# SERUM CHOLINESTERASE PROFILE AS AN INDICATOR OF PATIENTS WITH ABNORMAL PREGNANCIES

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## SUMMARY

**Serum cholinesterase (ChE) activity was estimated in forty two (42) patients with abnormal pregnancies and fifty (50) normal pregnant women. The serum values were found to be significantly lowered in women with abnormal pregnancy as compared to the levels of serum ChE in normal pregnant women. The present study signifies that serum ChE values may be a valuable index in the detection of abnormal pregnancy in women.**


### *Introduction*

Acetylcholine (ACh) level in the nervous and non-nervous organs in the body are maintained by acetylcholinesterase (AChE) and cholineacetyltransferase (ChAc). The reports by Brahmayya Sastry (1962), Brahmayya Sastry and Krishnamurty (1978) clearly indicate that placental ACh is conditioned by physiological factors, along the gestation period and in abnormal states of pregnancy. Furthermore, it has been observed by Satyanarayana et al (1987) that there is 74% reduction in placental AChE activity in maternal diabetes which could be correlated with 129% increase in ACh content (Satyanarayana et al, 1985). Thus it may be postulated that ACh is associated with placental trophoblast and that it has a role in maintaining the pregnancy to full term. In the present study we are reporting the serum cholinesterase activity during normal pregnancy (no history of abortion) and abnormal pregnancy (patients having a history of abortion).

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### *Material and Methods*

Blood samples were withdrawn from fifty (50) normal pregnant and forty two (42) abnormal pregnant women subjects in their first trimester stage. The average age was between 20 to 30 years. The procedure had the approval of the local hospital (Suri Sadar Hospital, West Bengal, India). Blood samples were centrifuged at 3000 x g for 10 minutes (Indian Equip-

ment Corporation, Bombay) and the clear serum samples were collected. 0.1% sodium azide ($NaN_3$) was added to serum samples prior to storage in Deep freeze at –20°C. The serum samples were thereafter used for the determination of cholinesterase (ChE) activity. Cholinesterase activity was measured by the method of Ellman et al (1961) at 405 nm in a Shimadzu DB Spectrophotometer (UV-190) using butyrylthiocholineiodide (Sigma, USA) as the substrate and 5'-dithiobis-2-nitrobenzoic acid (Sigma, USA) as the thiol indicator. The cholinesterase activity was calculated in terms of µmole thiocholine hydrolysed per minute per ml of serum. Statistical analysis of the data was done according to Student's 't' test.

### *Results*

Table I depicts the ChE activity in the serum prepared from normal pregnant and from patients with histories of abortion. The serum values were found to be significantly lowered (47.53%) in women with abnormal pregnancy as compared to the levels of serum ChE in normal pregnant women.

### *Discussion*

From the table it is clear that there is a highly significant ($p<0.05$) decrease in the enzyme activity in the patients with abnormal pregnancies. From the present data it may be inferred that abnormal pregnancy has a relationship with the serum ChE profile. This finding supports the contention of Suryaprabha et al (1986) that ACh plays a role in determining the duration of pregnancy and in uterine contractions leading to abortion.

### *Conclusions*

Monitoring of ChE activity in the serum from the first month of pregnancy may help the management of such patients who have a history of recurrent abortion and the procedure may be valuable index in the detection of abnormal pregnancy in women.

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**TABLE - I : SERUM CHOLINESTERASE (CHE) PROFILE IN NORMAL AND ABNORMAL PREGNANT WOMEN**

| *Status (Women)* | *Number (n)* | *Cholinesterase activity (µmole thiocholine produced / min / ml serum ± S.E.M)* |
|---|---|---|
| Normal pregnant | 50 | 5.28 ± 0.147 |
| Abnormal pregnant | 42 | 2.77 ± 0.148* |

*$p<0.05$