



A Monthly e Magazine
ISSN:2583-2212
April, 2023; 3(04), 593-598

Popular Article

Repeat Breeding and Its Therapeutic Management in Dairy Cow: A Review

Swati Thakur¹, Souvik Dhara^{2*} and R Huozha³

¹PhD Scholar, Department of Veterinary Physiology, LUVAS, Hisar, Haryana.

^{2*}PhD Scholar, Department of Animal Reproduction, Gynaecology & Obstetrics, Assam Agricultural University, Khanapara, GHY- 781022, Assam

³Assistant Professor, Department of Veterinary Physiology, G. B. Pant University of Agriculture & Technology, Pantnagar-263145, Uttarakhand
<https://doi.org/10.5281/zenodo.7881394>

Abstract

Repeat breeding is a major reproductive disorder in dairy animals and its incidence varies among different management systems, environments and regions. Fertilization failure and early embryonic mortality are main causes of repeat breeding leading to delayed age at first calving in heifers, the intercalving interval is extended causing lowering of calf crop. Incidence of repeat breeding is low in buffalo (8.68%) than cattle (18.79%). It can be reduced by improving their conception rate through careful handling of genitalia during insemination to avoid acquired abnormalities, appropriate treatment of uterine infections, administering hormone therapy to improve fertilization success and lower embryonic mortality

Introduction

Animal's reproductive ability is one of the key elements of a dairy herd. Production of one calf crop every year provides good profit to the dairy farmers. Good reproduction and production are two sides of a coin for a profitable dairy enterprise. The productive life of a cow starts with parturition which is a main event of reproduction. After that cow needs regular cycles of conception and calving to begin resultant lactation which is an important component of her productive life. So, for a successful dairy farming reproductive performance of the dairy animals play a very crucial role. Therefore, the reproductive problems that lead to reproduction failure need to be diagnosed and



treated for better production and profit of the farm (Abdisa *et al.*, 2018). One of the major reproductive problems in dairy cattle is repeat breeding. A repeat breeder is a cow that has nearly normal estrus cycle, is free from palpable clinical abnormalities, has no abnormal vaginal discharge, is less than 10 years old, has calved at least once but fails to conceive after three or more consecutive inseminations (Singh *et al.*, 2017). The repeat breeding cows come to heat regularly but fail to conceive after successful mating. Repeat breeding causes financial loss in terms of repeated inseminations, treatment, cost of feeding without production, production loss due to delayed conception. In practice, some will have been inseminated at the wrong time, others may have pathological changes in the bursa or oviduct that are difficult to palpate, or undiagnosed uterine infections (Singh *et al.*, 2008).

Repeat breeders can be divided into two groups

1. Early repeaters

Cow that come into heat within 17-24 days after artificial insemination (AI). In these animals the luteal function has been shorter than normal or typical for the physiological estrus cycle in non-bred cow. In these cows the most probable event is either failure of fertilisation (delayed ovulation, poor semen quality etc.) or early embryonic death (delayed ovulation, poor embryo quality, unfavourable uterine environment, precocious luteolysis).

2. Late repeaters

Cows that come into heat later than 25 days after AI. In these animals the luteal function was maintained for longer than the physiological luteal phase in non-bred cows. Fertilisation and initial recognition of pregnancy probably took place but for some reason (inadequate luteal function, inadequate embryo signaling, infectious diseases, induced luteolysis) luteolysis was induced and pregnancy lost.

Causes

1. Anatomical causes

The anatomical causes of repeat breeding include congenital as well as acquired defects. Congenital cause includes persistent hymen which is rare. Acquired causes include cervical problems, ovaro-bursal adhesions, fibrous fallopian tubes and uterine adhesions. The treatment of anatomical causes of repeat breeding is difficult.



2. Functional causes

The functional causes of repeat breeding mainly include delayed ovulation, anovulation and luteal insufficiency. These occurs mainly due to endocrine defects of hypothalamus and anterior pituitary gland.

3. Infectious causes

Many specific and non-specific uterine infections are associated with fertilization failure and early embryonic mortality. In repeat breeders, clinical and sub-clinical endometritis are main causes. Incidence of uterine infections are higher in buffaloes than in cows. The possible factors involved in the development of endometritis are retentions of fetal membrane, injury to the reproductive tract due to difficulty in calving, at the time of breeding and uterine treatment.

4. Managemental causes

These include female and male factors, technical and nutritional factors. Female factors include non-observed estrus or improper estrus detection. Male factors include poor semen quality. Technical factors include improper timing of AI, faulty AI technique, improper handling and thawing of straw, AI in early pregnancy showing gestational estrus and vigorous handling of genitalia leading to acquired anatomical defects. Nutritional factors include vitamin A, D, E deficiency. Among minerals phosphorous deficiency is an important cause of infertility followed by copper and magnesium. Deficiency or surplus of carbohydrates, imbalance of carbohydrates and proteins and excessive feeding of proteins are also the contributing factors. Higher level of urea in diet affects reproduction due to high level of nitrogen in uterus. These causative factors also occur in combination. Genital infections and hormonal aberrations together are major contributing followed by combination of anatomical defects and hormonal aberrations and genital infection and anatomical defects.

Incidence and risk factors

The incidence of repeat breeding is low in buffaloes than in cows. A large number of factors predispose for repeat breeding which include parity, periparturient diseases, season, herd size, lactation and poor fertility. Seasonal suppression of fertility during hot summer months in buffaloes is common, so such considerations should be limited to breeding season only. Reproductive disorders are common in buffalo during summer and rainy season, and significantly higher incidence of repeat breeding during autumn season (Wodaje *et al.*, 2016).



Repeat breeding has a higher predisposition to stress, as evidenced by increased production of cortisol from adrenal glands. Adrenal progesterone in stressed cows reaches suprabasal levels. Thus, stress can be considered as potential cause (Saraswat *et al.*, 2016).

Economic implication of repeat breeding

The economic success of dairy industry depends upon proper and optimal reproductive rhythm of individual animal of herd within normal physiological range. Repeat breeding syndrome is responsible for long service period, dry period and intercalving interval causing low milk yield, calf crop and additional cost of management resulting into greater economic losses to dairy industry.

Treatment

Treatment of repeat breeding in cow is completely depended upon diagnosis of actual causes. There are two main causes of repeat breeding i.e. failure of fertilization and early embryonic death and treatment is given considering these causes.

Treatment of anatomical causes

Treatment of anatomical causes of repeat breeding is difficult. However, about 28.6% conception rate was achieved in dairy cattle suffering from cervical fibrosis or partial obstructions through natural service or artificial insemination (AI) with increased concentration of spermatozoa. Similarly, insemination on unaffected uterine horn side can treat the unilateral salpingitis, though the conception chances are very low.

Treatment of functional causes

For treatment of functional causes of repeat breeding in dairy cattle various hormonal protocols have been developed. In prolonged estrus exhibiting repeat breeder cattle, the use of single insemination along with administration of buserelin acetate, a GnRH analogue, is sufficient. However, in the absence of hormonal treatment, the use of double insemination at 24 hour interval also gives optimal results. Moreover, in repeat breeder cattle, GnRH administration at estrus or during luteal phase (between day 11-14 post-insemination) increases plasma progesterone and delays luteolytic response and enhance embryo survival rate. Treatment of repeat breeder cattle with 10.5 mcg GnRH analogue or hCG on day 12 post-AI lead to an improvement in conception rate (Singh *et al.*, 2017). Another option for improving the conception rate in dairy cattle with functional form of infertility is the use of ovulation induction protocol. Ovsynch protocol improved the conception rate. However, there was no impact of other protocols like double synch and heat synch on fertility



improvement (Singh *et al.*, 2017). Nevertheless, pre-synchronization with prostaglandin F_{2α} (PGF_{2α}) followed by administration of GnRH analogue along with AI at 60 hour post-PGF_{2α} improved conception rate in repeat breeder cattle .

For the treatment of repeat breeding from uterine infections need proper selection of antibiotics to prevent development of resistant strains of microbes and to eliminate infection as quickly as possible. A study suggested that systemic, rather than intrauterine, treatment achieves adequate concentration of an antibiotic in blood serum and endometrial tissue that is particularly necessary in cases of septic metritis. Systemic administration eliminates the risk of damage to genital tract and the risk of introducing new microorganisms. For the management of suspected fungal endometritis, 0.1% lugol's iodine is a successful and inexpensive therapeutic option (Ahmed *et al.*, 2014). Ciprofloxacin and Tinidazole combination are effective to control incidence of repeat breeding caused due to uterine infection (Kumar *et al.*, 2012).

Treatment of repeat breeding due to managerial problems

It is controlled by actual detection of heat, proper handling of semen as well as timing of AI.

Ethno-veterinary practices

For the treatment of repeat breeding in cow some livestock owners use (Sharma *et al.*, 2019)-

- (i) 250 gm overnight soaked ajwain (*Trachyspermum ammi*) to animal for five days.
- (ii) Mixture of 1 kg crushed lod (*Symplocos racemosa*) and 1 kg desi sugar. Both mixed well divided into four equal parts and one-part mix in water and fed to animal all four portions continuous for four days.
- (iii) 250 gm of saunf (*Foeniculum vulgare*) after mixed with water fed to animal for four days.
- (iv) 1 kg of moth (*Vigna aconitifolia*) continuous for five days.
- (v) 50 gm of haldi powder (*Curcuma longa*) with 100 ml til oil in 10 equal doses.
- (vi) Khejri (*Prosopis cineraria*) leaves after soaked in whey (butter milk) for 10 days.
- (vii) 20 gm fitkari (Alum) for 3 days.
- (viii) Decoction of 5 kg root of ber (*Ziziphus mauritiana*) with 10 liter water for continuous 10 days.
- (ix) 300 ml of desi ghee per day for continuous 10 days.

Conclusion

The ultimate goal in dairy farm should be to shorten calving interval of cow, decrease the number of services per conception thereby increasing farm production. But reproductive health disorders such as repeat breeding affect reproductive performance of dairy animals.



To reduce the negative effects of repeat breeding nutritional supplementation can be used to restore imbalances at herd level. 8-12 days before estrus, diets containing high level of inorganic iodine improve stimulation pituitary gland. Vitamins A, D, E and phosphorus, copper and magnesium supplementation can improve fertility. Awareness of farm owner and attendants about proper feeding, accurate heat detection, timely AI and hygiene can reduce this problem.

References

- Abdisa, T. *et al.* (2018). Review on reproductive health problems of dairy cattle. *Journal of Dairy and Veterinary Science*. 5(1)
- Singh, M., Sharma, A., Sharma, A. and Kumar, P. (2017). Repeat breeding and its treatment in dairy cattle of H.P.(India)- A review. *Indian journal of Animal reproduction*. 38(2)
- Singh, J., Dadarwal, D., Honparkhe, M. and Kumar, A. (2008). Incidence of various etiological factors responsible for repeat breeding syndrome in cattle and buffaloes. *The International Journal of Veterinary Medicine*. 6(1)
- Wodaje, H.B. and Mekuria, T.A. (2016). Risk factors in repeat breeding. *Advances in Biological Research*. 10(4): 213-221.
- Saraswat, C.S. and Purohit, G.N. (2016). Repeat breeding: incidence, risk factors and diagnosis in buffaloes. *Asian Pacific Journal of Reproduction*. 5(2): 87-95.
- Singh, M., A. Sharma, A. Sharma and P. Kumar. (2017). Repeat Breeding And its Treatment in Dairy Cattle of Himachal Pradesh (India) – A Review., *Indian Journal of Animal Reproduction* 38 (2): December 2017.
- Faisal Omer Ahmed and Adil Salim Elsheikh. (2014). Treatment of Repeat Breeding in Dairy Cow with Lugol's Iodine., *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)* e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 7, Issue 4 Ver. I: 22-26 www.iosrjournals.org.
- Rajesh Kumar and et. al. (2012). Clinical Management of Repeat Breeding Syndrome in Bovines. *Intas Polivet*, vol. 13 (I): 23-25.
- Sharma NK, Garg SL, Rajput DS, Mishra P. (2019). Ethno Veterinary Practices of Repeat Breeding and Anoestrous with their Extent of Use Followed By Livestock Owners in Western Zone of Rajasthan. *Indian Research Journal of Extension Education*. 2019 Jan 4;19(1):52-5.

