SUMMARY AND CONCLUSION

Tumor necrosis factor-alpha (TNF-α) is a proinflammatory cytokine that produces negative inotropic effects in the heart. Recent observations showed that levels of circulating TNF-α are elevated in adult patients with advanced congestive heart failure.

The present study was designed to assess the potential role of TNF-α in pediatric patients with congestive heart failure.

The study population composed of **50** infants and children with various degrees of congestive heart failure and **20** healthy, age- and sex-matched control subjects. All patients were chosen from the internal section, Pediatric Hospital, Cairo University, between October 1, 1996 and May 31, 1997. Any patients had received anti-inflammatory drugs within the preceding two weeks were excluded. Patients with significant concomitant disease such as infection, renal failure, pulmonary disease, thyroid disease, malignancy, or collagen vascular disease were also excluded.

According to the etiology of heart failure, our patients were divided into 3 groups :

* ***Group I*** : Included **30** patients with *"Rheumatic heart disease"*.
* ***Group II*** : Included **10** patients with *"Dilated cardiomyopathy"*.
* ***Group III*** : Included **10** patients with *"Congenital heart disease"*.

All patients included in this study were subjected to the following :

- Thorough clinical evaluation.
- ECG study.
- Plain X-ray chest.
- Echo-Doppler study.
- Routine blood examination.
- In addition to, assessment of TNF-α in serum using the ELISA technique.

Our results revealed that serum TNF-α levels were significantly increased among heart failure patients compared to the control subjects. This increased level did not significantly differ among the 3 etiologic groups. Seventy percent of our pediatric patients with heart failure had elevated levels of serum TNF-α (> 2 SD above the mean vlaue of the controls). Again, this percentage showed no statistically significant difference among the 3 studied groups.

In this study, the circulating concentration of TNF-α was significantly related to the severity of heart failure. A progressive increase in serum TNF-α levels was observed as the grade of heart failure deteriorates.

The increased values of serum TNF-α in patients with congestive heart failure were significantly correlated with the presence of cachexia in the 3 studied groups. Whereas, in the Rheumatic group only, a significant negative correlation was established between serum TNF-α level and hemoglobin & hematocrit values and left ventricular ejection fraction.

To summarize, the following important issues are concluded from the present study :

1-The cytokine tumor necrosis factor-alpha is significantly increased in the serum of pediatric patients with congestive heart failure. This finding is consistent with previous studies carried out on adult patients with congestive heart failure.

2-The increase in TNF-α in heart failure is related to the presence of heart failure rather than the cause of heart failure.

3-Circulating levels of TNF-α increase in patients as their functional heart failure classification deteriorates.

4-Although the elaboration of TNF-α in congestive heart failure was originally proposed as a potentially important mechanism for the cachexia that frequently occurs in this syndrome, this study raises the possibility that TNF-α may play a much broader pathophysiologic role in congestive heart failure than was originally posited.