MODIFICATION OF THE TUBAL PERISTALTIC ACTIVITY IN VIVO INDUCED BY A DRUG WITH ANTICHOLINERGIC ACTIVITY IN STERILE WOMEN

S. RUSTICHELLI, M. MARIATTI, A. PATRIARCA, M. O. ROSA, C. ALOVISI, R. CROCCO, R. GRIO

Obstetric and Gynecological Clinic, Ist University of Turin (Italy)

SUMMARY

Thirthy-four sterile women underwent uterotubal insufflation before and after the intravenous administration of an anticholinergic drug (prifinium bromide).

The kymographic patterns were evaluated and frequency, height amplitude of the peristaltic wave's compared.

Most cases improved tubal activity according to all the considered parameters after the administration of p. b.

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INTRODUCTION

The Authors ([1-7]) report that lesions of uterine tubes were found to be etiologic agents of female sterility in about 30 per cent of all cases, and that this event is worth great attention. The most common technique for the examination of the anatomic and physiologic state of the uterine tubes is to pour a gas or a fluid into the cavity to evaluate tubes patency.

One of the most frequently employed methods is the Rubin's test (insufflation of CO_2 into the uterotubal cavity in order to record pressure variations related to the tubal contractions, to determine tubal patency and tubal functionality) ([5, 6, 7]).

This method has always been employed in our Center in addition to hysterosalpingography.

We have clinically investigated an anticholinergic drug, Prifinium Bromide ([2, 3, 4, 8]) *, to evaluate its influence on the curve of uterotubal insufflation in female sterile patients, in order to evaluate the real effect of this drug on uterotubal function ([9]).

CASES REPORT

34 sterile female patients of the Obstetric and Gynecologic Clinic of Turin University, underwent uterotubal insufflation.

The Rubin Test was performed ambulatorially at the early stage of ovulation: between the 2nd/3rd day and the 10th day after the end of menstruation (Tab. 1).

All women were treated with an antibiotic protection of Phosfomicin per os (3 g tablets, for five days: -3; $+2$).

The judgment of the ovulation time was based upon the finding of cervical mucus and the evaluation of plasmatic progesterone levels.

* Riabal I.B.I. - Milan - Ampoules.

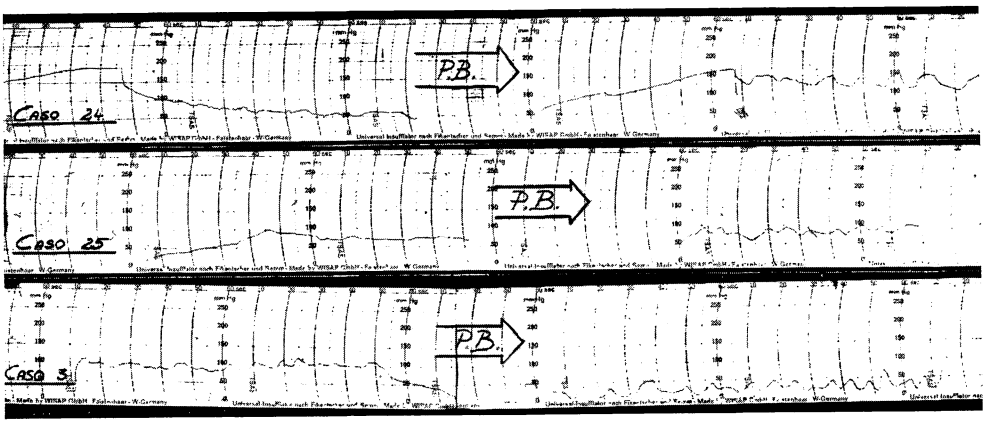
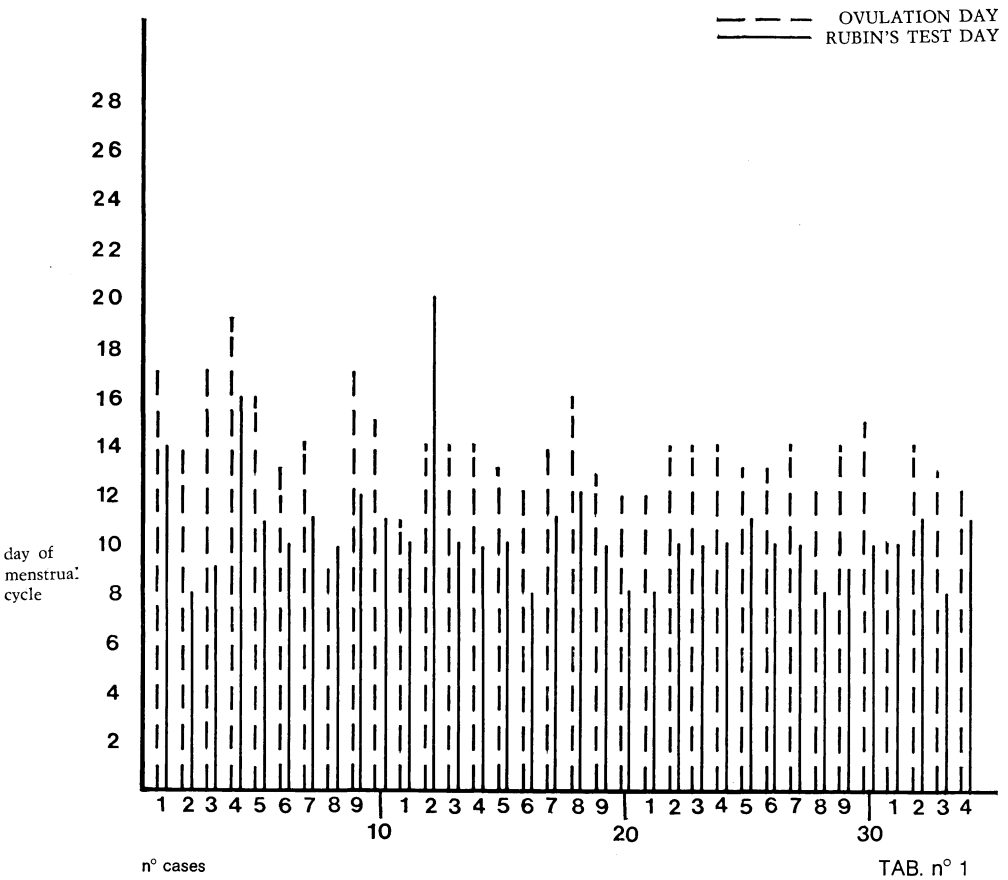

P.B.
CASO 24
P.B.
CASO 25
P.B.
CASO 3

Fig. 1.


OVULATION DAY
RUBIN'S TEST DAY
day of menstrual cycle
28
26
24
22
20
18
16
14
12
10
8
6
4
2
1 2 3 4 5 6 7 8 9 1 2 3 4 5 6 7 8 9 1 2 3 4 5 6 7 8 9 1 2 3 4
10
20
30
n° cases

TAB. n° 1

In order to obtain the graphic record of the insufflation curves, a Fikentscher and Semm CO_2 insufflator was used; paper speed was adjusted to 10 cm/min and mean flow of Carbon Dioxide was of 30 ml/min at a pression rate of 100 mmHg.

The uterotubal insufflation was usually performed twice: the first insufflation

Table 2. — *Average values of age, body weight, ovulation day, age of first menstruation and years of sterile period of sterile women.*

— Body weight (kg)	55,21
— Ovulation day	13,75
— First menstruation age	12,21
— Sterile period (years)	2,21
— Age (years)	30,43

Table 3. — *Insufflatory findings*

N. Cases	Patency		Stenosis		Spasm		Altered activity		Hysterosalpingography
	B	A	B	A	B	A	B	A	
1	1	1	0	0	0	0	0	0	Normal
2	1	1	0	0	0	0	0	0	Right stenosis
3	1	1	0	0	0	0	0	0	Normal
4	1	1	0	0	0	0	0	0	Normal
5	1	1	0	0	1	2	0	0	Normal
6	1	1	0	0	0	0	0	0	Normal
7	0	0	0	0	0	0	0	0	Normal
8	1	1	2	2	0	0	0	0	Normal
9	1	1	0	0	0	0	0	0	Reduced patency
10	1	1	0	0	1	0	0	0	Normal
11	1	1	0	0	1	0	0	0	Normal
12	1	1	0	0	0	0	0	0	Normal
13	1	1	1	1	0	0	0	0	Left stenosis
14	1	1	1	0	0	1	0	0	Normal
15	1	1	2	1	0	0	0	0	Normal
16	1	1	0	0	1	0	1	0	Normal
17	1	1	0	0	1	1	0	0	Normal
18	1	1	0	0	1	1	0	0	Normal
19	1	1	0	0	1	1	0	0	Normal
20	1	1	0	0	0	0	0	0	Normal
21	1	1	1	1	0	0	0	0	Normal
22	1	1	0	0	0	0	0	0	Right stenosis
23	1	1	0	0	1	1	0	0	Left stenosis
24	1	1	0	0	0	0	0	0	Normal
25	1	1	0	0	0	0	0	0	Normal
26	1	1	0	0	1	0	0	0	Normal
27	1	1	0	0	1	0	0	0	Normal
28	1	1	0	0	0	0	0	0	Left stenosis
29	1	1	0	0	1	0	0	0	Bilateral stenosis
30	1	1	0	0	0	0	1	1	Bilateral stenosis
31	1	1	0	0	0	0	0	0	Left stenosis
32	1	1	0	0	0	1	0	0	Left stenosis
33	1	1	1	1	0	0	0	0	Limited patency
34	1	1	1	1	1	0	0	0	Limited patency

B - Before administration of P. B.

A - After administration of P. B.

— *PATENCY*
1 YES
0 NO

— *STENOSIS*
0 NO
1 First degree
2 Sec. degree

— *SPASM*
0 NO
1 First degree
2 Sec. degree

— *ALTERATED ACTIVITY*
0 NO
1 YES

Table 4. — *Kymographic pattern. Tubal contractions obtained by the utero-tubal insufflation.*

Cases N.	Frequency		Amplitude		Shape Regularity	
	B	A	B	A	B	A
1	1	2	1	2	0	0
2	1	2	1	2	1	0
3	1	2	2	2	1	0
4	1	2	1	3	1	0
5	1	2	1	2	0	1
6	1	1	2	3	0	1
7	0	0	0	0	0	0
8	1	2	1	2	0	0
9	1	0	1	0	0	0
10	1	2	1	2	0	1
11	1	2	1	2	1	1
12	1	1	1	2	0	0
13	1	0	1	0	0	0
14	0	1	0	1	0	0
15	0	1	0	2	0	0
16	1	1	2	3	1	1
17	1	3	1	2	0	1
18	1	2	1	2	0	0
19	1	1	1	3	0	1
20	1	2	1	2	0	1
21	1	0	1	0	0	0
22	1	2	2	2	0	0
23	1	3	1	3	0	1
24	1	2	1	2	0	1
25	1	2	1	2	0	0
26	1	2	2	2	1	1
27	1	2	1	2	0	1
28	0	1	0	2	0	0
29	2	1	2	1	0	0
30	1	1	1	1	0	0
31	3	1	1	2	0	1
32	0	2	0	2	0	0
33	0	0	0	0	0	0
34	1	1	1	2	0	1

B - Before administration of P. B.

A - After administration of P. B.

— *FREQUENCY*

0, 1 Low

2 Normal

3 Increased

— *AMPLITUDE*

0, 1 Low

2 Normal

3 Increased

— *SHAPE REGULARITY*

0 Irregular

1 Regular

before the administration of the drug; the second one two minutes after the intravenous injection of 1 ampoule of P. B., in order to compare the changes of insufflation curve (Fig. 1).

Average values of age, weight, age of first menstruation and ovulation day, have been calculated (Tab. 1-2).

Patients, ranging from 20 to 42 years of age (average: 30-43 years) were 34 women with primary sterility, with an average sterile period of 2-3 years (Tab. 2).

The average body weight was 55.21 Kg, ranging from 40 to 80 Kg of weight; and the average age of first men-

struation was 12.21 years, ranging from 10 to 15 years. A previous I.S.G. X-Ray was performed, with the finding of 5 monolateral occlusion, 22 bilateral patency (regular finding), 7 pathologic pattern (Tab. 3).

Uterotubal insufflation curves were classified as *normal-obstructive-spastic - altered tubal motility* (Tab. 3).

Changes of the utero tubal contraction pattern before and after intravenous administration of P. B. were noted. Frequency, amplitude (height) and shape of Kymographic pattern were calculated, before and after the administration of P.B. (Tab. 4).

Variation of the three parameters employed in the evaluation of oscillation appeared very significant.

E.G.: 5 patients showed a decreased frequency, 21 patients showed an increased frequency.

The likelihood that 21 of the 26 patients show a variation in a way and 5 patients show a variation in an apposite way is less than 0.01.

In conclusion, we think that a treatment with P.B. can produce a significant increase of frequency and height of oscillations, and remarkably regularize them.

Table 5. — *Insufflatory findings: modified activity after P. B. administration.*

		No Variations	Decrease	Increase	Sign test
Rubin's Test	Stenosis	5	4	1	N. S.
	Spasm	5	6	5	N. S.
	Not Normal	1	0	0	—
Kymographic Pattern	Frequency	7	5	22	<0.01
	Amplitude	5	4	25	<0.01
	Shape Regularity	21	2	11	<0.01

FREQUENCY was classified:
(average: 2.75 min)

Low	for the average	44.12 %
Normal	» » »	14.70 %
High	» » »	41.18 %

HEIGHT (Amplitude) was classified:
(average: 11 mm Hg)

Decreased	for the average	23.55 %
Normal	» » »	32.35 %
Increased	» » »	44.11 %

After the i.v. administration of P.B., patients were classified in three classes: No change - Normalization - Alteration.

The cases in each class are reported in Tab. 5.

CONCLUSION

The activity of P. B. was studied in 34 sterile female patients, who underwent uterotubal insufflation, by means of a double trend in the same patient: with and without the drug.

1) In patients with a regular pattern, no tubal patency deterioration tendency was noted after the drug administration.

2) The statistical evaluation of the changes of the oscillations of the Kymographic pattern after P. B. administration revealed a significative increase in frequency, height, and a regularization of the oscillations (Tab. 5).

Since the cases were mostly with a I.S.G. X-Ray normal pattern, we can

conclude that in normal tubes, P.B. plays a very important role in the significant improvement of tubal patency, with a modification of the insufflating pattern towards a better patency and motility.

Next step of this study will be the administration of P.B. in women with a pathologic insufflation pattern, in order to evaluate the drug ability to induce modifications in malfunctioning tubes.

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