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Reproductive problems in mares and their importance in equine production

Problemas reproductivos en yeguas y su importancia en la producción equina

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Abstract

The purpose of equine reproduction is to produce specimens with the desired genetic characteristics to have satisfactory performance in different equestrian activities. Mares are characterized by being seasonal polyestrous, presenting their estrous cycle every 21 days on days with the greatest number of daylight hours (spring – summer). However, this species presents several reproductive problems that can be management problems such as poor diet and body condition, stress due to excessive work during the reproductive process or the use of a stallion with poor seminal quality. The pathological problems that arise are bacterial infections due to poor hygiene during copulation, which can lead to infectious endometritis, embryonic resorption due to using postpartum heat before the uterus is in a position to develop the embryo, hormonal alterations or persistent follicles. All of these anomalies can cause great economic losses as well as compromise the health and well-being of the equine species.

Keywords: Reproduction, mares, management, pathologies.

Resumen

La reproducción equina tiene como finalidad producir ejemplares con las características genéticas deseadas para tener un desempeño satisfactorio en las diferentes actividades ecuestres. Las yeguas se caracterizan por ser poliéstricas estacionales, presentando su ciclo estral cada 21 días en los días con mayor número de horas de luz (primavera – verano). Sin embargo, esta especie presenta diversos problemas reproductivos que pueden ser problemas de manejo como mala alimentación y condición corporal, estrés por exceso de trabajo durante el proceso reproductivo o el uso de un semental con mala calidad seminal. Los problemas patológicos que se presentan son infecciones bacterianas por mala higiene durante la cópula, que puede derivar en endometritis infecciosa, reabsorción embrionaria por utilizar el celo postparto antes de que el útero

esté en condiciones de desarrollar el embrión, alteraciones hormonales o folículos persistentes. Todas estas anomalías pueden ocasionar grandes pérdidas económicas, así como comprometer la salud y el bienestar de la especie equina.
Palabras Clave: reproducción, yeguas, manejo, patologías.

INTRODUCTION

Reproductive management in a Production Unit (PU) is of great importance for livestock production. Knowledge of the reproductive physiology of horses allows for adequate reproductive, health and nutritional management to produce specimens with the genetic and performance characteristics needed for satisfactory performance in equestrian activities (Bolger, 2015). The desired characteristics of a breeding mare are its conception capacity, ease of calving, maternal abilities and its milking capacity. However, regardless of these characteristics, an appropriate body condition and a nutritional balance according to its physiological state, provide the horse with the appropriate conditions for its reproduction (Hernández, 2013).

Mares enter puberty between 12 to 18 months of age, this can vary according to seasonality, nutritional status and breed. They are considered seasonal polyestrous, since their estrous cycle is influenced by the number of light hours, beginning their reproductive season in spring - summer, which is when the days are longer, in addition to the quality of the forage better covering their nutritional requirements; although in stabled mares that are well fed they can have cycles at any time of the year. Their estrous cycle is on average 21 days (5 – 7 days of follicular phase and 14 to 15 of luteal phase) and their gestation is on average 330 days (Cortés *et al*., 2018).

Unlike other domestic females, mares have many difficulties in reproducing; which according to Carvajal (1998) can be classified into problems due to poor reproductive management and pathological problems. The latter are caused by microorganisms, physiological or anatomical failures derived from hereditary genetic anomalies (Ganin *et al*., 2017).

Reproductive problems due to mismanagement

Reproductive problems in mares do not necessarily have to be pathological; they can be due to environmental factors or poor management in the breeding units (Rickkets & Troedsson, 2007). The low reproductive quality of a stallion can be a very common cause of confusion when believing that the mare has fertility problems, when the problem comes from the stallion that is used for natural service. An andrological evaluation of the stallion is essential to determine libido and semen quality, and therefore its reproductive performance (Castro & González, 2019).

A stressful environment for the mare may be a predominant factor in embryonic resorption; Facilities in poor conditions, lack of visual field, coexistence with others of its species, poor nutrition or excessive work during the reproductive stage can cause physiological disorders during reproduction. A diet that does not cover their nutritional requirements according to their productive stage is a factor that reduces their reproductive efficiency (Robledo *et al.*, 2020). Brinsko *et al*. (2011) documents that body condition significantly influences pregnancy rates; both obese and cachexic mares can have alterations in their estrous cycle. As well as service in fillies before 3 years of age, which not only endangers the pregnancy, but also the life of the animal.

Vulvar conformation and angle are something that must be evaluated in the mare before subjecting her to reproductive management. If it does not have the appropriate conformation, it allows bacteria and microorganisms to enter directly into the vagina, producing infections that cause infertility. Mckinnon (2011) reports that English Thoroughbred mares are the ones with the highest prevalence of this type of problems.

Preventing contamination by microorganisms through hygiene during mating or artificial insemination (AI) reduces the risk of infertility. Bacterial contamination by AI is more controlled than by natural breeding (McKinnon, 2011).

Sin the foal's heat is a very common practice in the UP that is beneficial to achieve a birth in less time and take advantage of the reproductive season; However, the probability of achieving a safe pregnancy is lower beca usé the uterus is in the postpartum period and is not yet fully prepared to develop another pregnancy (Ramírez *et al.,* 2006).

Pathological reproductive problems

Hormonal imbalances are associated with alterations of the hypothalamus – pituitary – ovary axis; These problems occur mainly in geriatric, obese, or mares with poor body condition (Brinsko *et al*., 2011). Follicular atresia develops when a dominant follicle emerges and develops more than the others, which may be due to follicular hypoplasia, ovarian cysts, infections of the uterus, or poor nutrition (Pardo & Mattos, 2007).

A persistent corpus luteum is characterized because the mare does not present a spontaneous regression of the corpus luteum in a normal manner, which may be due to immature corpus luteum that originates from ovulations in the last part of the diestrus at the time of prostaglandin release; due to inadequate secretion of prostaglandins during the estrous cycle, or due to chronic endometritis that produces the destruction of the endometrium, reducing the secretion of prostaglandins (Pardo & Mattos, 2007).

Sometimes, there are mares that, despite being in the reproductive season, develop anovulatory follicles that can reach between 5 to 15 cm in diameter and persist for up to 2 months; This could be due to inadequate secretion of gonadotropins that stimulate ovulation, or due to inhibition of estrogen secretion by the follicle; Instead of ovulating, it fills with blood and persists as a hematoma (Ganin *et al*., 2017).

Not all mares present postpartum heat or foal heat; sometimes the anestrus period begins or they do not ovulate due to not having good follicular development. McCue (2007) has reported an incidence of 21 to 74% of anestrus due to lactation, although some authors have shown that lactation has no effect on ovarian activity, but rather that anestrus is due to poor body condition or poor nutrition after lactation. delivery.

Endometritis is one of the most common causes of infertility in female horses, Benko *et al*. (2015) reports a prevalence of 25 to 60% of mares with this pathology. Its etiology is mainly due to aerobic bacteria such as *E. coli*, *Proteus* spp., *Staphylococcus aureus*, *Streptococcus* spp., among others, with *Streptococcus equi* zooepidemicus being the most prevalent.

After mating, temporary endometritis always occurs due to the inevitable contamination and irritating effect of semen, in addition to inflammation occurring when the barrier of the cervix is crossed. When there is persistent inflammation, it is usually due to poor conformation of the perineum or delayed expulsion of uterine dirt; The time in which endometrial inflammation occurs is approximately 12 to 24 hours after mating (Gallego *et al*., 2021).

CONCLUSIONS

The mare is a species susceptible to reproductive anomalies due to inadequate management problems. Providing management Ahmed at taking care of their well-being can contribute to good production and benefit the well-being of the horse and the owner.

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