METRITIS AND ENDOMETRITIS IN COWS, PROBLEMS, TYPES, SYMPTOMS, TREATMENT AND PREVENTION OF THE DISEASE.

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Summary: The problem of inflammatory processes in the uterus of cows is currently one of the most discussed among practicing veterinarians and workers of scientific schools in the field of obstetrics, gynecology and biotechnology of animal reproduction. This is due to the fact that postpartum metritis, of varying severity or endometritis, in terms of prevalence in dairy complexes and farms, vary widely and make up from 14 to 90% or more. Expectation of offspring in a herd of cows is an important event in the life of any livestock breeder. At this time, cattle, pregnant cows, need to be looked after, they require especially careful care immediately after calving. This is one of the most dangerous moments in the life of an animal, since it is weakened, and a large number of various infections can easily get into the body, the damaged uterus. On this basis, many gynecological diseases in cows develop. Among them, metritis and its varieties stand out, which can lead to complete infertility of the herd. Without appropriate timely treatment, bacteria quickly spread, affecting the animal's organs and vessels, leading to serious consequences. This can be avoided by carrying out regular preventive measures and closely monitoring your livestock.

Key words: uterus, oviduct, vagina, cervix, calving, childbirth, lochia, obstetric care, etiology, symptoms, microbe, infection, contamination, inflammation, exudate, metritis, endometritis, myometritis, perimetritis, parametritis, catarrhal, uterine discharge, catarrhal-purulent, purulent, fibrinous, hemorrhagic, necrotic, subclinical, involution, subinvolution, palpation, pacemakers, infertility, diagnosis, treatment, antibiotic, prevention, hormone,

progesterone, antioxidant, functional state, corpus luteum of the ovary, endocrine and immune status of animals

Between calving and the process of uterine recovery after calving, metritis is often diagnosed. Metritis in cows is a serious inflammatory disease that affects the uterus of farm animals after birth. This pathology can lead to significant economic losses due to decreased productivity of animals, deterioration of their health and increased mortality. Therefore, females require long-term observation, proper care and calm in the first days after the birth of a calf. Only attentiveness to your herd will allow the livestock breeder to notice any violations, undesirable symptoms in time and take measures to eliminate them. The uterus of animals is very sensitive to external irritants. Therefore, all kinds of inflammatory processes in it occur more often than in other organs of the reproductive system. The uterus has many important functions. It is necessary for the delivery of sperm to the ovaries, where the development and bearing of the fetus occurs. Once pathogenic microbes get onto the mucous membrane of the animal's uterus, they actively multiply, irritating the tissues and producing toxins. In most cases, the cow's body is unable to cope with the bacteria on its own, which penetrate into the deeper tissues of the uterus, causing increasing intoxication and complications in the form of inflammation. After that, it participates in the birth process. The uterus also affects the hormonal background. The organ has three layers. Inflammation of each of them has its own name:

1. mucous membrane – endometritis;
2. middle muscular layer – myometritis;
3. serous covering of the uterus – perimetritis;
4. uterine ligaments and connective tissue surrounding the uterus – parametritis.

In most cases, the disease begins with the mucous membrane, which means that endometritis always occurs. Endometritis in cows is an inflammatory process of the mucous membrane of the uterus, which usually occurs five to ten

days after birth, and is considered a fairly common dangerous disease. Particularly dangerous is the latent and prolonged course of the disease, which requires complex and long-term treatment. After that, the inflammation can reach other layers. Endometritis can be acute or chronic. It is also divided into types depending on the characteristics and properties of the fluid in the uterus:

• catarrhal;

• purulent;

• fibrinous;

• hemorrhagic;

• necrotic;

• myometritis;

• pyometra.

Based on the analysis of many years of clinical practice on the treatment and prevention of this pathology, many questions arise regarding the etiology, pathogenesis, diagnosis, treatment and prevention.

First of all, when making a diagnosis, veterinary specialists use various clinical criteria and approaches that may not be accurate enough. A certain category of doctors and dairy cattle workers identify the inflammatory process in the uterus only as endometritis, or only as metritis and differentiate them by the nature of the exudate. Such approaches do not allow for an accurate diagnosis and, accordingly, for effective treatment and preventive measures to be prescribed. The uterus of a strong, healthy animal whose birth was calm, independently removes the placenta and closes, settling in the right place in a few days. But if the process was not carried out correctly, then there is a high probability of metritis. In any case, for inflammation to occur, the cow must have already calved.

Among the most significant reasons for its occurrence it is worth noting:

Microbial factor. In a healthy state, the cow's uterus is sterile. But the vagina is home to multiple microbes that can be delivered to the uterus. For

example, bacteria and fungi mix with its environment in the postpartum period. Especially if there is an injury to the vulva or vagina with a decrease in the body's defenses, infection occurs in ninety percent of cases. In addition to non-specific immunity (general resistance), local (local) factors protecting the genitals play a leading role in preventing the inflammatory process in the uterus. They prevent microbes from penetrating the mucous membrane of the organ, limiting their reproduction and pathogenicity. The course of the postpartum period and the degree of complication by the inflammatory process depend on the state of these factors. The genital area of animals communicates with the external environment, which makes it an entry point for bacteria, viruses, fungi and protozoa. The infection penetrates the genitals with urine, feces, during childbirth and various instrumental procedures, as well as through the placenta when the biotope of the gastrointestinal tract is disrupted. Any disruption of the integrity of the mucous membrane of the genital tract contributes to the development of the pathological process. Endometritis or metritis in cows after childbirth occurs as a result of infection of the uterus, disruption of the contractile function of the uterus, a decrease in local (local) non-specific immunity and resistance of the body.

Infection can occur in various ways, and the main ones are: unsanitary conditions in the premises, during obstetric care, careless intervention of livestock breeders or veterinarians, the use of non-sterile instruments during labor, contamination of the genitals during mating, complications arising from intrauterine interventions, abortions, difficult labor, retention of the placenta or through the placenta. Currently, more than 130 types of microbes are known that cause inflammation in the uterus, and the main ones are: Streptococcus agalactiae, Streptococcus uberis, Streptococcus dysgalactiae, Streptococcus equirius (раньше называли Streptococcus bovis), Streptococcus parauberis, Enterococcus faecalis, Enterococcus faecium, Escherichia coli, Klebsielle

spezies, Enterobacter spezies, Citrobacter spezies, Serratia spezies, Trueperella pyogenes, Bacillus srezies, Pseudomonas srezies, Proteus srezies.

On the 2nd-4th day of the postpartum period, the following microorganisms were found in the uterine contents of 75% of cows: Escherichia coli–86.7%, Staphylococcus aureus–13.3%, Staphylococcus epidermidis–33.3%, Streptococcus pyogenes–26.7%, Streptococcus agalactiae–13.3%, Corynebacterium vaginalis–20%, Proteus vulgaris–20%, Bacillus subtilis – 26.7%. The most common associations of E. coli with streptococci and staphylococci are found in 55% of animals, streptococci, corynebacteria and E. coli are associated in 15%, hay bacillus, corynebacteria and E. coli in 10%. It is important to remember that animals from each individual complex or farm have their own association of microorganisms, and this fact must be taken into account during treatment and preventive work.

In this regard, when developing a protocol for etiotropic therapy, it is necessary to take into account the pathogens and their sensitivity to the active ingredients of the veterinary drug.

Factor of contractile function of the uterus. The occurrence and course of postpartum endometritis or metritis in all cases is also associated with a violation of the contractile function of the myometrium. It is known that contractions of the uterus occur rhythmically, begin from the top of the horn and continue to the cervix. Provision of rhythmic contractions is carried out due to the presence of "pacemaker" cells - pacemakers. Pacemakers of the uterus are a group of nerve cells of the ring muscles, which are located at the transition point of the top of the horn into the oviducts. From this group of cells, excitation spreads to other cells and is integrated into the contractions of the entire organ.

Endocrine factor. High stress level. At present, scientific data have been accumulated on the significant importance of the hormonal status of cows before parturition and in the early postpartum period (mainly before the first ovulation - day 21) in the occurrence of postpartum metritis or endometritis. Particular

attention is paid to the concentration of progesterone, estradiol 17-beta and prostaglandin F2-alpha. In cows of the risk group, the content of estradiol is significantly lower than in animals with a normal course of the postpartum period, and 1-3 days before calving, the concentration of this hormone was 37.3% lower, and its deficiency leads to dystocia, which contributes to the inflammatory process in the uterus.

Being an immunosuppressant, progesterone promotes endometrial hyperplasia. Its high concentration in the early postpartum period creates conditions for slow involution of the uterus, seeding with microflora, decreased contractile function and development of the inflammatory process. Insufficient amount of estradiol cannot ensure the proper level of the immune system and the course of the labor process, and low content of prostaglandin F2-alpha - luteolytic activity and uterine tone. This pattern must be taken into account when developing treatment and preventive measures due to the fact that beta-carotene is a strong antioxidant, has a positive effect on the functional state of the corpus luteum of the ovary, endocrine and immune status of animals.

Factors of the state of local immune protection of the uterus and resistance of the organism, poor conditions of keeping animals and feeding. (*Improper nutrition, poorly selected feed; too concentrated feeding; long period of feeding calves after the previous calving; short dry period, when the cow is not milked; premature insemination of young animals; presence of other serious diseases; metritis easily coexists with such diseases as brucellosis, leptospirosis, viral diarrhea and infectious rhinotracheitis).*

Local protection of the genitals is due to anatomical and physiological features, the presence of lysozyme, complement and immunoglobulins. The leading role in this protection belongs to secretory (SIgA) immunoglobulin A. It was found that in cows predisposed to metritis or endometritis, on the 3rd day after parturition, the titer of immunoglobulin G in the uterine secretion is 17.9% higher, and secretory immunoglobulin A - by 22.2%, than in animals with

normal uterine involution. This is explained by the reaction to the pathological onset of the inflammatory process in the uterus. From this it can be concluded that immunoglobulin G and secretory immunoglobulin A play the main role in protecting its mucous membrane. In animals with impaired uterine involution, the content of lysozyme and bactericidal activity in the uterine secretion decreases by 31.5 and 44.7%, respectively.

It is known that histological changes in the mucous membrane of the uterus in the postpartum period are observed from the first days after birth, and the well-being of involution depends on how these processes proceed. At the same time, on the second day after birth, no special differences were noted in the histomorphological changes in the endometrium of cows with a normal and complicated course of the postpartum period. The integumentary epithelium is single-layered, some cells are destroyed and torn from the basal layer of the mucous membrane, the nuclei have different shapes, but most of all oval, and are located in one row. The blood vessels are dilated, filled with blood, the formed elements are released beyond the vessels and hematomas of various sizes are formed.

The results of the study confirm that depending on the state of cellular (leukocyte) protection in the subepithelial layer, the course of the inflammatory process in the uterus differs in severity with or without a systemic reaction of the body. This should be used when making a diagnosis, as well as when drawing up protocols for working with dry and newly calved cows using effective veterinary drugs that are developed and tested in production conditions taking into account scientific achievements and modern testing methods.

Types of metritis.

Experts divide the disease by the place of infection: endometritis, or inflammation of the uterine mucosa, is one of the most common obstetric and gynecological diseases in cows. The inflammatory process most often develops soon after birth: pathogenic microorganisms penetrate the uterus. Therefore,

each calving of cattle is a risk factor for the development of the disease. Endometritis is curable, but the absence of medical intervention can lead to severe complications, the transition of the disease to a chronic form, infertility, or even the death of the animal. Therefore, it is important for the farmer not to miss the first symptoms of inflammation and begin treating the cow's endometritis as soon as possible.

Its occurrence depends on the nature of labor in newly calved cows: Light - the calf is born on its own - the disease is observed in a small number of cases; Average - livestock breeders help the cow to give birth - the percentage of occurrence of disorders is higher. Severe - the process takes a long time, often involves surgical intervention - almost always ends in endometritis and infertility. Among the signs of the disease are: A small amount of milk, a depressed state; mucous, purulent discharge from the uterus, possible bleeding into the vagina, the uterine horns swell, increase in size, the cow eats poorly or does not eat at all. To avoid possible infertility, a long-term set of measures is carried out to improve the health and strengthen the health of the animal. The main task of the livestock breeder at this stage is to increase the immunity of the cow, get rid of all kinds of infections and injuries.

Catarrhal endometritis. This is an early stage of the disease, and it is not always easy to detect. With catarrhal endometritis, the upper layer of the mucous membrane is affected, flakes, mucus and turbid liquid are released from the uterus. The symptoms are easy to miss - they are not as pronounced as in later stages, and do not greatly affect the cow's well-being. Therefore, the disease often has time to become chronic or develop into catarrhal-purulent endometritis. The description may vary depending on the form of the disease, but it is very difficult to diagnose, since it quickly develops into more serious pathologies. This type is rarely determined because it quickly develops into more severe stages. It is not paid attention to due to the presence of lochia, which appear after childbirth anyway. In some cases, it is able to cope with this,

the uterus removes them. But there are factors that contribute to the colonization of pathogenic microflora. In a healthy state, the discharge should not have a foreign unpleasant odor. A general deterioration in the animal's condition, an increase in temperature, and a decrease in appetite are observed. The cow loses the desire to eat food, the temperature rises, and she is in a sluggish mood. Mucus often flows from the genital tract.

Catarrhal-purulent endometritis. The next stage develops on average six days after calving. The cow begins to feel worse, trembles, her productivity decreases, she finds it uncomfortable to urinate. After endometritis comes purulent. This form follows if the animal has a strong immune system and the signs of catarrhal were not obvious. Then the treatment comes late and the disease becomes more pronounced. Usually it is indicated on the second day after birth, the cow regularly gets into a pose as for urination, but nothing happens. Even in a lying position, a viscous, foul-smelling liquid is released from the genital tract. During examination, it is revealed that the uterus is larger than usual. Greenish pus begins to be released from the uterus, lochia are brown, yellow or green. When palpated, it is noticeable that the tone of the uterus is reduced, its horns are enlarged, and the tissue is swollen and soft. If a calf drinks milk from such a cow, it may develop diarrhea.

Symptoms of the purulent type: The amount of milk decreases, there is no appetite, the animal weakens and loses weight. The cow tries to get into the urination position, arching her back and raising her tail. Often groans at the same time. Toxins in a large amount of liquid enter the blood and affect all organs; a viscous foul-smelling liquid flows from the genital tract even in a lying position. Its color is burgundy or gray, there may be bloody streaks and dead tissue. If the process has gone very far, the discharge becomes dirty gray with an admixture of pus. The liquid then dries and turns into crusts that can be seen on the floor, tail and limbs of the cow. A detailed examination of the vagina and rectal area shows that the uterus is larger than usual in size, almost

does not contract, the muscles do not react, are stretched, loose. Often the uterus is in the abdominal cavity. There is a corpus luteum in the ovary.

Subclinical endometritis. This form occurs if the cow has a strong immune system and the body has the strength to fight the disease on its own. It is called latent endometritis: the symptoms are blurred, and sometimes not noticeable at all. The disease can manifest itself in the form of gray-yellow lumps in the discharge from the uterus, inclusions of pus or abnormal discharge after the introduction of prostaglandin into the uterus. If these signs are not noticeable, endometritis may be indicated by a long absence of fertilization or miscarriages up to 5 months of pregnancy. The disease is chronic and can last for years.

Fibrous metritis. Fibrin is an insoluble protein responsible for blood clotting. When the inner layers of the mucous membranes are affected, it begins to appear in the discharge - this form of the disease is called fibrinous. It usually develops after trauma to the uterus, for example, after childbirth. Fibrinous endometritis can be recognized by the nature of the pus: fibrin threads appear in it, and when squeezing the discharge in the palm of the hand, a crunching sound can be heard. The cow feels generally well, and can even eat. This form, unlike the previous one, does not affect the organs so deeply. But fluid with high-molecular protein appears in the uterus. It is difficult to start treatment in a timely manner with fibrinous metritis, since the symptoms of the disease are weakly expressed. Nevertheless, this subtype of inflammation is usually distinguished due to its features. Films in the form of yellow deposits appear in the uterine cavity. Fluid with fibrins accumulates here. The discharge manifests itself as yellow-brown mucus with fibrin flakes. This form, unlike the previous one, does not affect the organs so deeply. It is difficult to start treatment in a timely manner with fibrinous metritis, since the symptoms of the disease are weakly expressed. Deterioration begins abruptly, affecting the entire body.

When, in this situation, the cow suddenly felt ill, the condition worsened, and a general infection of the body began.

Myometritis. It is a more severe form of endometritis, characterized by a general deterioration in the condition of the affected cattle. First of all, the inflammation starts with the mucous membrane. Then the process moves to the connecting tissue layers that divide the muscle bundles of the uterus. The connective tissue pushes the muscle tissue away, which makes the uterus thicker and rougher. At the same time, the walls of the uterus become infected, they become denser and thicker. When palpated, irregularities and tubercles become noticeable. In some places, lime salt deposits form, which leads to the formation of abscesses and ulcers. The affected area loses the ability to contract. The motor function of the organ is completely reduced. Even uterine massage does not help, natural recovery after childbirth does not occur. In this case, hormonal drugs also do not have the desired effect. In general, myometritis is characterized by symptoms similar to those of endometritis. Unfortunately, this type of metritis is difficult to cure and often ends in infertility.

Necrotic metritis. Associated with damage to tissues, muscles, and blood vessels during difficult labor. Inflammatory fluid enters the injured mucous membrane, blocking the normal flow of nutrients. The walls of the uterus may not withstand such pressure and rupture, which will lead to new wounds. At this time, the cow's temperature rises significantly, appetite decreases, severe diarrhea and paralysis are observed. Difficult labor causes damage to the uterine mucosa. Tissues, muscles, and deeper layers are damaged and disintegrate. An inflammatory secretion is released onto the surface of the inner mucosa of the uterine body. It can get into the muscles. Then they become denser, do not allow nutrients to pass through. As a result, the tissues gradually die and are rejected. Erosions and deep wounds appear in these areas.

Microbes enter the blood even faster through the bare walls of the vessels. The walls of the uterus in the affected areas are noticeably thin and can rupture

under the pressure of the fluid. There are blood flows with crumbs from the uterus. These are tissues of the inner layer of the uterus that have ceased to live. The body is completely weakened as a result of: strong heartbeat; significant increase in the body temperature of the cow; weakened work of the forestomachs; mastitis; severe diarrhea.

Gangrenous metritis. The most severe type of endometritis in a cow, develops very quickly - literally in a few days after calving. During the gangrenous process, tissues begin to disintegrate, this leads to severe poisoning - decay products enter the blood. The cow's temperature rises, the animal stops eating, lactation stops. The uterus does not contract, it is hard or loose when palpated. The genitals swell, they secrete a burgundy or dark liquid, often with a foul odor. Unfortunately, the process often ends with the death of the animal from sepsis.

Hemorrhagic metritis. Characterized by hemorrhage into the mucous membrane, vascular thrombosis. Accompanies other infectious diseases. This form of metritis in cows is diagnosed with thickening of the uterine walls and hemorrhage into the mucous membranes. Hemorrhagic endometritis is diagnosed in the presence of infectious diseases. Purulent fluid accumulates on the uterine wall. As a result, the type is characterized by plethora of vessels, thrombosis. A significant number of erythrocytes come out due to inflammation of the connective tissue, alveoli and milk. The vascular wall becomes too fragile, its throughput increases.

Perimetritis. Another complication of endometritis, arising from direct injuries to the uterus, its cervix or vagina. In these cases, the infection can reach the serous layers, which leads to complete infection of the animal. Infection always begins with the mucous membrane, and then moves to the rest of the organ, spreading toxins throughout the cow's body. It is not always easy to determine the development of the disease. In the first eight to ten days after calving, the cow secretes lochia. This is a natural process, to which an infection

joins. At first, the amount of discharge decreases. The more there is, the more actively toxins spread into the body.

Pyometritis The process is revealed by a delay in the uterine cavity of lochia, when the placenta does not come out. This pathology is mixed with endometritis, decomposition of the fetus, closure of the cervical canal. Purulent fluid harmful to the cow's body does not come out.

Causes: - the cervical canal is open and a lot of secretion is released. This is clearly noticeable when the animal is lying down or trying to urinate. The cervix is swollen, covered with growths that cause painful sensations. The uterus drops down;

- a closed cervix does not allow a large amount of discharge. But the fluid pressure increases, and lochia still appears;

- during examination, the uterus is lowered, it is enlarged and fluctuates. This situation resembles the first half of pregnancy. But upon detailed examination, it becomes clear that the uterine arteries are larger in size on both sides and fluctuate differently;

- blood vessels stagnate, hemorrhages occur;

- sepsis is possible - infection of the body due to the fact that the walls of the uterus are saturated with blood, edematous, acute serous or purulent inflammation is evident. Pyometra develops in the presence of peritonitis, when the inflammation descends along the ligaments. This is caused by the inept actions of obstetricians during childbirth.

The main symptoms: poor general condition; enlarged lymph nodes in the pelvic area; tissues near the uterus harden, have an uneven structure; the organ itself is painful and sensitive; rectal examination reveals the presence of adhesions; the inflammatory process quickly spreads into the abdominal cavity.

All metritis begins with a deterioration in the animal's condition. However, depending on the form and nature of the inflammation, the symptoms may vary. There are several types of the disease, divided by characteristic signs.

The main task of the livestock breeder in this case is to protect the animal from peritonitis and blood poisoning.

Diagnosis of the disease. The owner of cattle may suspect endometritis, but the final diagnosis is made by a veterinarian. The specialist uses the following diagnostic methods: examines the cow's genitals, evaluates their appearance and condition, and analyzes the composition of the discharge. The veterinarian examines the cervix using a vaginal speculum; rectally palpates the uterus, checks its size, position and size of the horns, the tone of the walls, and the presence of fluid inside; if necessary, conducts a histological examination, that is, takes tissue samples for analysis; takes samples of discharge to conduct a bacterial culture - the isolation of microorganisms and an assessment of their sensitivity to various antibiotics. Culture is needed to more accurately determine the causative agent of the infection. most often, these are bacteria: streptococci, staphylococci, or E. coli. Less often, the cause is fungi, which require the use of antimycotic drugs. But culture results may take a week or two to come back, so treatment with broad-spectrum antibiotics is usually started immediately.

Possible treatment schemes. Endometritis should be treated as soon as possible, after consulting with a veterinarian. The treatment regimen usually includes antibiotics that destroy pathogenic microorganisms. Hormonal drugs can be prescribed to restore the tone of the uterus, and fluid from its cavity is removed by vacuum or massage. Until the pathogen is identified, therapy begins with broad-spectrum antibiotics, that is, those that work against most microorganisms.

The criteria for choosing a drug are: no waiting period for milk, i.e. no metabolites or active substances of the drug should get into the milk; the ability to quickly reach the focus of the pathological process and work effectively in it;

a rapid anti-inflammatory effect, allowing to alleviate the animal's condition in a short time. But how to treat cow endometritis in a specific case is decided by the veterinarian.

Treatment. Due to the rapid progression of the disease in cows and the absence of symptoms in the early stages, the treatment of metritis often begins too late. The veterinarian must first complete the main task, that is, preserving the life of the cow and milk production. If this is achieved, then it is necessary to try to restore the animal's fertility. Based on the set goals, the specialist strives to alleviate the condition of the sick cow, fight the infection and cope with the source of its occurrence:

- cleansing the uterus and eliminating fluid. Washing is done with antiseptics, the introduction of which should be short-term, so as not to disturb the natural microflora. They are quickly sucked out of the cavity with vacuum tubes;

- introduction of antibacterial agents in the form of tablets, solutions, gels, suppositories. Foaming drugs have a great effect. It is necessary that they be prescribed based on the results of tests, cultures. When there is no time to wait, the specialist recommends the most effective, proven ones. After receiving the results, the methodology is adjusted. It is recommended to take broad-spectrum antibiotics that can be used to treat postpartum diseases, drugs to restore normal microflora, vitamin supplements to strengthen the immune system. Timely intake of drugs and vitamins will help in the fight against serious diseases, including endometritis.

- restore the ability of the uterus to contract. For this, hormonal injections of estrogen are used. After some time, oxytocin is injected. Five days of one injection is enough;

- resort to a method of restoring the damaged inner mucous membrane of the uterus. Here a set of measures and drugs will be needed;

- during treatment, it is recommended to use a novocaine blockade, after which the uterus begins to contract again;

- vitamins and minerals to give the body strength and strengthen the immune system.

The problem may be that most antibiotics have a destructive effect on the fragile mucous membrane. Microbes become insensitive to these drugs. Microbes can remain in the body for a long time, so it is forbidden to eat milk and dairy products. If the inflammation has lasted for a long time and treatment has not begun, there is a possibility of losing the productive function. When the acute course has developed into a chronic one and the period is calculated for two or more months, we have to talk about infertility. But with timely detection of pathology, the chances of achieving a positive result are high. It is primarily facilitated by regular examination of pregnant animals, isolation of pregnant females two months before childbirth and after calving. They need to be fed well and walked regularly. The birth process should be accompanied by a qualified specialist who observes all hygiene standards.

Measures to prevent disease. 1 Diet adjustments. The risk of endometritis increases if the cattle's diet is not properly formulated or if it lacks vitamins and microelements. For dry and newly calved animals, it is recommended to reduce the amount of concentrates in the feed and increase its volumetric part (hay), include mineral supplements with vitamins A and E, as well as selenium in the cows' diet. **2 Regular cleaning of the barn.** Often, the disease develops because cows are kept in the same barn as others after calving, and the barn itself is not cleaned on time. As a result, opportunistic flora spreads in it, which penetrates the mucous membranes of the cow's uterus. To prevent possible infections, it is necessary to carefully observe hygiene standards and clean the barn on time. **3. Follow disinfection standards during calving.** It is best to allocate a separate room for calving cows and animals in the postpartum period. It should be pre-washed and disinfected. Hygiene and an optimal

microclimate should be maintained in the maternity boxes.**4. Regular check-ups and veterinary care.** During labor, the cow must be provided with qualified obstetric care. It is also important not to neglect medical and preventive measures for the entire herd: veterinary examinations, infection monitoring, and timely vaccination.

The chance of restoring the cow's reproductive function depends primarily on the duration of the disease itself. Prevention and early detection of pathology are the path to the fastest recovery.

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