INDUCTION OF ABORTION BY $PGF_{2\alpha}$ IN THE SECOND TRIMESTER OF PREGNANCY

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Summary: The Authors evaluate the efficacy of the intravenous infusion of $PGF_{2\alpha}$ in the induction of abortion in the second trimester of pregnancy with live fetus (Italian Law no. 194/1978). Abortion occurred in 3 out of 11 (27.27%) nulliparous patients, and uterine curettage was necessary in 2 cases. The interval between administration of the drug and the beginning of uterine contractions was 31.42±14.15 minutes (range 10 to 35 minutes), the duration of infusion was 7.55±3.64 hours (range 7 to 9.15 hours), the interval between initiation of infusion and delivery was 8.10±2.60 hours (range 7 to 9.45 hours), and the dose administered was 20.23±3.75 mg (range 15 to 25 mg). Side effects were reported in 10 cases (90.90%), and in 5 cases these effects were caused by interruption of infusion. Abortion occurred in 7 out of 13 pluriparous patients (53.84%), and uterine curettage was necessary in 4 cases. The interval between administration of the drug and the beginning of uterine contractions was 20±12.24 minutes (range 20 to 45 minutes), the duration of infusion was 8.26±0.9 hours (range 3.10 to 16 hours), the interval between initiation of infusion and delivery was 8.40±0.8 hours (range 3.0 to 9.6 hours), and the dose administered was 19.28±5.34 mg (range 5 to 25 mg). Side effects were reported in 11 cases (84.61%), and in 6 cases these effects were caused by interruption of infusion. The high frequency of severe side effects and low success rate incate that $PGF_{2\alpha}$ is not indicated in the induction of second trimester abortion with live fetus (Italian Law no. 194/1978) and actually we use $PGF_{2\alpha}$ derivatives.

Key words: prostaglandins, abortion, $PGF_{2\alpha}$.

INTRODUCTION

The interruption of a pregnancy with live fetus in the second trimester has been performed by various pharmacological means, particularly with the use of prostaglandins.

The aim of this study is to evaluate the efficacy of $PGF_{2\alpha}$ in the induction of labor with live fetus in the second trimester (Italian Law No. 194/1978) with uterine crevix posterior, conserved, and closed in relation to parity of the patient.

MATERIAL AND METHODS

This study included 11 nulliparous patients with an average age of 26.6±5.3 years (range 15 to 31 years) who were on the average in the 23.7±3.2nd week of pregnancy (range 14 to 27 week), and 13 pluriparous with an average age of 23.7±3.2 years (range 17 to 39 years) in the 16.4±5.4th week of pregnancy (range 13 to 26 week) respectively (table 1). Average age and average week of pregnancy were not significantly different in the two groups. There were no contraindications to the use of prostaglandins and the general condition of all patients was good. In all cases development of the uterus was consistent with amenorrhea and uterine cervix was posterior, conserved, and closed in all cases. Indications for induction of labor (Italian Law no. 194/1978) are reported in table 1; the prevalent cause was fetal malformation.

The drug utilized was $PGF_{2\alpha}$, administered intravenously diluting 5.5 mg vials in 500 ml of physiologic solution. The initial dose was 2.5 mcg/min and the dose was progressively increased until the appearance of regular uterine contractile activity or the appearance of severe side effects, up to a maximum dose of 25 mg.

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Table 1. – *Average age and week of pregnancy and indication for interruption of second trimester pregnancy.*

	Nulliparous	Pluriparous
Average week of pregnancy	26.6±5.3 range 15-31	23.7±7.8 range 17-39
Average age (years)	22.2±3.24 range 14-27	16.42±5.4 range 13-26
Indication for abortion:		
anencephaly	4	–
Cooley's disease	1	1
breast cancer	2	–
umbilical hernia	1	–
psychosis	2	2
trophoblastic disease	–	4
measles	–	4
radiation	1	–
trisomy 21	–	1
myelomeningocoele	–	1
Total	11	13

The following parameters were evaluated: the frequency and severity of side effects, frequency of success, time interval between the initiation of therapy and the beginning of uterine contractile activity, the duration of infusion, time interval between initiation of therapy and the beginning of delivery, and in how many cases uterine curettage was performed after delivery.

Delivery within 12 hours of the initiation of therapy was considered successful.

Statistical evaluation of the results was performed utilizing the chi square test, and a $p \leq 0.05$ was considered significant.

RESULTS

Abortion occurred in 3 out of 11 (27.27%) nulliparous patients, and uterine curettage was necessary in 2 cases. The interval between administration of the drug and the beginning of uterine contractions was 31.42±14.15 minutes (range 10 to 35 minutes), the duration of infusion was 7.55±3.64 hours (range 7 to 9.15 hours), the interval between initiation of infusion and delivery was 8.10±2.60 hours (range 7 to 9.45 hours), and the dose administered was 20.23±3.75 mg (range 15 to 25 mg) (table 2). Side effects were reported in 10 cases (90.90%), and in 5 cases these effects were caused by interruption of infusion (table 3).

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There were no statistically significant differences between the nulliparous and pluriparous in the interval between the beginning of administration of the drug and the beginning of uterine contractions, the duration of infusion, the interval between initiation of infusion and delivery, and the frequency of uterine curettage.

Table 2. – *Interval between beginning of infusion of $PGF_{2\alpha}$ and beginning of uterine contractions, duration of infusion, interval between beginning of infusion and delivery, frequency of success, side effects and uterine curettage after abortion.*

	Nulliparous		Pluriparous	
	SD±SEM	Range	SD±SEM	Range
Interval between beginning of infusion of $PGF_{2\alpha}$ and beginning of uterine contraction (minutes)	31.42±14.15	20-40	20.0±12.24 *	20-45
Duration of infusion (hours)	7.55±3.64	7-9.15	8.26±0.9 *	3.13-16
Interval between beginning of infusion and delivery (minutes)	8.10±2.60	7-9.45	8.4±0.8 *	3.0-9.60
Dose (mg)	20.23±12.03	15-25	19.28±5.34 *	5-25
No. of patients with side effects	10 90.90%		11 84.61% *	
Success	3 27.27%		7 53,84% **	

* $p>0.05$ ** $p<0.05$

The frequency of success was significantly higher in the pluriparous ($p<0.05$), while the frequency of side effects was equally elevated in both groups of patients.

DISCUSSION

The data from our study show that the intravenous administration of $PGF_{2\alpha}$ for the induction of labor in cases of abortion in the second trimester of pregnancy (Italian Law No. 178/1978) results in a high frequency of failure and severe side effects both in the nulliparous and the pluriparous. The time interval between administration of the drug and the beginning of uterine contractions did not differ in the two groups studied, nor did the duration of infusion and the dose of the drug used. In the pluriparous there was a significantly higher frequency of success, probably because, even though the uterine cervix was posterior, conserved, and closed, in the pluriparous the isthmo-cervical zone was damaged in some way by earlier deliveries, as demonstrated in a study performed by Hughesdon [1].

Table 3. – *Frequency of side effects during i.v. infusion with $PGF_{2\alpha}$.*

	Nulliparous Cases	%	Pluriparous Cases	%
Temperature >38 °C	2	18.18	2	15.38
Vomiting	8	72.72	8	61.53
Diarrhea	5	45.45	6	46.15
Tachicardia	1	9.09	–	—
Erythema	5	45.45	6	46.15

We administered $PGF_{2\alpha}$ intravenously to facilitate the immediate interruption of administration in case of serious side effects, which could also have been reduced by premedication with antiemetics and antidiarrheal drugs. We did not, like some other authors, administer tranquilizers. Other routes of administration have been reported, such as intramuscular, via cervical gel, or intraamniotic, which in some cases was associated with the administration of urea or rivarolo [2, 3] with varying frequencies of success and side effects.

The use of $PGF_{2\alpha}$ has been reduced in recent years in favor of other prostaglandin derivatives, particularly PGE_2 which insures a higher frequency of success with less side effects [4, 5, 6, 7]. Among the PGE_2 derivatives 16 phenoxyl 17, 18, 19, 20, tetranor PGE_2 methylsulphonilamide has been reported as being notably effective. In a preceeding study on the use of prostaglandins in the interruption of pregnancy in the second trimester (Italian Law No. 194/1978) we reported that the in-

travenous dose to a maximum of 500 mcg leads to 60% success rate with minimal and nonsevere side effects ([8]); in cases of endouterine fetal death success was attained in 100% of cases ([8]).

Currently in the iterruption of pregnancy in the second trimester (Italian Law No. 194/1978) we use PGE_2 which gives a 90% success rate if administered intramuscularly ([3]). Hysterotomy is indicated after failure of PGE_2 induction. We have never had cases of severe complications or maternal death from the interruption of second trimester pregnancy (Italian Law No. 194/1978).

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