Summary

This study was designed to determine the T-helper cell subsets in severe asthmatic children and to evaluate the effect of treatment with prednisolon for one week on it and on calculated Th1/Th2 ratio

The study included 20 patients with severe asthma considered as study group and 10 healthy children of cross-matched age and sex and gave blood sample considered as control samples. After through clinical examination, chest X-ray examination, routine laboratory investigation included complete blood picture and erythrocyte sedimentation rate.

All the study participants gave two samples: pre-treatment and on the 7th day after treatment (Post-treatment) for flow cytometric determination of T-helper cell subsets; namely: Pre-T-helper cell (Th_0), T-helper cell type 1 (Th_1), T-helper cell type 2 (Th_2) and the ratio of Th_1/Th_2.

Eight patients were symptomatizing since birth, 4 patients at age younger than one year, in other 4 patients at age of one year and in 2 patients at age of 2 years; while in the other 2 patients disease was presented at age of 4 years.

Only one patient (5%) had disease duration of 3 years; while 12 patients (60%) had mean disease duration of 7.7±0.8; range: 6.3-9 years and the other 7 patients (35%) had diseased since a mean duration of 12.3±1.5; range: 10-14 years.

In control group; no APC could be detected in 4 controls (40%) and other controls had <100 cell/cc, while 15 patients had APC >100-500 cells/cc; while another 5 patients had >500 APC cells/cc with a significant increase of frequency of detection of APC in patients compared to controls, (X^2=9.15, P<0.001).

The percentage of CD4 in pre-treatment samples showed a non-significant (P>0.05) decrease compared to control levels. Furthermore, post-treatment samples showed a non-significant (P<0.05) decrease of percentage of CD4 compared both to control and pre-treatment levels.

There was a significant (P<0.05) decrease of percentage of Th_0 in patients both pre-treatment and post-treatment samples compared to control levels with a significant (P<0.05) decrease of the percentage of Th_0 in pre-treatment compared to post-treatment samples.

There was a significant (P<0.05) decrease of percentage of Th_1 in patients both pre-treatment and post-treatment samples compared to control levels with a non-significant (P>0.05) difference between percentage of Th_1 between pre-treatment and post-treatment samples.

There was a significant (P<0.05) increase of percentage of Th_2 in pre-treatment sample compared to both control and post-treatment levels with a non-significant (P>0.05) difference between percentage of Th_2 cell in post-treatment samples compared to control samples.

There was a significant (P<0.05) decrease of Th_1/Th_2 in patients; pre-treatment and post-treatment samples, compared to control levels. Moreover, there was a significant (P<0.05) increase of the Th_1/Th_2 ratio in post-treatment samples compared to pre-treatment samples.

Conclusion

It could be concluded that asthma is a disease of Th_2-associated cytokines predominance and treatment with corticosteroid could ameliorate symptoms through suppression of polarization of Th_0 to Th_2 thus correcting the Th_1/Th_2 ratio.