SUMMARY

Asthma is a chronic inflammatory disorder of the airways characterized by an obstruction of airflow, which may be completely or partially reversed with or without specific therapy. Airway inflammation is the result of interaction between various cells, cellular elements and cytokines. In susceptible individuals, airway inflammation may cause recurrent or persistent bronchospasm, which causes symptoms including wheezing, breathlessness, chest tightness and cough, particular at night or after exercise.

Recent years have brought growing mechanistic awareness of the profound influence of the innate immune system on the development of adaptive immune responses. The complement system, a phylogenetically ancient part of the innate immune system, is no exception.

In the present study, serum complement profile was assessed through measurement of serum C3 and C4 levels in an attempt to throw light on the possible changes in complement in children with bronchial asthma. We collected 40 children with +ve history of bronchial asthma from Benha children hospital and Benha university Hospital over the period from May 2010

to April 2011as well as 20 age and sex matched healthy children as control.

All children were subjected to thorough history taking, complete physical examination, PEFR recording, routine laboratory tests including esinophilic count and measurement of C3, C4 by automated nephlometry.

We found that:

- Among the asthmatic group, 55% were male and 45% were female.
- Their age ranged from 3-12 years with mean age 6.8±3.01years.
- Patients from rural areas constituted 25% and those from urban side constituted 75% of our cases.
- Most of studied cases were for educated parents (80% of cases).
- 57% of cases belonging to family size more than 5.
- There was positive family history of atopy in 57.5% of the asthmatic children and positive personal history of atopy in 15% of asthmatic children in the form of skin allergy and/or allergic rhinitis.

- Using GINA guidelines (2010) for grading patient's asthma we had 7.5% of the cases with mild persistent asthma, 52.5% with moderate persistent asthma and 40% with severe persistent asthma.
- There were significant elevations of mean C3 and C4 levels in the asthmatic children in comparison to normal healthy children, with significant relation between asthma grade and the levels of C3, C4 (the mean for C3 was 95.33±3.06, 166.67±41.34 and 211.06±7.36 for mild persistent, moderate and severe asthma respectively. While, the means for C4 were 27.3±2.69, 32.97±9.87 and 58.35±7.69 for mild persistent, moderate persistent and severe persistent asthma respectively).
- There was significant relation between level of C4 and the duration of asthma while there is increase in the level of C3 with increasing the duration of asthma but it did not reach significance.
- There were significant elevations in eosinophilic count in relation to increasing asthma grade.
- There was positive correlation between levels of C3, C4 and eosinophilic count.

- There was no influence to sex or age on the levels of C3, C4.but there was significant relation between levels of C3, C4 and the residence as it was highly increased in patients from urban areas (mean C3 was 186.2±41.04 and mean C4 was 47.35±15.22) in comparison to patients from rural areas (mean C3 157.7±47.97 and mean C4 28.7±4) ($p<0.015$ for C3 and $p<0.003$ for C4).
- According to GINA 2009, we classified our cases into 2 groups, controlled group (25% of cases) while 75% were uncontrolled asthmatic children.
- As regard the used medications, most of controlled cases (60%) were on ICS therapy alone as controller therapy and 40% were using other medications besides ICS.
- There were significant relations between levels of C3 ,C4 and the level of asthma control in our cases (as the mean C3 level was 203.4 ±10.8 and the mean C4 level was 48.2±14.09 in uncontrolled cases in comparison to 106.1±11.72 and 26.15±2.4 for C3 and C4 respectively in controlled cases) ($p<0.001$).
- It was concluded from the present study that serum levels of C3 and C4 are elevated in children with asthma. There was a significant positive correlation between serum

C3and C4 and severity of asthma grade.C3; C4 levels were significantly higher in uncontrolled asthmatics than controlled patients.

- We recommended further studies on larger number of asthmatic children to evaluate the effect of complement components activation in asthma exacerbations, duration, and clinical severity of asthma.