

**FERTILITY OF COWS AFTER DYSTOCIAS AND COMPLICATED
PUERPERIUM WITH RESPECT TO BACTERIOLOGICAL AND
MYCOLOGICAL FINDINGS IN THE GENITALIA**

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Abstract

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Seventy-three cows with the history of laboured calving and complicated puerperium were observed for persisting pathological conditions in the genitalia, the incidence of bacteria and micromycetes in the cervical mucus and for subsequent fertility. Clinical examination at 28 to 32 days after parturition revealed persisting pathological processes, mainly inflammations, in the genitalia of 75.34 %, incomplete involution of the uterus in 50.68 %, absence of the sexual cycle in 26.02 % and the incipient syndrome of ovarian cysts in 17.80 % of the cows. By 55 to 65 days post partum the incidence of pathological processes had substantially decreased, the most frequently processes then observed being inflammations (in 34.24 % of the cows), particularly mucopurulent endometritis (in 17.80 % of the cows).

Bacteriological and mycological examination detected, in keeping with the incidence of pathological processes, a number of pathogenic species. The most frequently identified bacteria and micromycetes were *Actinomyces pyogenes*, *Staphylococcus aureus* and beta-streptococci, and *Aspergillus fumigatus*, *Aspergillus flavus*, *Aspergillus ochraceus* and *Aspergillus parasiticus*, respectively. Compared with the means obtained in the respective herds, the cows yielding pathogenic and potentially pathogenic micromycetes showed a higher incidence of reproductive disorders, worse reproduction indices and a higher culling rate, while cows yielding pathogenic and potentially pathogenic bacteria also showed a higher incidence of reproductive disorders and a higher culling rate but their reproduction indices, except insemination interval, were unaffected.

Cattle, parturition, puerperium, bacteria, micromycetes, reproduction

The importance of a non-complicated parturition and puerperium for further fertility and performance of the cow has long been recognized. Much attention has therefore been paid to the aetiology, therapy and prophylaxis of pathological con-

ditions impairing involution of the genitalia and delaying the return of cows to the reproductive process or causing their premature culling. A number of studies are available concerning puerperal changes and processes underlying the return of the reproductive organs to a morphological and functional state permitting another pregnancy (Vlček 1969; Kudláč and Vlček 1970; Kudláč et al. 1970; Buchholz and Busch 1977; Garcia 1982; Garcia and Larson 1982), the effects of environmental and internal factors on the course of puerperium, and the possibilities to control the puerperium and stimulate its early completion (Kudláč 1982; Vlček 1982; Vlček and Svobodová 1985; Laktiš 1977; Leidl et al. 1983; Bostedt et al. 1980; a.o.).

Other experiments by the aforementioned and other investigators were conducted in cows with a pathological course of parturition (Gamčík et al. 1983; Bostedt et al. 1979; Bostedt 1984; Buchholz et al. 1979; Sobiraj et al. 1987; a.o.) in an attempt to assess the dynamics of demonstrable alterations in the individual parts of the genitalia, subsequent reproductive disorders, efficiency of treatment using various procedures and therapeutic drugs, rate of return of the cows to the reproductive process, culling rate, losses due to puerperal complications, a.o.

The present study was designed as a contribution to a better understanding of these aspects.

Materials and Methods

The experimental animals were 73 Bohemian Pied cows or their crosses with the Holstein-Friesian breed with the history of a pathological course of the latest calving or puerperium, either untreated or therapeutically treated, chosen by systematic search in herds with comparable management and feeding practices on several farms of an agricultural enterprise. They were subjected to clinical, bacteriological and mycological examination 28 to 32 and 55 to 65 d after calving. Clinical examination (assessment of the general health status and external, vaginal and rectal examination of the genitalia) was focussed on the determination of the involution degree, renewal of ovarian activity, oestrus onset, inflammatory processes and other pathological changes, the syndrome of ovarian cysts a.o.

Bacteriological and mycological examination was carried out with routine methods to detect pathogenic and potentially pathogenic bacteria and micromycetes in the cervical mucus and to evaluate their incidence with respect to clinical findings and subsequent fertility.

The animals were permanently observed and eventually evaluated on the basis of either pregnancy diagnosis or infertility diagnosis and culling. The evaluation covered basic reproduction indices (conception at first and further inseminations, insemination interval, service-period, insemination index, rate of return to the reproductive process and culling rate) with respect to gynecological, bacteriological and mycological findings under consideration of age and season (summer ration vs. winter ration).

Results and Discussion

The survey of pathological conditions diagnosed in the cows at parturition and during the puerperium is presented in Table 1. It can be seen that the most frequent complications were puerperal endometritis and retained placenta found in 54.79 % and 53.42 % of the cows, respectively. Substantially less frequent complications were laboured parturition, prolapse of the uterus, metritis a.o.

Table 1. Prevailing pathological conditions at parturition and post partum in the experimental group of cows

Character and incidence (%) of pathological conditions	% affected cows in the sample	% affected cows in the population under study
Labourled of a large calf or stillbirth	9.58	0.94
Labourled birth or abortion of twins	9.58	0.94
Premature calving	6.84	0.67
Late abortion	4.10	0.40
Prolapse of the uterus	5.47	0.53
Retained placenta	53.42	5.24
Puerperal endometritis	54.79	5.37
Metritis, perimetritis, parametritis	4.10	0.40

n	73	744
Age \bar{x}	5.51	not examined
No. parturitions \bar{x}	3.75	not examined

Table 2. Incidence and character of pathological changes in the genitalia diagnosed on external, vaginal and rectal examination of the cows 1 and 2 months post partum

	Examination 1 month post partum		Examination 2 months post partum	
	No.	%	No.	%
Cows in the experiment	73	100	71	97.26
Cows culled	—	—	2	2.73
No pathological findings	18	24.65	33	45.20
Cervicitis	2	2.73	2	2.73
First-degree endometritis	1	1.36	—	—
Second-degree endometritis	26	35.61	13	17.80
Third-degree endometritis	4	5.47	2	2.73
Endometritis + metritis	3	4.10	2	2.73
Residues (adhesions a.o.) followig metritis, perimetritis or parametritis	6	8.21	6	8.21
Total No. and % cows with inflammatory changes in the genitalia	42	57.53	25	34.24
Cows with the incipient and later confirmed syndrome of ovarian cysts	13	17.80	13	17.80
Total No. and % cows with pathological findings in the genitalia	55	75.34	38	52.05

Table 3. Involution of the uterus and ovarian activity in cows of the experimental group on examination 1 month post partum

No. cows	% cows	Uterine involution		Ovarian activity		
		completed	protracted	restored	incipient syndrome of ovarian cysts	not restored
73	100	36 49.31	37 50.68	41 56.16	13 17.80	19 26.02

Table 4. Bacterial contamination of the cervical mucus 1 and 2 months post partum in cows with the complicated course of parturition or puerperium

	Degree of bacterial contamination (No. /%)				
	S	I	II	III	Total positive
One month after parturition	36	19	11	7	37
	49.31	26.02	15.06	9.58	50.68
Two months after parturition	42	12	10	2	24
	63.63	18.18	15.15	3.03	36.36

S = bacteriologically negative samples

I = solitary colonies (up to 6 colonies)

II = medium contamination (up to 20 colonies)

III = more than 20 colonies

Table 2 shows the survey of residual pathological states detected in the genitalia one and two months after parturition. The reduced incidence of positive findings 2 months post partum as compared to those observed 1 month after calving indicates a tendency to healing and restoration to normal. Whereas the examination at 28 to 32 d after calving detected pathological changes in the genitalia in 75.34 % of the cows, that conducted at 55 to 65 d post partum revealed persistent pathological changes in 52.05 % of the animals. Two cows (2.73 %) had been culled by this time. This implies that 17 (23.28 %) cows were cured. The persisting pathological conditions were mainly inflammatory processes (found in 34.24 % of the cows), particularly mucopurulent endometritis (in 17.80 % of the cows). Thirteen animals (17.80 %) showed the incipient syndrome of ovarian cysts which was then confirmed by further examinations.

Involution of the uterus was clinically completed by about 30 d after calving in 36 (49.31 %) cows and protracted in 37 (50.68 %) animals. The ovarian cycle was restored in 41 (56.16 %), no signs of ovarian activity were observed in 19 (26.02 %)

and the incipient syndrome of ovarian cysts was found in 13 (17.80 %) cows (Table 3). From these findings it appears that in most cows with a complicated course of parturition and puerperium the involution of the uterus and, occasionally, also the renewal of the sexual cycle are delayed, in consequence of which the insemination interval and the service-period are prolonged.

The results of bacteriological examination confirmed in keeping with our previous findings and those reported by other investigators (De Bois 1961; Lloyd et al. 1968; Vlček 1969, 1983; Vlček and Svobodová 1985) a substantial decrease in the content of both pathogenic and potentially pathogenic bacterial species in the cervical mucus during the period under study. In cows with the renewed sexual cycle only very low bacterial counts were found. It can be seen in Table 4 that although the bacteriological examination of the cervical mucous samples collected 28 to 32 d after calving yielded positive results in 37 (50.68 %) cows, large bacterial counts were found only in 7 (9.58 %) animals. In most cows the isolation attempts yielded only solitary bacterial colonies (in 19 cows, i.e. in 26.02 % of the animals) or negative results (in 36 cows, i.e. in 49.31 % of the animals).

On examination at 55 to 66 d post partum positive findings were even less numerous, being found in 24 (36.36 %) cows. Major bacterial contamination of the cervical

Table 5. Survey and involvement of pathogenic, potentially pathogenic and saprophytic bacteria isolated from the cervical mucus of cows with the complicated course of parturition or puerperium 1 and 2 months post partum

Species	1 month post partum		2 months post partum		Total incidence	
	No.	%	No.	%	No.	%
<i>Actinomyces pyogenes</i> (+++)	6	8.21	5	7.57	11	7.91
<i>Staphylococcus aureus</i> (+++)	2	2.73	—	—	2	1.43
<i>Staphylococcus epidermidis</i> (++)	1	1.36	—	—	1	0.71
<i>Escherichia coli</i> (++)	6	8.21	1	1.51	7	5.03
<i>Pseudomonas aeruginosa</i> (++)	1	1.36	3	4.54	4	2.87
<i>Proteus vulgaris</i> (+)	—	—	1	1.51	1	0.71
<i>Bacillus cereus</i> (+)	2	2.73	1	1.51	3	2.15
<i>Bacillus subtilis</i>	1	1.36	—	—	1	0.71
<i>Bacillus</i> sp.	12	16.43	8	12.12	20	14.38
Alpha streptococci	8	10.95	4	6.06	12	8.63
Beta streptococci (++)	2	2.73	1	1.51	3	2.15
Gamma streptococci	1	1.36	1	1.51	2	1.43
<i>Micrococcus</i> sp.	3	4.10	3	4.54	6	4.31
Samples yielding pathogenic bacterial species (+++)	8	10.95	5	7.57	13	9.35
Samples yielding potentially pathogenic bacterial species (++, +)	9	12.32	5	7.57	14	10.07
Samples yielding saprophytic bacterial species (—)	20	27.39	14	21.21	34	24.46
Total No. and % bacteriologically positive samples	37	50.68	24	36.36	61	43.88

+++ pathogenic species

++, + potentially pathogenic species

Table 6. Survey of micromycetes isolated from the cervical mucus of cows with the complicated course of parturition 1 and 2 months post partum

Species	Incidence (No./%)			Total	Species	Incidence (No./%)			Total	
	1 month post partum	2 months post partum	Total			1 month post partum	2 months post partum	Total		
<i>Absidia</i> sp.		1	1.51	1	0.71	<i>Penicillium</i> vermiculatum (-)	1	1.36	1	0.71
<i>Aspergillus fumigatus</i> (++++)	3	4	6.06	7	5.03	<i>Penicillium rubrum</i>	1	1.36	1	1.43
<i>Aspergillus flavus</i> (++++)	-	1	1.51	1	0.71	<i>Paecilomyces varioti</i> (+++)	5	6.84	7	8.63
<i>Aspergillus ochraceus</i> (++++)	1	-	1.36	1	0.71	<i>Scopulariopsis</i>	1	1.36	1	1.43
<i>Aspergillus parasiticus</i> (++++)	-	1	1.51	1	0.71	<i>Scopulariopsis sp.</i> (-)	2	2.73	4	4.31
<i>Aspergillus fischeri</i> (+++)	1	-	1.36	1	0.71	<i>Acremonium strictum</i> (+)	-	-	1	0.71
<i>Aspergillus ustus</i> (+)	1	-	1.36	1	0.71	<i>Acremonium sp.</i>	2	2.73	-	1.43
<i>Aspergillus restrictus</i> (+)	2	-	2.73	2	1.43	<i>Alternaria alternata</i> (-)	1	1.36	2	1.43
<i>Aspergillus amsterodami</i>	1	1	1.51	2	1.43	<i>Alternaria sp.</i>	2	2.73	-	1.43
<i>Aspergillus sp.</i>	6	-	8.21	6	4.31	<i>Cladosporium sp.</i>	5	6.84	6	7.91
<i>Penicillium waksmanii</i> (-)	-	1	1.51	1	0.71	<i>Geotrichum candidum</i> (+)	1	1.36	-	0.71
<i>Penicillium chrysogenum</i> (-)	1	-	1.36	1	0.71	<i>kvasinkové mikroorganismy</i>	2	2.73	-	1.43

+++ pathogenic species

++++, + potentially pathogenic species

According to Meyer H. Leistner L.: Mycotoxins, Environmental Health Criteria 11 WHO Geneva 1979.

mucus was found in only 2 (3.03 %) cows, negative findings were recorded in 42 (63.63 %) cows and solitary colonies were found in 12 (18.18 %) cows. The number of findings showing medium contamination was approximately the same as before.

The survey of the isolated pathogenic and potentially pathogenic bacterial species is presented in Table 5. Of the species that may either produce pathological changes in the genitalia or be involved in their development, our isolation attempts yielded mainly *Actinomyces pyogenes* (»*Corynebacterium pyogenes*«) and *Staphylococcus aureus* which are involved particularly in the aetiology of suppurative processes. Potentially pathogenic bacteria isolated by us included *Staphylococcus epidermidis*, *Escherichia coli*, *Pseudomonas aeruginosa* and beta-streptococci.

Table 5 also shows the proportions of cows yielding pathogenic, potentially pathogenic and saprophytic bacteria 1 and 2 months after parturition. The finding of fewer pathogenic and potentially pathogenic species in the samples collected 55 to 65 d post partum is in keeping with the trend to amelioration of the health status, renewal of the sexual cycle and with the reduced total bacterial content of the genitalia.

Similar results were obtained upon mycological examination which yielded a relatively broad spectrum of micromycetes in the cervical mucus of cows with a complicated course of parturition and puerperium. Their survey, together with the incidence of the individual pathogenic, potentially pathogenic and saprophytic species is shown in Table 6. The pathogenic species were represented mainly by *Aspergillus* spp. (*Aspergillus fumigatus*, *Aspergillus flavus*, *Aspergillus ochraceus*, *Aspergillus parasiticus*) and the potentially pathogenic species, by *Aspergillus fischeri*, *Aspergillus ustus*, *Aspergillus restrictus*, *Penicillium rubrum*, *Paecilomyces variotii*, *Scopulariopsis brevicaulis*, *Acremonium strictum* and *Geotrichum candidum* (according to Mayer and Leistner: Mycotoxins, Environmental Health Criteria. 11. WHO Geneva 1979).

The incidence of pathogenic, potentially pathogenic and saprophytic micromycetes in the cervical mucus of cows with a complicated course of parturition and puerperium at 1 and 2 months post partum is shown in Table 7. Comparison with the results of bacteriological examination shows that the total incidence of micromycetes also decreased, but the proportion of persisting pathogenic and potentially pathogenic species remained higher.

The subsequent fertility of cows with the findings of pathogenic and potentially pathogenic bacteria and micromycetes is shown in Table 8. The proportion of cows that failed to conceive and were culled was 6.5 % higher among those yielding pathogenic and potentially pathogenic bacteria than in the animals yielding saprophytic bacteria or negative findings (44.00 % vs. 37.50 %). Similarly, in cows yielding pathogenic and potentially pathogenic micromycetes the proportion of those that failed to conceive and were culled was 8.2 % higher than in the animals yielding saprophytic species or negative findings (45.45 % vs. 37.25 %). Evaluation of the insemination interval, service-period and insemination index in cows that yielded pathogenic and potentially pathogenic micromycetes and conceived showed a substantial increase of all these values and delayed conception. That micromycetes may exert negative effects on reproduction in cattle was also pointed out by Rob and Toman (1970), Feješ (1972) and Krpatová (1974). Our results obtained along this line in cows yielding pathogenic and potentially pathogenic bacteria are, except a prolonged insemination interval, not convincing (Table 8). However, our results were necessarily affected by the fact, demonstrated by our previous and current research, that pathological processes and infections of the genitalia are more frequent in younger cows which, on the other hand, respond better to therapy and show

Table 7. Results of mycological examination of the cervical mucus of cows with the complicated course of parturition and puerperium 1 and 2 months post partum (No./%)

	No.	Mycological examination		Incidence of micromycetes					
		negative	positive	pathogenic +++	potentially pathogenic ++	with non-identi- fied characteristics ?	saprophytic -		
Examination 1 month post partum	73	46	27	4	5	7	6	5	6.84
		63.01	36.98	5.47	6.84	9.58	8.21		
Examination 2 months post partum	66	46	20	5	5	1	7	2	
		69.69	30.30	7.57	7.57	1.51	10.60		
Total	139	92	47	9	10	8	13	7	
		66.18	33.81	6.47	7.19	5.75	9.35		5.03

+++ pathogenic species

++ , + potentially pathogenic species

? characteristics not determined
species not identified
-- saprophytic species

+ According to Meyer H. Leistner L.: Mycotoxins,
Environmental Health Criteria 11. WHO Geneva
1979.

Table 8. Reproduction indices and culling of cows with positive and negative bacteriological and mycological findings

	No. %		No. %		Insemination interval (days)	Service-period (days)	Insemination index
	culled		conceived				
Cows yielding pathogenic bacteria	5	38.46	8	61.53	73.00	85.50	1.25
Cows yielding potentially pathogenic bacteria	6	50.00	6	50.00	69.00	98.33	2.00
Cows yielding pathogenic and potentially pathogenic bacteria. Total	11	44.00	14	56.00	71.28	91.00	1.57
Cows yielding saprophytic bacteria and negative findings	18	37.50	30	62.50	67.96	99.70	1.83
Cows yielding pathogenic micromycetes	3	33.33	6	66.66	75.83	121.66	2.33
Cows yielding potentially pathogenic micromycetes	7	53.84	6	46.15	68.33	104.00	1.83
Cows yielding pathogenic and potentially pathogenic micromycetes. Total	10	45.45	12	54.54	72.08	112.83	2.08
Cows yielding saprophytic and nonidentified micromycetes and negative findings	19	37.25	32	62.74	67.87	90.96	1.62

Table 9. Incidence of pathogenic and potentially pathogenic bacteria and micromycetes in the cervical mucus of cows with the complicated course of parturition and puerperium with respect to age (No./%)

	No.	Incidence of bacteria			Incidence of micromycetes		
		pathogenic +++	potentially pathogenic ++	pathogenic +	pathogenic +++	potentially pathogenic ++	pathogenic +
Cows with 1—3 calvings	39	9 23.07	6 15.38	0	6 15.38	3 7.69	2 5.12
Cows with 4 and more calvings	34	4 11.76	5 14.70	2 5.88	3 8.82	4 11.76	4 11.76

Table 10. Incidence of pathogenic and potentially pathogenic bacteria and micromycetes in the cervical mucus of cows with the complicated course of parturition and puerperium with respect to winter and summer feeding (No./%)

	No.	Cows yielding					
		pathogenic bacteria	potentially pathogenic bacteria	pathogenic micromycetes	potentially pathogenic micromycetes		
		+++	++	+	+++	++	+
Winter ration	46	11 23.91	9 19.56	1 2.17	5 10.86	4 8.69	4 8.69
Summer ration	27	2 7.40	2 7.40	1 3.70	4 14.81	3 11.11	2 7.40

Table 11. Incidence of the complicated course of parturition and puerperium in cows on winter ration and summer ration and their subsequent fertility

	No.	Conceived						Insemination interval (d)	Service period (d)	Insemination index	Failed to conceive			
		altogether		at 1st insemination		at 2nd insemination					at 3rd or subsequent inseminations		No.	%
		No.	%	No.	%	No.	%				No.	%		
Winter ration (November – May)	46	29	63.04	15	32.60	6	13.04	8	17.39	67.41	96.27	17	36.95	
Summer ration (June – October)	27	15	55.55	9	33.33	2	7.40	4	14.81	72.13	98.20	12	44.44	

Table 12. Fertility and culling of cows with the complicated course of parturition and puerperium with respect to age (No./%)

	No.	Conceived			Insemination interval (d)	Service period (d)	Insemination index	Failed to conceive and were culled
		at 1st insemination	at 2nd insemination	at 3rd or subsequent inseminations				
Cows with 1 to 3 parturitions	39	16 41.02	5 12.82	8 20.51	29 74.35	69.68	93.37	10 25.64
Cows with 4 or more parturitions	34	8 23.52	3 8.82	4 11.76	15 44.11	67.73	103.80	19 55.88

Table 13. Reproduction indices of cows with the complicated course of parturition and puerperium compared with the mean reproduction indices on the individual farms under study

	Conceived at 1st insemination (%)	Conceived altogether (%)	Insemination interval (d)	Service period (d)	Insemination index	Culling rate (%)
Cows with the complicated course of parturition and puerperium	32.87	60.27	69.02	96.93	1.75	39.72
Mean values on the individual farms	49.8 - 61.4	73.5 - 96.6	60.3 - 66.5	78.9 - 91.8	1.6 - .7	29.5 - 32.4

a better tendency to healing and renewed fertility than older animals (see Tables 9 and 12). Moreover, the results may have also been affected by the approach of the herdsman who is interested in systematic and intensive therapy particularly in younger cows with prospective higher performance and sometimes culls older animals without awaiting therapeutic results. The present findings confirm the fact that microbes do not exert a decisive effect on bovine health and reproduction but play a role in the interaction with other environmental effects and additional factors.

Comparison of the findings of bacteria and micromycetes in the cervical mucus of cows of various age categories (Table 9) showed a higher incidence of pathogens in younger cows with 1 to 3 calvings. However, the evidence from Table 12 comparing the reproduction indices and culling in cows of various ages also shows a better tendency to recovery and renewed fertility in younger cows. Of I- to III-parous cows, 41.02 % conceived at first insemination, altogether 74.35 % conceived at first or subsequent inseminations and 25.64 % failed to conceive and were culled. Of cows with the history of 4 or more calvings, only 23.52 % conceived at first insemination, altogether 44.11 % conceived at first or subsequent inseminations and 55.88 % failed to conceive and were culled.

Table 10 shows the incidence of bacteria and micromycetes in the cervical mucus of cows with a complicated course of parturition and puerperium in relation to feeding (winter ration vs. summer ration). The findings of pathogenic and potentially pathogenic bacteria prevailed in winter and spring (in 45.64 % vs. 18.50 % cows) in keeping with the expected reduced resistance and higher occurrence of pathological conditions during these seasons. The incidence of pathogenic and potentially pathogenic micromycetes was higher in summer (in 33.33 % vs. 28.24 % cows). Environmental conditions favouring the multiplication of micromycetes and thereby also their penetration into the genitalia may occur both in winter and in summer. In winter the underlying causes are to be seen in insufficient ventilation of wet and warm barns, in inadequate storage of wet feed, etc. Similar conditions arise also in summer in consequence of rainy weather and mowburnt feed. Air-drying of mouldy feed in hot summer days then produces conditions favouring the spread of micromycetes in a dusty environment.

From Table 11 it can be seen that the incidence of cases with a complicated course of parturition and puerperium was higher in winter and spring, but the conception rate was lower and the culling rate was higher in summer. This fact may have also affected the evaluation and confirms our previous findings that in summer the saccharide-protein ratio of the ration is often less adequate and subclinical metabolic disorders exerting negative effects on fertility are more frequent.

Adverse effects of a complicated course of parturition and puerperium on subsequent fertility of the cows can be seen in Table 13. Of the affected cows, 29 (39.72 %) failed to conceive and were culled, a total of 44 (60.27 %) cows conceived, but the proportion of those conceiving at first insemination was only 32.87 %. The insemination interval was substantially prolonged and the service-period was longer than normal. A substantial impairment of all the reproduction indices becomes apparent on comparison with the mean values obtained on the individual farms of the agricultural enterprise under study.

Plodnost krav po dystokiích a komplikovaném puerperiu se zřetelem k bakteriologickému a mykologickému nálezu v pohlavních orgánech

U 73 krav po těžkých porodech a komplikovaném puerperiu se zjišťoval výskyt přetrvávajících chorobných stavů na pohlavních orgánech, bakterií a mikromycetů v cervikálním hleny a jejich vztah k další plodnosti. Za 28—32 dnů po porodu ještě u 75,34 % krav přetrvávaly na pohlavním ústrojí chorobné procesy - zejména záněty, u 50,68 % nebyla klinicky ukončena involuce dělohy, u 26,02 % se neobnovil pohlavní cyklus a u 17,80 % se vytvářel syndrom ovariálních cyst. Za 55—65 dnů po porodu se výskyt chorobných procesů podstatně snížil. Přetrvávaly zejména záněty (u 34,24 % krav), nejčastěji mukopurulentní endometritis (u 17,80 % krav).

Bakteriologickým a mykologickým vyšetřením byla v souladu s incidencí chorobných procesů identifikována řada patogenních druhů, z bakterií nejčastěji *Actinomyces pyogenes*, *Staphylococcus aureus* a beta-streptokoky, z mikromycetů *Aspergillus fumigatus*, *Aspergillus flavus*, *Aspergillus ochraceus* a *Aspergillus parasiticus*. U krav s nálezem patogenních a příležitostně patogenních mikromycetů se častěji vyskytovaly poruchy plodnosti, zhoršily se všechny reprodukční ukazatele a byla větší brakace. U krav s nálezem patogenních a příležitostně patogenních bakterií byl rovněž častější výskyt poruch plodnosti a brakování, avšak až na interval se reprodukční ukazatele nezhoršily.

Уровень репродукции коров после осложненного отела и осложненного послеродового периода с учетом бактериологического и микологического анализов в половых органах

У 73 коров после тяжелого отела и осложненного послеродового периода выявляли наличие существующие заболеваний половых органов, бактерий и микромицетов в слизи шейки и устанавливали их отношение к дальнейшей плодовитости. Через 28—32 суток после родов еще у 75,34 % коров встречались болезненные процессы в половых органах, в особенности воспаления — 50,68 % — клинически незавершенная инволюция матки — 26,02 % коров не наблюдалось возобновление полового цикла и у 17,80 % — образовался синдром кист яичника. Через 55—65 суток после отела наличие болезненных процессов существенно понизилось. Имели место в особенности воспаления (у 34,24 % коров), чаще всего слизисто-гнойные воспаления эндометрия (у 17,80 % коров).

Бактериологическим и микологическим исследованиями с учетом болезненных процессов определили ряд патогенных видов; из бактерий чаще всего *Actinomyces pyogenes*, *Staphylococcus aureus* и бета-стрептококки, из микромицетов — *Aspergillus fumigatus*, *Aspergillus flavus*, *Aspergillus ochraceus* и *Aspergillus parasiticus*. У коров с анализом патогенных и случайно патогенных микромицетов чаще всего встречались нарушения плодовитости, наступало ухудшение всех показателей репродукции с более существенной браковкой. У коров с патогенными и случайно патогенными бактериями наблюдались также частые нарушения плодовитости и выбраковка, однако, за исключением интервала, показатели репродукции не ухудшались.

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