THE RELATIONSHIP BETWEEN METOCLOPRAMIDE AND MILK SECRETION IN PUERPERIUM

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SUMMARY

The Authors administered Metoclopramide to women in puerperium with poor lactation.

An increased lactation and high serum prolactin levels were noted.

The administration of this medicine did not provoke any variations in serum T_3, T_4 and TSH levels.

Thyroid screening of the treated mothers' babies resulted negative.

It has been noted that prolactin plays an important role in the processes of initiation and maintenance of human lactation ([8, 9]). In support of this thesis are the fact that some medicines such as bromocriptine and metergoline, which notably provoke lower plasmatic prolactin levels, inhibit puerperal lactation ([3, 7, 9]) and the fact that the women who regularly breast feed have been found to have high plasmatic HPRL levels ([4, 8]) while poor lactation is generally associated with low HPRL levels.

Prolactin secretion may be reduced through the utilization of medicines which, through interference with hypothalamic monoamines, inhibit hypothalamic receptors, or stimulate dopaminergic receptors.

Contrarily, prolactin secretion may be facilitated through the utilization of medicines which act directly upon lattotrope hypophysis cells, or which block the hypothalamic receptors.

The object of this study is to evaluate the effect of metoclopramide (MC), which increases prolactin secretion blocking the hypothalamic dopaminergic receptors, administered during puerperium and lactation.

MATERIAL AND METHODS

Forty women between 20-35 years of age were examined. All women had passed the first two weeks of puerperium with insufficient lactation and had thus recourse to nutritional supplements for the feeding of their babies.

They were administered metoclopramide 10 mg three times daily orally over a period of three weeks. During this period, blood samples were taken at 8 a.m. on alternate days; furthermore, the amount of milk produced as well as the amount of nutritional supplement both by means of weighing of the neonate before and after feeding. The same procedure was followed before treatment began.

In the evaluation of HPRL and TSH pituitary secretions, 10 women were administered metoclopramide. Venous blood samples were taken from these two groups of women at 0′, 20′ and 60′.

Dosages of HPRL, TSH, T_3 and T_4 were effected utilizing radioimmunoassay.

Table 1. — *The mean values of plasma T_3, T_4, TSH, HPRL in mothers with insufficient lactation and during oral metoclopramide treatment.*

		Before	Weeks of treatment		
T_3	(ng/ml)	1.2±0.05	0.98±0.04	1.2±0.08	0.93± 0.002
T_4	(γ % ml)	7.7±0.4	7.2 ±0.4	7.3±0.5	7.1 ± 0.4
TSH	(μU/ml)	5.1±0.5	3.5 ±0.3	5.1±0.5	4.7 ± 0.2
HPRL	(ng/ml)	32.1±8.4	84.5 ±5.7	57.7±8.3	56.6±11.9

The total quantity of milk produced daily was registered by means of weighing of the neonates before and after feeding.

In addition to periodic clinical controls, the neonates were also tested for T_3, T_4, TSH and bilirubinemia.

RESULTS

It was found that the serum prolactin secretion significantly increased after metoclopramide oral treatment during the first three weeks of puerperium (table 1). TSH, T_3 and T_4 values did not change.

The serum levels of HPRL increased in response to i.v. MC and TRH during MC oral treatment (table 2). Oral MC therapy did not change the prolactin response to i.v. MC or TRH injection.

I.v. injection of TRH caused a notable increment of TSH serum levels both before as well as during oral MC treatment, whereas MC injection did not cause any significant TSH changes (table 2).

Regarding lactation, during the MC treatment, an improved lacteal secretion was maintained during the entire course of the treatment; thus, for most of the neonates, the amount of nutritional supplements notably decreased.

During the entire period it was used, metoclopramide showed no collateral effects.

The clinical controls of the babies consistently resulted negative. The serum levels of T_3, T_4, TSH and bilirubinemia were always within normal limits.

DISCUSSION

The Metoclopramide treatment of women in puerperium produced an increase of serum prolactin levels without inducing thyroid stimulation.

Stimulation tests with endovenous MC provoked an increase in serum HPRL levels which was higher than those induced by the test with i.v. TRH.

The same occurence had been previously noted in normal subjects ([1, 2]). This is most likely due to the fact that TRH stimulates prolactin secretion directly via

Table 2. — *The mean plasma HPRL and TSH responses to TRH and metoclopramide injections during oral MC treatment.*

		Oral MC treatment		
		Basal	20 min.	60 min.
HPRL (ng/ml):	– Response to TRH	27.2± 6.1	98.2±12.4	65.4± 7.3
	– Response to MC	62.2±12.3	198.8±23.7	175.4±25.2
TSH (μU/ml):	– Response to TRH	4.3± 0.4	142.2± 1.7	14.5± 1.5
	– Response to MC	4.6± 0.5	4.4± 0.6	4.8± 0.7

the pituitary, while MC seems to block hypothalamic dopaminergic receptors.

It has been noted that dopamine and dopaminergic medicines inhibit TSH secretion in humans ([5]); therefore, MC, an antidopaminergic medicine, inhibits TSH secretion. In the women examined in our study, the medicine did not produce TSH secretion even after TRH test. In all the women treated with MC, we noted that an increase in prolactin secretion does not necessarily correspond to an improved lactation; therefore, the direct involvement of MC in the lactogenesis process is hypothetically possible.

If this is indeed true, then the fact that MC, administered over a relatively long period of time, does not provoke any alteration in thyroid functions is of the utmost clinical importance.

Of equal importance is the fact that the thyroid screening of the babies, whose mothers had been treated, resulted negative; moreover, the clinical controls of these babies all resulted normal.

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