

ESTETROL AND UTERO-PLACENTAL FLOW AFTER PROGESTERON LOAD

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SUMMARY

On the basis of recent demonstration in animals of the effect of some hormones on utero-placental flow, the Authors examined the response of plasmatic Estetrol (15 α -hydroxy-estriol) after the administration of Progesteron to pregnant women with low Estrogen values.

The increase of this compound was related to an improvement of placental function, probably dependent on an increase of available O₂, and therefore on uterine blood flow.

This can justify a Progesteron treatment in such pregnancies.

Recent experiments in animals show that hormones, among other factors, can effect important modifications in utero-placental flow (^{1, 2, 3, 4, 5}).

Estradiol 17- β (⁴), DHEA (⁵) and Progesteron (³) act on uterine flow of non-pregnant sheep; Estradiol acts as well on pregnant sheep (²); in particular Progesteron has twice the effect of Estrogens on caruncular blood flow (¹).

The action of Progesteron may have different interpretations: of reducing the vasodilatory effect of Estrogens (⁴), or of resensitising the uterus to Estrogens (¹).

We have already reported the behaviour of Estriol after Progesteron load and explained it as an effect of Progesteron on the utero-placental flow (Salvadori B.: Steroids and uterine blood flow. V Inter. Symp. "Grossesse à haut risque", Bruxelles, 1978). This could be an indirect demonstration of a rise in placental function, probably dependent on an increase of available O₂ and therefore on uterine blood flow.

We examined the behaviour of Estetrol (15 α -hydroxyestriol) after Progesteron load on the basis of the above statements.

We considered 12 cases of pregnancies complicated by different pathologies, in the third quarter of gestation (32-34 weeks); all of them had Estrogen values lower than normal (at least 3 consecutive analyses were below the lowest normal value). After having measured the basal rates, we gave 300 mg of Progesteron i.m. in oily solution, at 8 a.m., and then valued the Estetrol behaviour with seriate analyses every 4 hours on the first day, and then every 24 hours for the following 2 days. The quantity of Estetrol was determined by R.I.A. methodology; the kit was supplied by Biodata S.p.A.

If we consider the variations of unconjugated plasmatic Estetrol after giving 300 mg of Progesteron, as related below, with 2 basal values, we note at first a reduction of levels, reaching a maximum

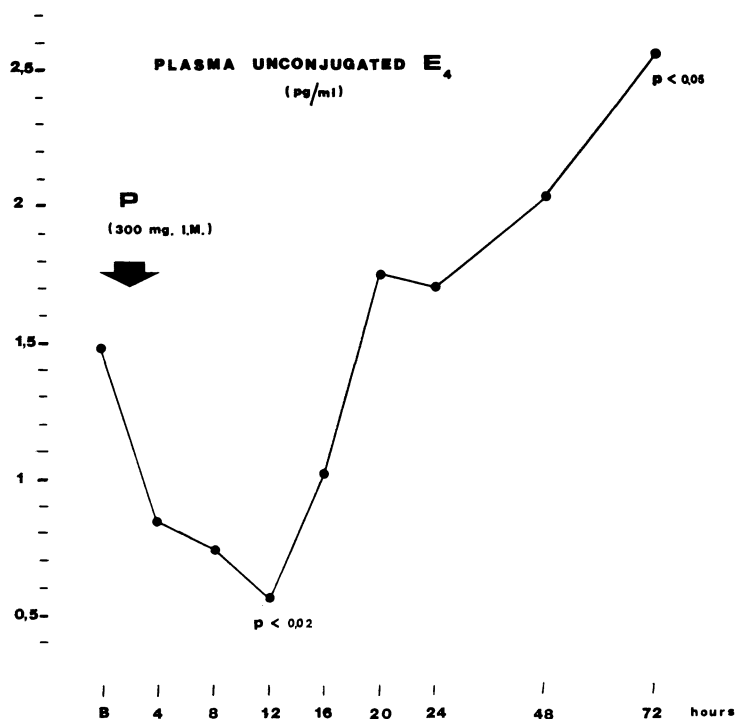


Fig. 1. — Variations of plasma unconjugated E₄ after Progesteron load.

Table 1. — Plasma Estetrol values (ng/ml) after Progesteron load. Statistical comparison (Student's *t*) of each group with basal values.

	basal	4	8	12	16	20	24	48	72	hours
mean	1.48	0.86	0.75	0.56	1.03	1.76	1.70	2.04	2.56	
S.D.	1.25	0.77	0.48	0.38	0.96	1.61	1.45	1.71	1.66	
t		1.44	1.97	2.49	0.96	0.40	0.44	1.07	2.10	
p		0.20	0.10	0.02	0.40	0.70	0.70	0.30	0.05	

Table 2.

Name	Week of the P-test	Pathology	Delivery	Week	Newborn	
1) P. A. M.	33	EPH-Gestosis	C.S.	35	M.	1,880 SGA
2) P. R.	35	P.I.F.G.	S.D.	40	F.	3,150 AGA
3) F. M.	28	F.P.I.	S.D.	36	M.	2,430 AGA
4) L. A.	30	Cervical insuff.	C.S.	40	F.	4,000 AGA
5) T. W.	33	Cervical insuff.	S.D.	34	F.	2,300 AGA
6) C. F.	30	P.I.F.G.	S.D.	40	M.	2,700 SGA
7) C. G.	30	Polyhydramnios	C.S.	40	M.	3,700 AGA
8) C. M.	33	P.I.F.G.	S.D.	40	F.	2,450 SGA
9) M. S.	32	F.P.I.	C.S.	42	F.	4,150 LGA
10) M. A.	26	P.R.M.	S.D.	28	F.	1,000 AGA
11) S. A.	37	P.I.F.G.	S.D.	40	F.	2,700 SGA
12) T. A.	37	P.R.M.	C.S.	39	F.	3,700 AGA

P-test: Progesteron test; P.I.F.G.: Poor intrauterine fetal growth; F.P.I.: Feto-placental insufficiency; P.R.M.: Premature rupture of the membranes; C.S.: Cesarean section; S.D.: Spontaneous delivery.

after 12 hours, with statistical significance, with a subsequent increase until the third day.

Estetrol behaviour confirms what we already knew for Estriol and seems to be in accordance with proved increase of utero-placental flow in sheep after Progesteron load.

Estetrol decrease in the first 24 hours seems to be in accordance with the fact that initially Progesteron reduces by about 20% any flow increase such as that induced by Estrogens, and subsequently causes a rise in the same flow, as a possible result of the resensitising action of Progesteron.

Even if we admit that "Estetrol gain" may derive from foetal enzymatic induc-

tions, we believe that the positive results described above justify a Progesteron treatment in cases of pregnancies with low Estrogen values.

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