0.001; CXCL10 p<0.001). Biomarker levels in both plasma and saliva with malaria and non-malaria subjects were correlated and found a significant relationship between Ang-2 and CXCL10 which could be used to predict malaria severity (p=0.001 for Ang-2 and p<0.01 for CXCL10). Low Ang-1 and high Ang-2 in both plasma and saliva were significantly associated with increased risk of malaria severity: Ang-1, 2741.04 (1785.85-3582.68), p<0.009; Ang-2, 3508.82 (2139.61-5091.633.9), p<0.001 and Ang-1, 720.27 (439.82-1086.74); 16.98 (10.08-33.26), (p<0.001 for all). Finally, Ang-2 was informative when combined with CXCL10 to predict malaria severity.

Conclusions: These results provide insight into the use of saliva as a non-invasive diagnostic method and demonstrate that Ang-2 combined with CXCL10 is a promising predictive biomarker in malaria severity.