Th1/Th2 balance in hemodialysis patients

**Background.** Hemodialysis (HD) patients present an immunodeficiency that is mainly related to the defect of cell-mediated immunity. We have previously shown the polarisation of T-helper cells toward the phenotype in HD treatment with cuprophan membrane. In the present study, we have examined the effect of a Vitamin E-coated dialysr (Excebrane, VE) on the activity of the two Th subsets.

**Methods.** We studied 8 healthy controls and 10 patients on RDT for at least 6 months with cellulose membrane (AC), then switched to HD-VE. Blood was collected from HD patients while on treatment with AC, and after 1 year of treatment with VE. CD4+ cells were isolated from peripheral blood mononuclear cells (PBMC) by negative selection, treating PBMC with a cocktail of anti-CD8, -CD16, -CD19, -CD36 and -CD56 antibodies labelled with magnetic beads, and passing them through a magnetic field. The collected Th cells were cultured for 48h with and without phytohemagglutinin (PHA). The dosages of Interferone gamma (IFN-γ) and of interleukina 4 (IL-4) were measured in the supernatant using the ELISA assay.

**Results.** The constitutive release of IL-4 by CD4+ cells was abated significantly by treatment with VE. INF-γ released by mitogen-stimulated CD4+ recovered with VE.

**Conclusions.** This study demonstrates that treatment with vitamin E-coated dialysr improves the defect of PBMC function associated with cellulose membrane dialysr consisting of altered spontaneous and mitogen-stimulated cytokine release. The effects of vitamin E-coated filter, in particular the recovery of reactive INF-γ production by Th1 cells and the restriction of spontaneous IL-4 release by Th2 cells may have clinical importance. (G Ital Nefrol 2004; 21: 34-9)

**KEY WORDS:** T-helper cells, Interferon γ, Interleukin 4, Hemodialysis, Vitamin E