

Discussion

The current study demonstrated that the *in situ* expression of IFN- γ is significantly higher in women with RSA as compared with that of normal pregnant or women with first abortion and a part from the causes of this significant increase in the *in situ* expression of IFN- γ in women with recurrent abortion, revision was made for the previous studies that examined the association between Th1 type cytokines and recurrent abortion, first studies in Hill's laboratory (14) have shown that peripheral blood mononuclear cells (PBMC) of women with a history of RSA when stimulated with a trophoblast antigen extract produced significantly higher concentrations of the Th1 cytokines, IFN- γ and TNF- α , as compared with normal pregnancy. Moreover, it has been demonstrated that stimulation of the maternal PBMC with autologous placental cells *in vitro* results in a Th1-biased production of cytokines in women undergoing unexplained RSA (15, 17, 19). This was mirrored by the situation at the materno-fetal interface shown by other studies (28, 29).

On the other hand, this study showed a significantly higher expression of IL-10 in normal pregnant women in comparison with that of women with RSA which is in consistence with a previous study showed that IL-10 production was significantly lower in patients with recurrent miscarriage as compared with normal pregnancy (16), but the data presented by that study reflected events related to maternal blood cells in the periphery and not to the placenta itself as events at the materno-fetal interface are more representative as shown by the study of Piccinni and colleagues (28) who examined T cell clones generated from T cell infiltrating the deciduas, and found significantly decreased concentrations of IL-10 in

women with recurrent abortion which is also in agreement with the results of our study. This significantly lower IL-10 expression could be attributed to defect in Th2 and Tc2 cells at the materno-fetal interface or to the accumulation failure of Th2 cells at the implantation site in women with recurrent abortion (30, 31).

The higher level of IL-10 in women with elective pregnancy termination or first abortion in this study might be due to the progressive increase of progesterone and estrogens which reach high levels during pregnancy, at these high levels, they suppress the Th1- and stimulate Th2-mediated immunological responses (32, 33). For the same reason Th1-mediated diseases like rheumatoid arthritis, tend to improve, and Th2-mediated diseases, like systemic lupus erythematosus (SLE), tend to worsen during pregnancy (34, 35).

This study demonstrated that IFN- γ was expressed in lower levels in women with first abortion and those with elective termination of pregnancy which could be explained by previous studies showing that the pro-inflammatory cytokines act physiologically in normal pregnancy and high levels may cause recurrent miscarriage, it was found experimentally that very low concentrations of IFN- γ are required for full maturation of uterine natural killer cells which may be equally achieved by administration of 1 iu per implantation site (36,37). Although we can not convert our findings to the corresponding values in these studies, still our results are in line with the findings given by these studies.

There are many confounding studies held the notion on the balance of Th1 and Th2 cells at the implantation site, expressing them as a ratio of Th1/Th2 cytokines, so that,