

THE INFLUENCE OF **SIMPANORM (CARAZOLOL)** APPLICATION
ON PUERPERAL PERIOD COURSE IN DAIRY COWS.

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The course of puerperal period influences significantly dairy cows health, fertility and productivity. Disturbances in that period cause losses in milk and meat production that decrease profits in cows' rising.

Among different processes after delivery the most important are: uterus involution and resumption of ovaries activity. Normally, uterus involution (in per rectum investigation) ends in 25-30 day after delivery (pp). The prolongation of that period over 30 days pp is called delayed involution. Contractions of miometrium are the most intensive in first hours pp and the uterus involution in that time is the quickest. The attenuation of uterus contractions in first hours after delivery is one of the causes of placental retention. Slow and delayed uterus involution in post partum period impairs the excretion of lochial that is a very good basis for growth of microorganisms especially mixed of bacteria flora. That reason of various kinds of metritis therefore the prophylaxis is very important for future fertility of a cow.

Among many factors that influence post partum period and uterus involution (nutrition, living conditions, the frequency of milking, etc) very important are stress factors. Stress could disturb uterus contraction, which results in uterus hipotonia or atonia, and in consequence the involution is longer or delayed. That negative influence is caused by stimulation of beta-adrenergic receptors (many in mucosal membrane of uterus) by adrenalin secreted from medulla of suprarenal gland during the action of stressors. The negative impact of stress on animal body (including post partum uterus contraction) would be reduced by using anti-stress drugs. In veterinary practice very often are used carazolol and propranolol – blockers of beta-adrenergic receptors.

The aim of the investigations was to determine the influence of carazolol (SIMPANORM, Fatro Italy), on puerperal period.

MATERIALS AND METHODS

The investigations were carried out in 2002 in B farm on 85 cows (primiparous and multiparous, nbc x HF cross breed cows). The animals were 3-9 years old, average milk efficacy was 6380 kg of milk per year. The animals were kept in leashes in traditional cow barns with light bedding. The feeding was based on TMR system.

Mechanical milking was performed twice a day (morning and afternoon). An employed inseminator made inseminations. Each cow used in our experiment had no problems with delivery and the help was unnecessary and the time of pregnancy was physiological. None of them had multiple pregnancy.

In the first experiment were used 80 cows divided into two groups:

Group I, experimental: 40 cows that were administered in first hours after delivery, i.m. SIMPANORM (Fatro Italy), which contains 0.5 mg of carazolol / ml – the blocker of beta-adrenergic receptors. The dose for one cow was 2 ml of specimen/100 kg body weight that corresponds to 1 mg of carazolol per 100 kg body weight.

Group II, control; 40 cows with i.m. administration of 10 ml placebo in first hours after delivery).

In both groups was checked the time of lochial excretion and in 15-20 min after administration of investigated drug, or placebo each cow had per rectum examination to determine uterus tonus. In 6-7 weeks pp each cow had clinical and gynecological examination every week to control post partum period paying attention to uterus involution and appearance of endometritis.

The results were estimated with Hannover key. We assumed that the most important factor in our estimation is the next fertilization of each cow – the next step were estimation of chosen fertility factors separately for both groups. Pregnancy was recognized in per rectum investigation 8-10 weeks after insemination.

The second experiment involved 5 cows with uterography investigation in first twenty-four hours after delivery. Motility of uterus was recorded by balloon method, through air transmission. After recording the initial curve during 30 min the animals were given i.m. injection of SIMPANORM (2 ml/100 kg b.w.) and during next 60 min the recording of uterus contraction was carried out.

CONCLUSIONS AND DISCUSSION

Obtained results show that the application of SIMPANORM is profitable for uterus contraction and the course of post partum period. In per rectum investigation (tab.1) carried out 15-20 min after the administration of the investigated drug or placebo, three times fewer cases of uterus atonia in experimental (I) than in control (II) group were found. In more than 50% cows receiving SIMPANORM was observed a strong tension of uterus and its high response to massage, manifested in contraction of uterus and presence of longitudinal furrows detected by a touch, while in control group the similar reaction concerned only 27.55% of animals. Table 2 shows the course of uterus involution and the presence of complications as well as: placental retention, endometritis puerperalis in both compared groups. In most of the animals from group I the placenta shed spontaneously in 12 hours after delivery and only in 2 cases (5%) not. In control group that kind of affliction was twice as often as in the other group and concerned 5 cows (12.5%). The most of animals receiving SIMPANORM showed correct uterus involution, it was found that in 77.5% of these cows uterus involution was completed before 30-day post partum. In the control group delayed uterus involution concerned (47.5%) animals.

The number and percentage of cows with post partum metritis were lower in experimental group with intramuscular administration of carazolol. In cows from the control group it was found 9 cases (22.5%) of metritis were found while in experimental group only 4 cases (10%) occurred. It should be mentioned that animals in both groups, had placental retention and/or endometritis connected with delayed uterus involution. Fertility analysis showed differences, in relation to each fertility index, to the detriment of control (II) group (Table 3).

After 1-3 inseminations in following heats in group I 92.2% cows were pregnant instead of group II 87.5%. In group I of animals after the first insemination 22 cows were pregnant (55%) in the second 8 (20%) in the third 6 (15%) and in the fourth 1 cow (2.5%). Five cows (12.5%) were sorted out because of infertility. In the experimental group, pregnancy index was better (1.62) than in control group (1.8). The difference in service period was in favour of animals with SIMPANORM administration and carried out for 98 days whereas 111 days in the control group.

The results in the second experiment (uterography investigations) showed a profitable influence of carazolol on post partum uterus contraction in cows. It was proved that uterus contractions in each 5 cows before SIMPANORM administration were rare, with low

amplitude and weak myometrium tension (Picture 1). In 15-30 min after intramuscular carazolol administration occurred intensive changes in utherographic records in each investigated cow. Contractions of myometrium were more often, with higher amplitude and with increasing of myometrium tension (picture 1). Those favourable changes in uterus contraction lasted during all the time of utherography registration.

Our own investigation showed that the block of beta-adrenergic receptors in cows after delivery with using carazolol (SIMPANORM) would significantly limit some of the disturbances in puerperium period and caused significantly improve fertility.

Those results correspond to the results of other scientists, who succesfully used in dairy cows beta-adrenolitics (carazolol or propranolol) after delivery in prophylaxis of post partum disorders.

Those data showed how important are suitable uterus contractions in the first days after delivery.

Uterus involution is the quickest in first days after delivery and than usually goes slower. Proper uterus involution favours the success of uterus cleaning from lochial and this determines the possibility of endometritis.

Particular attention should be paid to the fact that both our own investigations and observations of other authors show that stress factor is very important for dairy cows after delivery.

Positive effects of blocking beta-adrenergic receptors show that stress factors should not be ignored in delivery and early post partum period.

CONCLUSIONS:

1. The using of carazolol (SIMPANORM) in first hour after delivery improves motility of uterus in cows that was showed in clinical and utherographical investigations.
2. Blocade of beta-adrenergic receptors in cows with SIMPANORM accelerates uterus involution, reduces the risk of placenta retention and endometritis and has profitable influence on fertility factors.
3. During usage of SIMPANORM in cows was not observed any side effects.

Tab 1. Tension of uterus in per rectum investigation 15-20 min after Simpanorm at the dose of 1mg of carazolol / 100 kg b.w. or placebo administration.

GROUP	No. of COWS	ATONIA OF UTERUS		MIDDLE REACTION OF UTERUS		HIGH REACTION OF UTERUS	
		No. of COWS	%	No. of COWS	%	No. of COWS	%
I Simpanorm Group	40	2	5	15	37.5	23	57.5
II Placebo Group	40	7	17.5	22	55	11	27.5

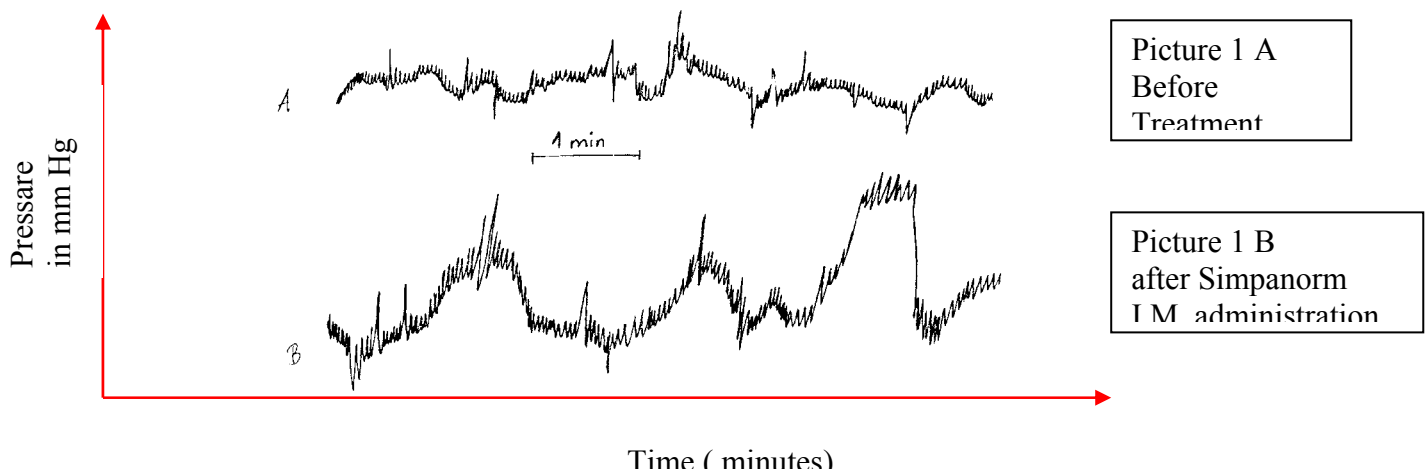
Tab 2. The influence of Simpanorm administered at the dose of 1mg of carazolol / 100 kg b.w. on post partum period course in comparison with the placebo administration.

GROUP	No. of COWS	RETENTION PLACENTA		KIND OF UTERUS INVOLUTION				<i>ENDOMETRITIS PUERPERALIS</i>	
				Involuzione Uterina (entro 30gg)		Involuzione Uterina (dopo 30gg)			
		No. of COWS	%	No. of COWS	%	No. of COWS	%	No. of COWS	%
I Simpanorm Group	40	2	5	31	77.5	9	22.5	4	10
II Placebo Group	40	5	12.5	21	52.5	19	47.5	9	22.5

Tab3. Level of fertility factors in cows between Simpanorm and placebo groups.

Group	No. of Cows	Pregnant Cows		Conception rate after 1st A.I.		Pregnancy Index	Service Period (days)	Infertility Sorting out	
		No. of Cows	%	No. of Cows	%			No. of Cows	%
I Simpanorm Group	40	37	92.5	22	55	1.62	98	3	7.5
II Placebo Group	40	35	87.5	18	45	1.8	111	5	12.5

Picture. 1. Uterus contractions in a cow 16 hours post partum.



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