

Reproductive disorders in dairy cows of the southwest of Paraná

Fernanda Elisa Giacomelli¹, Adalgiza Pinto Neto^{2*}, Marcelo Falci Mota²,
Antônio Campanha Martinez³, Luiz Sérgio Merlini⁴

¹Veterinarian, Realeza, Brazil

²Universidade Federal da Fronteira Sul, Realeza, Brazil

³Universidade Estadual de Maringá, Umuarama, Brazil

⁴Universidade Paranaense, Umuarama, Brazil

*Corresponding author, e-mail: adalgiza.uffs@gmail.com

Abstract

Reproductive efficiency of dairy cows is evaluated directly considering the calving interval, which is affected by nutrition, irregular estrus cycle, prolonged anestrus, and reproductive diseases. Reproductive diseases cause economic losses due to diagnosis and treatment costs, and reduction in milk production. Thus, the objective of this study was to report the occurrence of the main reproductive disorders in dairy cows of the Southwest of Paraná, South of Brazil. Data of ultrasound diagnoses were collected from 2274 cows of 70 rural properties in the municipalities of Realeza, Planalto, Capanema, Pérola do Oeste, and Santa Isabel do Oeste from January 2014 to May 2015. Reproductive disorders were found in 24.50% (557/2274) of the animals evaluated; ovarian cysts (follicular, and luteal) were the most significant disorders, found in 16.13% (367/2274) of the cases. Other disorders were found less frequently. The occurrence of follicular and luteal cysts was observed especially in primiparous animals in months of pasture transition.

Keywords: ovarian cysts, uterine disorders, dairy cattle, Brazil

The reproductive efficiency of a cattle herd is important for the economic development of a dairy farm (Brumatti et al., 2011); it maximizes yield and makes the activity viable, efficient, and profitable (Silva et al., 2008). The reproductive performance of cows affects directly their milk production, costs with replacement of animals, and genetic improvement of the herd (Portinari et al., 2013).

This efficiency can be achieved through positive interactions between genetic, health, nutritional, and reproductive parameters (Pereira et al., 2013), and calving intervals of 345 to 365 days (Borges et al., 2009). However, when the resumption of ovarian cyclicity occurs after this

period, the calving interval increases; it is the second most common cause of reproductive deficiency and causes high economic losses to the producers (Borges et al., 2009).

According to Le Blanc et al. (2006), approximately 75% of diseases in dairy cows occur in the first week after delivery, denoting a reproductive inefficiency and increased calving interval; these diseases are caused by placental retention, uterine infection, ovarian cysts, infectious diseases, and other disorders (Borges et al., 2009).

Follicular cyst and corpus luteum cyst cause significant problems in cattle; they are responsible for infertility, and delays in ovulation

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and cyclicity in dairy cows (Borges et al., 2009). Moreover, uterine infections during puerperal and post-puerperal periods, fetal deaths, abortions, pyometra, and fetal mummification and maceration are also reported as causes of losses, and decreases in reproductive efficiency (Vilela et al., 2007). According to Silva et al. (2008), reproductive disorders are the third cause of animal replacement, occurring in approximately 13.50% of dairy herds.

The objective of this study was to report the occurrence of the main reproductive disorders in dairy cows of the Southwest of Paraná, South of Brazil.

Data of transrectal ultrasound diagnoses

from 2274 cows were collected using a linear probe (Kaixin KX5200, Oxson Technology, São Paulo, Brazil) from January 2014 to May 2015; these cows were from 70 rural properties in the municipalities of Realeza, Planalto, Capanema, Pérola do Oeste, and Santa Isabel do Oeste.

The identification of the rural properties, total number of cows evaluated in each property, identification of animals, number of deliveries for each animal, diagnosis date, and disorder diagnosis data were subjected to descriptive statistical analysis.

Reproductive disorders were found in 24.50% (557/2274) of the 2274 bovine females evaluated (Figure 1).

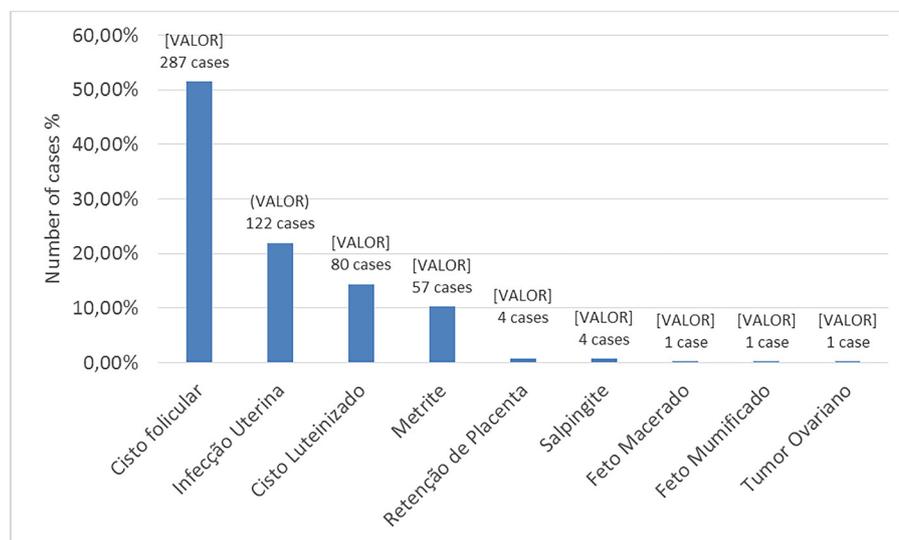


Figure 1 . Reproductive disorders found in dairy cows of the Southwest of Paraná, Brazil.

The most frequent reproductive disorder found in the animals evaluated was follicular cyst, which, together with luteal cyst, represented 16.13% (367/2274) of the disorders. The ultrasonographic examination showed ovarian follicles as non-echotic structures, usually with a thin border, and irregular shape due to the compression of other ovarian structures. According to Palhão et al. (2014), the follicular wall is very thin in cases of follicular cysts, and thick in case of luteal cysts, with at least 20 mm in diameter, and absence of corpus luteum. These descriptions were confirmed in the diagnoses of follicular and luteal cysts in the present study.

Cystic ovarian follicles are the most frequent and important disorder in dairy cattle (Nascimento & Santos, 2011), occurring mainly in the first 60 days postpartum, during the transition

from gestation and resumption of cyclicity (Jeengar et al. 2014). In the present study, the highest occurrence of this alteration was observed in the postpartum period.

The number of animals with follicular cysts (12.77%; 287/2274) found in the present study was higher than those reported by Silva et al. (2008) in cull cows (3.3%; 11/2083), and Santos et al. (2009) in Holstein cows (9.3%; 31/333). However, similar result was reported by Vanholder et al. (2006) when evaluating lactating cows (6% to 30%), mainly up to 60 days postpartum; and lower number was found by Ribeiro et al. (2013) (15%) in lactating cows, which presented one or more ovarian cysts.

The highest occurrence of follicular cysts was observed between July and October 2014 (Figure 2); these animals gave birth possibly

between May and August, coinciding with the pasture transition period. Pastures in this period present low quality and quantity, potentiating effects of the negative energy balance at postpartum; this is a predisposing condition for the formation of ovarian cysts, especially in high-production cows (Pin et al., 2014).

According to Santos et al. (2009), the

occurrence of cysts varies with the season, with highest percentages in April to July, when births occur between February and May. This can be explained by the summer thermal stress, combined with the increased milk production, which causes the negative energetic balance, and is a predisposing factor for cysts formation (Pin et al., 2014).

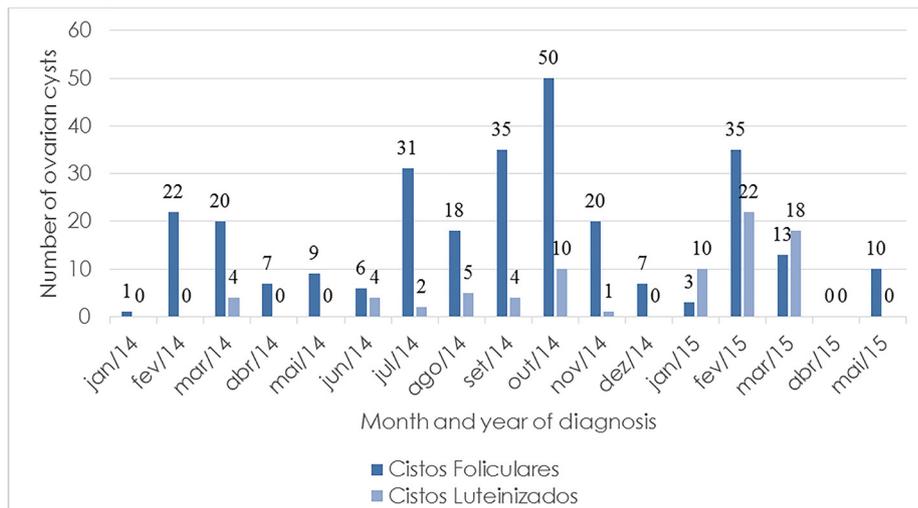


Figure 2 . Occurrence of follicular and luteal cysts in dairy cows of the Southwest of Paraná, Brazil, from January 2014 to May 2015.

The low feed availability in the months of highest occurrence of these disorders, the stress for recovering from the negative energetic balance, and the high milk production of animals affected the results found in the present study, as also reported by Pin et al. (2014).

Luteal cysts occurred more frequently in January to March 2015 (Figure 2), indicating a luteinization of the follicular cysts that occurred in the previous months. Luteinization of follicular cysts is described as an attempt to promote the ovulation of the formed follicular cyst that leads to impregnation of the follicular wall with the luteinizing hormone, thus forming a luteal cyst (Santos et al., 2009; Nascimento & Santos, 2011).

The highest percentage of follicular (28.57%; 82/287) and luteal (22.5%; 18/80) cysts occurred in primiparous animals (Figure 3). However, Jeengar et al. (2014) reported that ovarian cysts are more common in multiparous than in primiparous cows. The result of the present study was probably due to the greater number of young animals used in the ultrasonographic diagnosis analysis, and the difficulty of these animals in reestablishing their normal cyclicity

during the postpartum period.

The occurrence of uterine infection (5.3%; 122/2274) observed was the second most frequent disorder. However, it was lower than those reported by Marques Júnior et al. (2011) (40% to 64%) for dairy cows in feedlots, and by Martin Sheldon et al. (2010), who found half of the dairy cows presenting postpartum infectious uterine disorders.

Uterine infection was diagnosed by Nascimento & Santos (2011) and Marques Júnior et al. (2011) in cows with vaginal discharge of fluids of altered color, odor, viscosity, with different intensities. Fernandes et al. (2014) observed a uterus that was dilated and filled with heterogenic echogenicity fluid using ultrasonographic examination. Similar diagnosis was observed in the present study.

Occurrence of metritis was observed in 2.5% (57/2274) of the diagnoses. Martins and Borges (2011) found 41.23% (40/97) cases of metritis in postpartum cows and explained this result by risk factors—placental retention and heat stress. Lucena et al. (2010) found cases of death by metritis in 0.24% (16/6706) of the animals

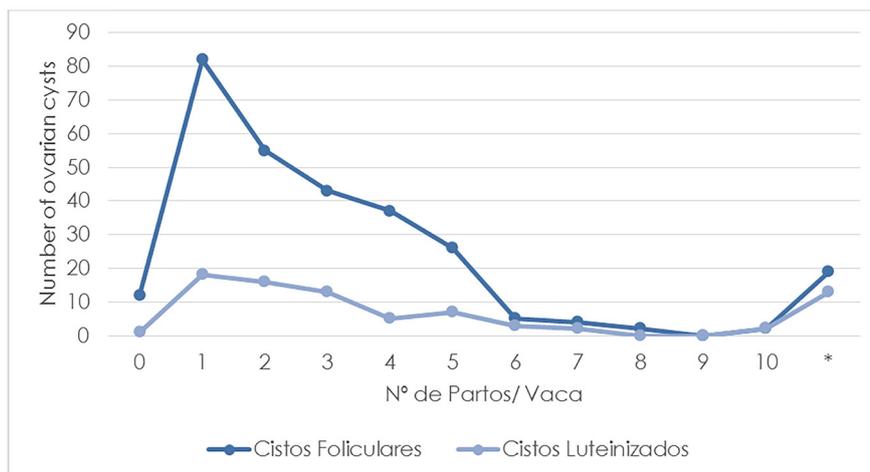


Figure 3 . Diagnoses of follicular and luteal cysts as a function of the number of deliveries in dairy cows of the Southwest of Paraná, Brazil.

evaluated and emphasized the importance of a rapid diagnosis.

Retained placenta was found in 0.17% (4/2274) of the animals. Nobre et al. (2012) found retained placenta in 12.8% of the dairy cows evaluated. Studies in the Southwest of Paraná showed varied percentages of occurrence of placental retention in dairy cows, from 2.9% to 50% (Bernardi et al., 2016; Martins & Borges, 2011). According to Pereira et al. (2013), this disorder is found in all herds, regardless of their degree of specialization, technology, and technical assistance; and the occurrence variation is due to the management practices adopted in each farm. The low number of placental retention found in the present study is probably a consequence of the previous ultrasound diagnosis, without follow-up of the animals in the immediate postpartum period.

The salpingitis resulting from an increasing inflammatory process was found in 0.17% (4/2274) of the animals. Similar occurrence of salpingitis was observed by Santiago & Barros (1972) in 0.22% (3/3527) of cows maintained in an extensive system with natural breeding and rearing. This disorder may not result in macroscopic sequelae, but in most cases, it results in obstruction of the fallopian tubes, preventing the reproduction of these animals (Nascimento & Santos, 2011).

The occurrence of mummified (1/557) and macerated (1/557) fetuses represented 0.1% of the diagnosed disorders. Silva et al. (2008) evaluated 244 pregnant cows and found one mummified, and one macerated fetus.

Ovarian tumors are rare in cows; they can be primary in the ovary, or due to metastasis of other organs (Nascimento & Santos, 2011). Silva et al. (2008) reported the occurrence of three cases of ovarian tumor among 244 cows (1.2%), and one case (0.33%; 1/2083) of ovarian tumor among the causes of replacement of Holstein cows. Similar result was found in the present study (0.04% -1/2274).

The occurrence of follicular and luteal cysts was observed in most of the studied animals, especially in primiparous cows during the months of pasture transition. The occurrence of uterine infection, metritis, retained placenta, salpingitis, and fetal alteration (maceration and mummification) were observed less frequently.

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