BMC Proceedings

Poster presentation

Opposed plasma levels of endothelin-1 and C-type natriuretic peptide in children with *Plasmodium falciparum* malaria

Anelia Dietmann*[1,3], Peter Lackner[1], Raimund Helbok[1,3], Katharina Spora[1,3], Bertrand Lell[2,3], Saadou Issifou[2], Markus Reindl[1], Peter Kremsner[2,3] and Erich Schmutzhard[1]

Address: [1]Clinical Department of Neurology, Innsbruck Medical University, Innsbruck, Austria, [2]Department of Parasitology, Institute of Tropical Medicine, University of Tübingen, Germany and [3]Medical Research Unit, Albert Schweitzer Hospital, Lambaréné, Gabon

Email: Anelia Dietmann* - Anelia.Dietmann@uki.at

* Corresponding author

from Infectious diseases of the nervous system: pathogenesis and worldwide impact
Paris, France. 10–13 September 2008

Published: 23 September 2008

BMC Proceedings 2008, **2**(Suppl 1):P16

This abstract is available from: http://www.biomedcentral.com/1753-6561/2/S1/P16

Background

Molecular mechanisms involved in the pathogenesis of severe *Plasmodium falciparum* (Pf) malaria (SM), are not yet fully understood. Both endothelin-1 (ET-1) and C-type natriuretic peptide (CNP) are produced by vascular endothelium and act locally as paracrine regulators of vascular tone, ET-1 being a potent vasoconstrictor and CNP having strong vasorelaxant properties.

Methods

We studied plasma levels of ET-1 and N-terminal fragments of CNP (NT-proCNP) on admission and after 24 hours of treatment, using enzyme-linked-immunosorbent-assay (ELISA) technique, in Gabonese children with severe Pf malaria (SM, n = 50), with uncomplicated Pf malaria (UM, n = 39) and healthy controls (HC, n = 25).

Results

Plasma levels of ET-1 were significantly higher in malaria patients compared to HC ($p < 0.001$) and levels were significantly higher in UM patients compared to HC ($p < 0.001$) and a trend towards higher levels than SM ($p = 0.085$). Plasma levels of NT-proCNP were significantly lower in SM malaria patients compared to HC ($p = 0.034$), whereas no significant difference was found for UM patients compared to HC.

Conclusion

We could show an imbalance between the vasoconstricitve and vasorelaxant endothelium-derived substances ET-1 and CNP in the plasma of children with Pf malaria, probably in favor of vasoconstrictive and pro-inflammatory effects. Our results may reflect endothelial cell damage. We provide evidence for a critical involvement of ET-1 and CNP in SM pathogenesis and would like to point to the importance of further investigation of the vascular entity, in particular endothelial cells, and their way of contributing to the development of severe malaria with its devastating multi-organ complications.