# ALPHA-I-ANTITRYPSIN ACTIVITY IN NORMAL AND ABNORMAL PREGNANCIES WITH SPECIAL REFERENCE TO TOXAEMIA OF PREGNANCY*

by

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The etiology and prevention of toxaemia of pregnancy (TOP) have attracted the attention of many workers but despite extensive work, it continues to be the "obstetrician's dilemma".

Recently, the role of Alpha-I-antitrypsin (Alpha-I-AT) activity has been introduced as diagnostic, preventive and prophylactic in the management of these cases (Guibaud *et al* 1975; Kishore *et al* 1979). Thus, this study was undertaken with a view to measure serum Alpha-I-AT levels in normal pregnant women and cases of toxaemia of pregnancy and to find its diagnostic and prognostic value.

*Material and Methods*

This study was carried out in 50 non-pregnant females of childbearing age (group A) with no obvious clinical abnormality, in 75 cases of normal pregnancies (25 cases from each trimester—group B) and 100 cases of T.O.P. (Group C). diagnosed clinically on the basis of the presence of two of the triad i.e. hypertension, proteinurea and oedema. A detailed clinical history was taken. General and obstetrical examinations were conducted. Routine blood and urine investigations were carried out in each case. Serum Alpha-I-AT was estimated by Radial-immunodiffusion method using M-partigen immuno-diffusion plates (Mancini *et al* 1965). Serum trypsin inhibitor capacity (S.T.I.C.) was measured using BAPNA-HCl as substrate (Eriksson, 1965). Alpha-I-AT deficiency was assessed using the criteria of Lieberman (1973) and discussed elsewhere (Kishore *et al* 1979).

*Observations*

Alpha-I-AT activity was higher in normal pregnant females as compared to healthy controls. The rise was linear and was maximum in third trimester of pregnancy ($P < .01$). A statistical significant difference was noted in the values of the cases of toxaemia of pregnancy ($P < .001$).

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TABLE I

*Mean Values of Alpha-AT and STIC in Various Groups*

| Groups | No. of cases | Serum Alpha-I-AT (mg%) | S.T.I.C. (mg./ml) of trypsin inhibited |
|---|---|---|---|
| Controls (group A) | 50 | 223.38 ± 27.6 | 1.10 ± 0.07 |
| Normal Pregnants: | | | |
| Group B: | | | |
| 1st Trimester | 25 | 240.8 ± 22.2 | 1.11 ± 0.023 |
| 2nd Trimester | 25 | 244.8 ± 30.08+ | 1.13 ± 0.036+ |
| 3rd Trimester | 25 | 269.04 ± 24.9* | 1.16 ± 0.026* |
| Toxaemia of pregnancy | 100 | 276.48 ± 27.8** | 1.18 ± 0.03** |

* P <.01 ** P <.001 + <.05

TABLE II

*Mean Values of Alpha-I-AT and STIC in Primipara and Multipara TOP Cases*

| Group (Toxaemia of Pregnancy) | No. of cases | Alpha-I-AT (mg%) | S.T.I.C. (mg/ml) |
|---|---|---|---|
| Primipara | 80 | 294.3 ± 45.8 | 1.18 ± 0.22 |
| Multipara | 20 | 258.2 ± 27.5 | 1.15 ± 0.17 |
| P value | | <.01 | <.001 |

Alpha-I-AT levels were significantly higher in primipara TOP cases as compared to multipara (P <.01).

TABLE III

*Alpha-I-AT Activity According to Different Clinical Presentations*

| Group | No. of cases | Alpha-I-AT (mg%) | S.T.I.C. (mg/ml) |
|---|---|---|---|
| A. Hypertension + Oedema | 39 | 276.7 ± 28.3 | 1.17 ± 0.023 |
| B. Hypertension + proteinuria | 20 | 269.7 ± 20.7 | 1.168 ± 0.023 |
| C. Oedema + proteinuria | 11 | 270.27 ± 29.1 | 1.169 ± 0.025 |
| D. Hypertension + oedema + proteinurea | 30 | 283.6 ± 30.0 | 1.187 ± 0.035 |

Alpha-I-AT activity was found to be raised in those cases where hypertension was present with proteinurea and oedema.

Alpha-I-AT levels were normal in 53 TOP cases (Mean Alpha-I-AT 256.8 ± 10.6 mg%) and higher in rest of the cases (Mean 300 ± 20.75 mg%) (P < .001).

*Discussion*

Ganrot and Bjerre (1965) first documented the presence of Alpha-I-AT in the urine of pregnant females and found a fall during puerperium. This glycoprotein not only inhibits trypsin but many other proteolytic enzymes and synthessized by liver (Sharp, 1971).

Mean levels of Alpha-I-AT in 50 healthy females were 223.38 ± 27.6 mg% and STIC 1.109 ± 0.07 mg/ml. The

*Actinomyces in Association with Multiload Copper 250 IUD—Verma et al. pp. 29-31*

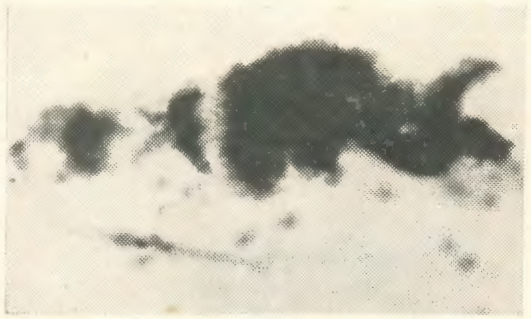

Fig. 1
A clump of actinomyces like organisms showing irregular margins. Pap x 480.

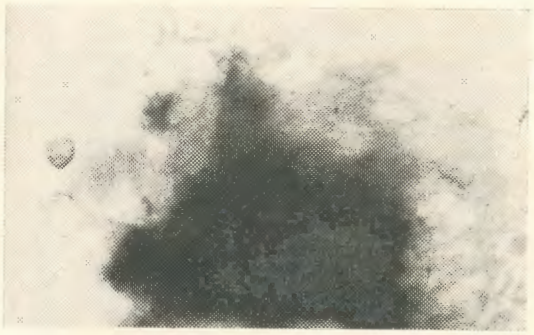

Fig. 2
Branching hyphae seen at the periphery of the clump of actinomyces. Gram x 480.

*Thoughts of Surgical Correction of Uterine Descent—Merchant and Yadav pp. 144-148*

Fig. 1
Photograph of a second gravida during 9th month of pregnancy with third degree prolapse. Note the asthenic built.

Fig. 2
Photograph of the same case showing supra-pubic transverse scar of previous operation and the prolapse.

ig. A.: Skull X-ray of patient No. I, showing enlarged sella tursica (20 mm/9 mm).

Fig. C.: Pituitary fossa of patient No. III showing very much enlarged sella with double flooring and elevation of posterior clenoid process.

B.: Enlarged sella seen in the Skull X-ray of patient No. II.

*Struma Ovari—M. Raghu et al. p.* 180

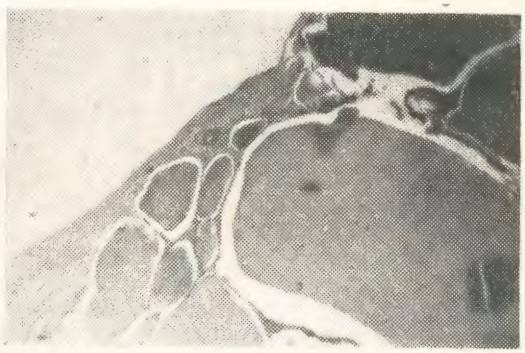

Fig. 1
Photomicrograph showing thyroid like tissue.

Fig. 1
Ossified fibroma of ovary in relation to bladder during I.V.P.

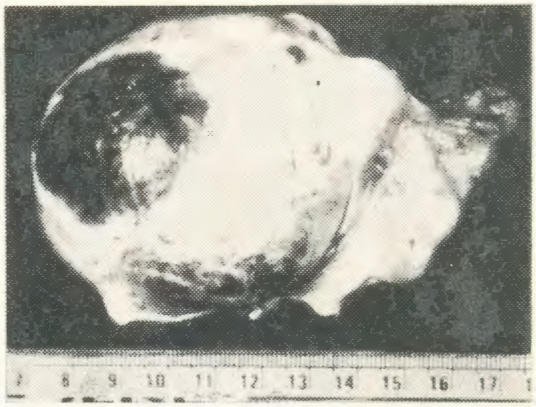

Fig. 2
Ossified fibroma of ovary.

*A Case Report of Ruptured Enterocoele with Prolapsed Intestines—Daxayani et al. pp.* 182-183

Fig. 1
Loop of intestine protruding through the vulva.

*An Unusual Case of Trophoblastic Tumour—Goswami et al. p.* 184

Fig. 1
Hysterectomy specimen with bilateral lutein cysts. Arrow indicates ruptured locule and moles made visible through stab wound in uterus.