

## SERUM COPPER AS A PROGNOSTIC INDEX IN THREATENED ABORTIONS

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### SUMMARY

Serum copper estimations in 105 cases of threatened abortions showed significant and consistent low values as compared to normal pregnancy of similar gestation. Serial estimation of Serum copper level showed a significant increase in patients of threatened abortions with favourable outcome during the early weeks of pregnancy.

Serum copper level is raised in normal pregnancy due to an increase in ceruloplasmin activity as a result of placental activity. (Holmberg and Laurell, 1951; Bhar *et al*, 1975).

Heijkenskjold and Medenstedt (1962); Friedman *et al* (1969) and Mirchandani *et al* (1980) have found significantly lower levels of serum copper in cases of threatened abortion. However, Prema (1978) has not reported any significant lowering of serum copper level as related to normal pregnancy. Mirchandani *et al* (1980) also did not observe any prognostic value of serum copper levels in relation to the outcome of threatened abortion.

### Material and Methods

This study was carried out at Kamala Nehru Memorial Hospital, Allahabad on 96 cases of normal pregnancy of 4-20 weeks gestation (control group) and 105

cases of threatened abortion (study group).

The diagnosis of threatened abortion was made on clinical grounds and routine vaginal examination. Serum copper level in the control and study group were estimated by the method of Gubler *et al* (1952). In addition serial estimation of serum copper level were done in 48 cases of threatened abortion with favourable outcome.

### Observations

The patients in both the groups (control and study) range from 15-35 years.

There was no correlation between serum copper level and parity of the case in the control group. The level was also not related to the socio-economic status of the patient. It was also not related to the food habits of the patients since majority were vegetarians with occasional non-vegetarian meals.

A consistent decrease in the level of serum copper level is seen in cases of threatened abortions as compared to gestation matched normal pregnancy (Table I).

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TABLE I

Duration of pregnancy in weeks	Serum Copper Level in $\mu\text{g}$ 1/100 ml.					t	p
	Normal pregnancy			Threatened abortions			
	No. of cases	Mean $\pm$ SD	No.	Mean $\pm$ SD			
4-6 weeks	10	174.9 $\pm$ 17.17	10	122.82 $\pm$ 13.6	8.66	<0.001	
6-8 weeks	10	188.41 $\pm$ 22.21	12	154.37 $\pm$ 36.07	2.59	<0.05	
8-10 weeks	22	202.75 $\pm$ 19.5	20	167.56 $\pm$ 20.089	5.74	<0.001	
10-12 weeks	21	225.8 $\pm$ 21.9	20	182.194 $\pm$ 31.737	5.15	<0.001	
12-14 weeks	9	230.86 $\pm$ 28.86	10	189.21 $\pm$ 36.536	3.97	<0.05	
14-16 weeks	8	242.68 $\pm$ 31.56	15	197.578 $\pm$ 36.43	2.95	<0.05	
16-18 weeks	8	244.5 $\pm$ 29	10	192.726 $\pm$ 30.969	4.87	<0.001	
18-20 weeks	8	248.46 $\pm$ 27.016	8	196.965 $\pm$ 44.027	2.82	<0.05	

TABLE II  
Showing Serum Copper Level in 2 Groups of Threatened Abortion

Duration of pregnancy in weeks	Mean serum copper level in $\mu\text{g}$ /100 ml					t	p
	Favourable outcome			Unfavourable outcome			
	No. of cases	Mean $\pm$ SD	No.	Mean $\pm$ SD			
4-6	1	153	9	119.47 $\pm$ 9.04	3.73	<0.05	
6-8	4	178.70 $\pm$ 38.59	8	142.20 $\pm$ 29.98	1.82	NS	
8-10	8	187.92 $\pm$ 13.67	12	147.21 $\pm$ 10.09	4.97	<0.001	
10-12	7	204.22 $\pm$ 31.02	13	160.17 $\pm$ 17.56	4.17	<0.001	
12-14	6	210.30 $\pm$ 32.04	4	168.10 $\pm$ 28.43	3.35	<0.05	
14-16	10	219.95 $\pm$ 27.48	5	175.20 $\pm$ 32.66	3.48	<0.05	
16-18	6	220.29 $\pm$ 33.33	4	177.16 $\pm$ 30.38	2.08	NS	
18-20	6	223.35 $\pm$ 34.74	2	170.56 $\pm$ 50.28	1.13	NS	

response to treatment and therefore does not reflect the true increase which may have occurred earlier to the initial estimation.

**Conclusions**

- (i) Serum copper levels were lower in cases of threatened abortions as compared to gestation matched normal pregnancy.
- (ii) Serum copper level was lower in cases of threatened abortion with unfavourable outcome as compared with cases with favourable outcome.
- (iii) Serial estimations in cases of threatened abortions with favourable outcome show a significant increase in levels in two weeks in the early period of gestation.

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