Background
Immune system response to *Plasmodium falciparum* (*P. falciparum*) malaria infection outlines the disease course and outcome. This attributed to variable production of cytokines that either promote (pro-inflammatory) or curtail (anti-inflammatory) the inflammatory process. Elucidating underlying immunological disease interactions may direct development of effective treatment and provide better understanding of the disease process.

Methods
A case-control study was conducted in Mohamed Elamin Pediatrics Hospital (March-August 2016) in Omdurman an area that is characterized by unstable malaria transmission in central Sudan. The study aims to investigate the role/ interaction of cytokine profiles of gamma interferon (IFN-γ) and Interleukin-10 (IL-10) in children infected with *P. falciparum* malaria. Enzyme-linked immunosorbent assay was used to measure the concentrations of cytokines, IFN-γ and IL-10, in sera from Sudanese children. Thirty-five children with complicated *P. falciparum* malaria were enrolled to the study; well matched 35 uncomplicated *P. falciparum* malaria and another 35 healthy children were controls. Informed written consent were obtained from the parents or guardian. Complete blood count, blood urea and random blood glucose were measured by using standard laboratory procedures.

Results
The concentrations of IFN-γ and IL-10 levels were significantly higher in children with severe malaria compared to uncomplicated malaria and healthy control. There was a strong positive correlation observed between IL-10 and IFN-γ (*r* =0.688 *P* =<0.001). Also strong positive correlation detected between IFN-γ and urea levels (*r* = 0.73; *P* = 0.010). There was moderate correlation between IL-10 and urea (*r* = 0.386; *P* =<0.001). While negative moderate correlation observed between IL-10 and haemoglobin levels (*r* = -0.316; *P* =0.003), no correlation detected between IFN-γ and haemoglobin levels. All patients discharged home in good conditions.

Conclusions
These results indicate both IFN-γ and IL-10 are involved in shaping the course and outcome of the severe malaria in children.