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RESEARCH ARTICLE

DISEASE OF ABOMASAL DISPLACEMENT IN MILK BOVINE

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ABSTRACT

The displacement of abomasum is the most serious pathology in cows, which often has a lethal outcome. From this pathology, the best individuals in the herds of dairy cows are affected. The incidence of abomasum displacement is different. Depending on the breed, the level of production and the nature of nutrition, abomasum displacement affects 4-5% of cows. This pathology has been diagnosed in Tetovo, Macedonia, in dairy cow herds where high production levels are achieved varying from 5000 to 6600 liters of milk per head during lactation period. The pathology of abomasums displacement can occur to the left, to the right, and may also come to the torsion of abomasum. The abomasums displacement ratio to the left and to the right is 2:1.

Key words: Cows, Abomasum Displacement, Ruminant.

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INTRODUCTION

The displacement of abomasum occurs more often in high-yielding dairy cows. Most often occurs at an early lactation stage, but sporadically may occur at any stage, and there are cases of occurrence even in the gestation period. This pathology, according to many authors, can also occur in bulls and newly born calves. Causes, the displacement of abomasum is thought to occur in cows that had spawned many times, but it is also thought to occur in first-time calving heifers. But it can also happen in cows of any age. The real cause that leads to the displacement of abomasum is still unknown, but the factors leading to the development of this pathology are well known. The production of excessive volatile fatty acids that occur in cows and the use of foods with high acid content, such as silage, corn and concentrated foods with high humidity content are such factors. Gastrointestinal phases caused by metabolic or infectious diseases. These factors are very important in the early postpartum period, when the gastrointestinal phases may also lead to abomasal abnormalities and as a consequence we have increased gases. These diseases cause the decrease of appetite and decrease of the size of rumen and then this causes abomasal displacement to occur. Abomasium displacement occurs during the selection of cows with large body capacity and large abdominal space, the abomasum displacement occurs.

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It should be noted that in those cases a high incidence of cows is occurring in a herd and it is necessary to study the food ration and breeding conditions in general, and to change the breed as soon as possible. In dairy cows with displaced abomasum, there is a loss of appetite for food, a decrease in milk production. So the main sign for the farmer is refused food and reduced dairy production by up to 30-50%, dehydration and unresponsiveness of the animal to the surrounding environment. Temperature, pulse, and breathing are normal, there is no change, the peristalsis of reticulum is present but stiffened, when the cow is viewed from the back, it can be seen an enlargement of the ribs on the side where the displacement has occurred but more clearly this can be seen in the displacement on the left side. During the auscultation, a high tympanic area called the ping area is located on that side where displacement has occurred. Usually this area is extended in the line of coxaltuberup to the humeroradial articulation, the ping area where a high tympanic sound is heard and can extend up to the 8th and 9th rib. When touched by hand, the fluid movement in the form of waves and splashing sounds are heard. In calves in the left displacement there is a chronic tympanic sign. During the control of cows with displacement of abomasium, signs of fever and pneumoperitonitis are found, so it should be taken into consideration the possibility of piercing of displaced abomasium. Such cows have adherence to abomasium with peritoneum ending up with ulceration. From the analysis made in cows with abomasal displacement, ketonuria is detected. The ketonic condition in this case may be primarily caused by decreased appetite and inhibition of the movement of reticulum with predisposition to abomasum displacement or refusal of high energy food. After the

diagnosis is established, it is possible to ascertain whether to apply medication treatment or surgical treatment. Treatment-Medication therapy is not as successful as surgical intervention. As a medication, various oral laxatives are used, cholinergic drugs for gastrointestinal stimulation. It is also used the intravenous calcium solutions and calcium chloride capsules through the mouth. Physical therapy can be used in addition to medical therapy. This therapy involves the spinning of the animal. The cow is placed in the dorsal position and is held for 2-3 minutes so that the displaced abomasium comes up. Then the cow is turned to the left and again takes 2-3 minutes. This physical therapy procedure should not be performed on cows with right abomasal displacement because it causes torsion (vulvus). Drug therapies and physical therapy are accompanied by cow stimulation to eat as much dry grass as possible to fill the reticulum with food. Acid foods should be gradually added. The best measure for abomasal displacement is surgical intervention.Surgical treatment-Surgical intervention depends on the preliminary treatment of the animal and vet's experience [Gjino, 2007].

MATERIALS AND METHODS

For the realization of the study were taken two farms with a considerable number of cattle in the Polog region in Tetovo. Epidemiological data on the Abomasal displacement in bovines in Tetovo, Macedonia. (Data were also obtained from the author's prior study). Clinical manifestation and diagnosis techniques. Treatment of abomasal displacement in cattle and laparotomy. The abomasal displacement is a pathology caused by the displacement of abomasium from the normal topographical position to a new changed position, or between the rumen and the left abdominal wall, or between the intestines and the abdominal wall. Abomasal displacement may occur on the left or right side of the abdominal cavity, and may also be associated with abdominal torsion. Both in left and right abomasal displacement, stomach entry and exit are slightly twisted. Torsion, together with gas and fluid spills enlargement, slows down the passage of food. First signs in cows are usually loss of livelihood, decreased consumption of food, especially concentrate, drastic decline in milk production, and poor constipated or diarrheal defecation. Abomasal relocation is observed exclusively in breeds for milk production. Large quantities of concentrates and low volumes of voluminous food stimulate an enlarged abomasium while the volume of rumen decreases. Immediate changes in the amount of cereal feed are suspected of causing this condition to dairy cows of any age.The real causes that lead to different forms of abomasal displacement are still unclear. It is thought that to the development of this pathology contribute several factors:

The tendency for cattle breeding with large body capacity may allow more space on the abdomen for abomasal displacement.
Immediate changes in the nutrition recipe according to the physiological state of the cows, by stimulating excessive production of volatile fatty acids through high-acid nutrient rations such as corn silage, use of cereal grains with high percentage of humidity, etc. During clinical control, moderate dehydration can be observed, while the cow does not react to the surrounding environment. The temperature, pulse, and respiratory rate are normal. Rumen contractions are noticeable and have medium hardness.
When the cow is viewed from the back, a symmetric deviation of the thoracic ribs on the displaced side is observed. Synchronized percussion and auscultation, note the existence of a high tympanic resonance zone (ping) in the chest, to the left or to the right that corresponds to the displacement. During the palpation with a fist are heard splashing sounds that confirm the presence of a large fluid mass. Large abomasal displacements are visible when the animal is viewed from the sidelines. In this case, asymmetric deformations of the animal body are observed. In abomasal displacement to the right, clinical signs are the same as the right abomasal displacement. Abomasal volvulus or abomasal twisting to the right is a serious threat to the life of dairy cows and are characterized by severe dehydration, hypochloremic and hypocalemic alkalosis, as well as by the mechanical blockage of the abomasal content movement. The twist of abomasium in cattle may appear at any age and sex. In most of them there are cases of abomasal torsion. Generally, during the abomasal torsion, animals manifest a depression, dehydration and anxiety compared to left or right displacements of abomasium. Appetite and milk production decrease rapidly and in an aggravated way. Treatment of abomasal displacement in all forms of its clinical manifestation is treated with medicaments and surgically. However, medication treatment is not as successful as it is the surgical one. Medical therapy usually includes oral laxatives, ruminants, calcium solutions and it should be s\c or i\v if it is judged that the patient suffers from hypocalcaemia.

In addition to drug treatment, physical therapy through the rotation of the animal is advised in cases of simple left abomasal displacements. The cow is placed in a dorsal position and is rotated left and right every 2-5 minutes. In this way, the displaced abomasium moves in the ventral line and returns to normal position. The more the cow lies on its back, the more gasses and amounts of liquids move the organ to the upper position. This procedure is not recommended for cows with simple right abomasal displacement, because it indicates to torsion of abomasium. Medical therapy alone or medical therapy coupled with rotation is accompanied by stimulation of the cow with food with as much hay as possible in order to fill up the reticulum with food [Sëmundjet e kafshëve rypërtypse, 2009; Mamuti, ?]

RESULTS AND DISCUSSION

The study was conducted in Tetovo, Macedonia, in two farms.
During the 1-year period of 2017, the cases of two farms, which are farms with register number 122200812 and farm with register number 138602561 at the FVA (Skopje) were taken for study. From the data collected, it was found that the largest number of pathologies in the cattle belongs to the pathologies of the digestive system, ranging from indigestion sinparastomosisup to intestinal disorders. Expressed in percentages, this means that about 50% of the pathologies treated by us are from the digestive system. During the 1 year period, a considerable number of cases with abomasal displacement have been observed. The treatment of these cases is carried out in a conservative and surgical way. There are cases of improvement, however medication is not successful. In this number have not been included other diagnosed cases, which have not been treated with any method, because of the refusal owners of animals who have preferred to slaughter them. The animals underwent general clinical and special control.
Careful control of the gastro-intestinal tract and the abdomen (contour inspection, palpation, swallowing, percussion and simultaneous auscultation) was performed.

Table 1.

Number of heads in farms:
1. Farm 138602561 – Cows - 40, Heifers - 20, Calves - 15, Total- 75
2. Farm 122200812 – Cows - 53, Heifers - 33, Calves - 12, Total - 98.

Table 2.

Number by breedin the farm:
1. Farm 138602561 – Holstein – 29, Montafon – 10, Brounviex – 1, Total -40
2. Farm 122200812 – Holstein – 53, Montafon – 0, Brounviex – 0, Total- 53.

Table 3.

Production of milk cowby breeds:
1. Farm 138602561 – Holstein 5500 – 6200 L, Montafon 4400 – 5200 L, Brounviex 4500 – 5500 L.
2. Farm 122200812 – Holstein 5800 – 6600 L, Montafon 0 L, Brounviex 0 L.

Table 4.

Cow body weight by breed (kg):
1. Farm 138602516 – Holstein 4800-5400, Montafon 4200 – 4500, Brounviex 4500 – 5000.
2. Farm 122200812 – Holstein 4500-5600, Montafon 0, Brounviex 0.

Table 5.

Abomasal displacement depending on the number of heads:
1. Farm 138602516 – Cows 40 (3), Heifers 20 (/), Calves 15 (/), Total- 75- (3)
2. Farm 122200813 – Cows 53 (4), Heifers 33 (/), Calves 12 (1), Total- 98- (5). Total- Cows 93 (7), Heifers 53 (/), Calves 27 (1) Total 173 (8).

Table 6.

Diagnose with abomasal displacement in cows by milk production:
1. Farm 138602561 - Holstein 5500-6200 (3), Montafon 4400-5200, Brounviex 4800-5500.
2. Farm 122200813 - Holstein 5800-6600 (4), Montafon 0, Brounviex 0.

Table 7.

Number of heads diagnosed with abomasaldisplacement by breed:
1. Farm 138602561- Holstein 29 (3), Montafon 10 (/), Bronviex 1 (/), Total 40 (3).
2. Farm 122200813- Holstein 53 (5), Montafon 0 (/), Bronviex 0 (/), Total 53 (5). Total: Holstein- 82 (8), Montafon 10 (/), Bronviex 1 (/), Total 93 (8).

Table 8. Findings of affected cows in two farms in Tetovo region

Cettle with abomasal displacement	Clinical treatment	%	Slaughtered	%	Died	%
8 heads	4 heads	50.	2 heads	25	2 heads	25

Controls were performed and notes were taken for body temperature, heart and pulse, respiration and rumen movements, especially venous circulation and dehydration rate. All clinical diagnoses were confirmed by right side laparotomy. All surgical interventions were performed on the animal in standing position, in the right paralumbal cavity. The anesthesia used was paravertebral and infiltrative with 2% lidocaine. The use of xylazine was not preferred because this substance slows the mobility of the digestive apparatus for a long time after surgery. During the anamnesis, owners stated that there is an appetite and milk production decline, lack of defecation or diarrhea. During the clinical visit, attention was focused on indicators such as body temperature, dehydration rate, mucus control, cardiovascular systemcontrol, ruminal and intestinal auscultation, hepatic area percussion, touching by hand and palpitations of the abdominal wall, rectal control, etc.

The suspicion of abomasal displacement was based on several clinical indications: Straining of the abdominal walls accompanied or not with dilatation of paralumbal region (fossa paralumbalis).The presence of the tympanic area (ping effect) on the right side, or in the left hypochondrial area. Defecation disorders where in some cases there were no fecesin the rectum. When viewed from behind on the displacement side we noticed an asymmetry of abomasium in the animal. The diagnosis was confirmed during laparotomy on the right side of abdominal cavity as well as during autopsy. Prior to surgery, cows were treated with Penstrept coupled with multivitamin complexes. The surgical correction was carried out immediately after the diagnosis was made. In a case of left abomasal displacement, the spin in the back of the animal was tried, a move that was repeated after 6 hours and the situation stabilized. In all other cases animals were subjected to paralumbal laparotomy on the right side of abdominal cavity. With the animal in standing position, a right paralumbl anesthesia was performed and the skin was cut into the paralumbal hollow, 10 cm. below the transversal lumbar vertebrae processes and 5 cm. from the caudal edge of the last rib.

After entering the abdominal cavity, the puncture of abomasium with 20G age was carried out at the most dorsal point of its large curvature for the purpose of emptying the gases and decompressing the abomasium. Further, the abdominal cavity control was performed to determine the type and degree of rotation or displacement of abomasium and at the same time the omasium. The abomas repositioning was performed by moderate pressure in the large curvature with cranioventral direction. Fixation of abomasium was performed according to abomasopexy technique on the median line and omentopexy on the left abdominal cavity wall using rivets. Performing the fluidotherapy after surgery was judged depending on any clinical case and condition of the patient. Evaluation of the success of surgical intervention considered indicators such as the return of desire for food, defecation, milk production, cardiac frequency, number of ruminal shrinkages and the evaluation of their intensity and duration. During the period after the surgical intervention the animals were fed with polyphilic hay by desire and with concentrates. In these dairy cow farms, the incidence pathology of abomasium displacement was studied based on clinical suspicions and anatomical controls after slaughter or treatment. Some data obtained for these farms are given in the tables below.From the study of these data it was observed that in farms the number of heads is relatively limited. Breeding farms have a number of heads ranging from 50 to 100 heads. In the treated farms present are these breeds: Holstein, Montafon and Brounviex. During one year work in these farms, we have faced various pathological situations, in some cases several other pathologies in the same individuals, but the pathology of abomasal displacement has been the most worrying and of interest to us. Perhaps in some cases it has been present but has passed undiagnosed and it was verified only when the animals were subjected to forced slaughter. From our side, they were diagnosed and then treated or sacrificed depending on the clinical situation or the conditions of breeding owners.

DISSCUSION

From the collected data, it was noted that the incidence of abomasal displacement ranged from 4-5% (averaging 4.6%) of the farms received in the study. Our data show that the most

affected by abomasal displacement are those of the Holstein race. In farms where this race is bred, abomasal displacement was 4.6% (8 cases at 173 head). It should be emphasized that in all farms a "tip" ration is used in feeding of cows based on the annual use of silage and thus decreasing the rate of food factor impact on the incidence of abomasal displacement. In farms the incidence of abomasal displacement is different and related to the level of yield of milk production. Based on the tables it is noted that the incidence of abomasal displacement in cows with average production of 5500 to 6200 liters of milk during lactation was higher compared to the dairy cows producing 4400-5200 l for a lactation period. Dependence of incidence of abomasaldisplacement from the level of milk production is reported by other authors. Even with regard to body weight, data showed that animals with higher body weight have higher predisposition forabomasal displacement than animals with smaller body weight. The findings were that from 4 heads treated clinically improved (50%), 2 heads (25%) passed to early slaughter and 2 heads (25%) died. Clinical diagnosis of abomasal displacement in this animal group was confirmed with post-mortem control results after slaughter or death, as shown in the table. Right displacement (RDA), left displacement (LDA), frontal displacement (VA) ratio is 2 to 1. Holstein breeds have greater predisposition to develop all types of displacements compared to other breeds. In Tetovo Region, the incidence of displacements, especially for frontal displacements, was higher during the winter. Although birth is a highly predisposed factor, the disease occurs throughout the year despite the incidence of calving. Based on this study, it can be said that the rarest cases of abomasal torsion occur during the late gestation period.

Conclusion and Recommendation

- Abomasal displacement is a high pathology in dairy cows. From the abomasal displacement suffer on average 4.6% of heads in both farms. More are affected cows of the “Holstein” breed,both those with high productivity and those with large abdominal cavity space.
- Auscultation and combining of percussion with auscultation is an effective and reliable method used in cows with abomasaldisplacement.
- Of the two most important factors that are predisposed for abomasal displacement, only the abomasalatony is preventable.
- The most frequent cases of abomasal displacement occur on the left side. The ratio between the incidence of abomasal displacement on the left side with the displacement on the right side is 2:1.
- Abomasal displacement cases are difficult to handle. More than 50% of diseased animals end up with early slaughter or death because of the lack of previous experience by the vets.

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