Summary

Inflammation plays an important role in acne pathogenesis and pro-inflammatory cytokines are considered key factors in this, one of these cytokines is tumor necrosis factor –α (TNF-α) which is an important pro-inflammatory mediator encoded by a gene that shows high level of genetic polymorphisms especially in the promoter region.

This study was conducted on (100) patients (64 females ,36 males) with different severities of acne vulgaris and with an age range (11-38) years , seen in Al-Diwaniya Teaching Hospital/ Dermatology Clinic from December 2011 to February 2012. Other (50) apparently healthy subjects (26 females and 24 males) were included as a control group. Blood samples were collected from both groups, genomic DNA was extracted from peripheral blood leukocytes for further molecular study to reveal any association between TNF-α polymorphism at position -308 and predisposition to acne vulgaris . Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) technique was used for this purpose and digestion of the amplified DNA products by restriction endonuclease (*Nco*I enzyme) gave fragments with different molecular sizes which express certain genotype.

The results of the study showed that 54% of the patients were in the age range of (16-20) years ,10% of the patients had clinical manifestations beyond 25 years old, 90% of them were females. The data showed that the mild (40%) and moderate (42%) acne vulgaris were more prevalent than severe cases(18%) and the males showed high tendency to have severe acne than females(P value = 0.001). Family history of the disease was present in 61% of the patients and the result

revealed that the presence of such a history was significantly correlated with the severity of the disease. Regarding the effect of premenstrual period on the disease progression the study showed that 65.2% of the female patients had a flare up of their acne lesions one week prior to their menstrual flow. Food was selected in this study among other different environmental factors that might affect acne, and it was found that the association is not significant between certain types of food (milk, high glycemic food, spicy food) and the severity of acne(P value= 0.52).

The genotyping of TNF-α revealed three genotypes; the wild homozygous GG type, the heterozygous GA & the mutant homozygous AA type, the frequency for these three types in acne patients were (29%, 67% and 4%) respectively, in control group, however, they were (58%, 30% and 12%) respectively. The frequency of GA type was found statistically significantly increased in acne patients compared to the healthy controls (P<0.001, OR 4.74, etiologic fraction (EF) 0.529),in contrast ,the GG genotype had rather preventive role(OR 0.30, protective fraction(PF) 0.408). No significant difference in genotype frequency regarding the gender between patients' group can be noted also there was no association detected between this type of polymorphism and the degree of severity of acne (P>0.05), however significant association was found between the minor A allele in female patients compared to healthy females(P value 0.001, OR 6.94, PF 0.615).The frequency of GA genotype was higher in our population compared to similar studies of Turkish, Polish and Central Europeans (Pvalue < 0.001).

In conclusion, this study suggests that TNF-α -308 G/A polymorphism may contribute to the predisposition of acne vulgaris and there was significant association between minor A allele and severity of the disease in females.