



RESEARCH HIGHLIGHTS (2004-2005)

The centre continued to address issues on filariasis, malaria, micronutrient deficiency disorder, tribal health and haemoglobinopathies. Two filarial antigens present on the surface of filarial parasites, Dssd1 and lipid fractions, have shown to mediate clearance of circulating microfilariae in animal model system – *S. digitata* infections in *Mastomys coucha*. Studies on innate immunity in filariasis showed that susceptible strains of mice (DBA/2) possessed significantly lower surface TLR-4 receptors than resistant (Balb/C) strains of mice. Filarial antigens bound significantly to a surface receptor on human as well as murine mononuclear cells suggesting innate recognition of filarial antigens by host immune cells. The antigen was found to be a very high molecular weight glycoprotein (> 100 Kd). Identification of the surface receptor is expected to reveal the molecular mechanisms of innate immunity in filariasis. The issue of Mass Drug Administration (MDA) in filariasis and side reactions observed in human communities after MDA with Diethylcarbamazine citrate, the anti-filarial drug being currently used for control of lymphatic filariasis was addressed. A study was undertaken to investigate the association between Wolbachia density and post-DEC reactions. Patients were treated with single dose of DEC to monitor reactions both clinically as well as sub-clinically by measuring inflammatory molecules viz., TNF- α , IL-6 and RANTES as well as to quantify Wolbachia to analyze any association between them. The major conclusions that can be drawn at this stage of the study are: a) post-DEC reactions are dependent on presence and density of circulating Mf and is related to plasma Wolbachia density in microfilarial; b) Post DEC reactions in AS and CH cases appear to be qualitatively different (raised TNF- α vs RANTES respectively) suggesting a dichotomy in the underlying mechanism of DEC mediated reactions in filarial endemic subjects.

Four primitive tribes Bondo, Didayi, Kandha and Juanga were investigated for nutritional anemia, sickle cell anemia, β -thalassemia, diarrhoeal disorders including cholera, geohelminths and amoebiasis. The prevalence of genetic disorders were low in comparison to infectious diseases indicating that timely intervention could reduce morbidity and promote good health. However, sickle cell and Hb-E disorders were found in high frequency in Dhelki Kharia tribes of Sundargarh in Orissa. Molecular typing of the *P. falciparum* isolates showed a strong association between severe manifestation of the diseases and incidence of *P. falciparum* isolates harbouring both Pfcr1 (K76T) & pfmdr1 (N86Y) mutation, the genes responsible for CQ resistance. In Anugul district of Orissa, out of five sibling species of *An. culicifacies*, species B and C are found to be prevalent and both were found to be resistant to DDT but susceptible to Deltamethrine.