

Pseudopregnancy In Domestic Animals

A. Thangamani¹, B. Vigneshwaran¹, A. Sabarinathan², V. Prabakaran³ and A. Elango⁴

¹Assistant Professor, ³Professor and Head, Dept. of Veterinary Gynaecology and Obstetrics

²Assistant Professor, Veterinary Clinical Complex

⁴Dean, Veterinary College and Research institute, Salem-636 112 Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

*Corresponding author: thangamtamil19@gmail.com
doi.org/10.5281/VeterinaryToday.21787067

Abstract

Pseudopregnancy is a complex condition across domestic species, driven by prolonged progesterone or prolactin secretion. This review compares the etiology, diagnosis and treatment of pseudopregnancy in dogs, rabbits, goats and mares. In canines, it is a normal physiological consequence of a prolonged luteal phase, managed with dopamine agonists. In rabbits, sterile mating triggers temporary luteal activity. Conversely, caprine pseudopregnancy known as hydrometra, results from failed luteolysis and is effectively treated with prostaglandins. Equine pseudopregnancy complicated by endometrial cups requires waiting for natural cup regression. Understanding these mechanisms is crucial for accurate diagnosis and targeted therapeutic intervention in modern veterinary practice.

Keywords: Pseudopregnancy, Rabbit, Bitch, Mare, Goat, Luteotropic hormone

INTRODUCTION

Pseudopregnancy (false pregnancy) is a hormonal and physiological state in non-pregnant female animals characterized by the physical and behavioral signs of pregnancy. While the underlying mechanisms vary significantly across species due to differences in reproductive cycles, the condition is generally driven by prolonged secretion of progesterone and/or prolactin. Below is a detailed causes, diagnosis and treatment plan for pseudopregnancy in dogs, rabbits, goats and mares (Kooistra and Ginther, 1976, Carter *et al.*, 2016, Arokia *et al.*, 2017 and Root *et al.*, 2018).

1. Dog (Bitch)

Pseudopregnancy is not a pathological anomaly in dogs but a normal physiological consequence of their unique estrous cycle. Canines have a remarkably long luteal phase (diestrus) lasting about 60–70 days, regardless of whether they are pregnant (Root *et al.*, 2018).

Causes

- Normal endocrinology: As the corpus luteum (CL) regresses at the end of diestrus, progesterone levels drop, triggering a surge in prolactin. In some bitches, this prolactin surge is exaggerated leading to clinical signs.

- Age and parity: It is most common in middle-aged, intact bitches, often occurring 1 to 2 months after an estrus (heat) cycle.

Diagnosis

- Clinical Signs: Mammary gland enlargement, galactorrhoea (lactation), nesting behavior, "mothering" of toys, restlessness, lethargy and sometimes aggression or appetite changes. Abdominal distension may also occur.
- Imaging: Abdominal ultrasound or radiography (X-rays) will confirm the absence of fetuses. (Note: Radiograph are only reliable after day 45 of a true pregnancy).
- Palpation: No fetuses are palpable.

Treatment

- Mild Cases: Usually self-limiting. The best approach is often conservative management. Do not milk the mammary glands, as stimulation will prolong lactation. Use an Elizabethan collar (E-collar) if the dog is excessively licking her mammary area.
- Severe cases:
 - Dopamine Agonists: Drugs like cabergoline or bromocriptine inhibit prolactin secretion. Cabergoline is the gold standard as it has fewer side effects (like vomiting) than bromocriptine.
- Prevention: Ovariohysterectomy (spaying) is the only permanent cure. However, it should be performed *after* the pseudopregnancy signs have subsided, as spaying during diestrus can actually induce or worsen the condition

due to the sudden drop in progesterone (Thangamani *et al.*, 2018).

2. Rabbit (Doe)

Rabbits are induced ovulators, meaning they do not have a regular estrous cycle; instead, the physical act of mating triggers the release of eggs (ovulation).

Causes

- Sterile mating: If a doe is mounted by a sterile buck or by another female (common in group housing), she will ovulate. Without fertilization, the resulting corpora lutea will still secrete progesterone, inducing a pseudopregnancy (Carter *et al.*, 2016).
- Ovarian Cysts: Hormonally active ovarian cysts can also continuously secrete hormones, mimicking pregnancy.

Diagnosis

- Clinical signs: The doe will exhibit nesting behavior (pulling fur from her dewlap and belly to line a nest), aggression and territoriality.
- Palpation: A true pregnancy can be palpated as distinct, marble-sized fetuses around day 12–14. In a pseudopregnancy, the uterus will feel uniformly toned or slightly enlarged, but no distinct fetuses will be found.
- Duration: Rabbit pseudopregnancy typically lasts exactly 17 to 18 days, after which the CL regresses and the doe returns to normal.

Treatment

- Observation: Because it is short-lived (17 days), treatment is rarely necessary. The condition will resolve on its own.

- **Management:** Remove nesting materials to reduce stress and prevent fur-pulling.
- **Surgical/Chronic cases:** If pseudopregnancies are recurrent (e.g., due to constant mounting by cage-mates) or if ovarian cysts are diagnosed an ovariectomy (spay) is recommended. Hormonal treatments are rarely indicated in rabbits.

3. Goat

In goats, pseudopregnancy is most frequently associated with a condition called hydrometra (or "cloudburst" or Missing Kid), where the uterus fills with sterile, clear mucus.

Causes

- **Failure of luteolysis:** In a normal cycle, the uterus releases PGF2 α to destroy the corpus luteum if the animal is not pregnant. In some does, this mechanism fails. The CL persists, progesterone remains high, the cervix remains tightly closed and uterine secretions accumulate causing the uterus to enlarge massively (Arokia *et al.*, 2017).
- **Early embryonic death:** An embryo may die very early in gestation, but the CL fails to regress leading to fluid accumulation.
- **Breed Predisposition:** Hydrometra is notably more common in certain breeds, such as Nanny goats.

Diagnosis

- **History:** The doe has not returned to estrus (heat) after being bred, or she has been completely silent.
- **Clinical Signs:** Progressive abdominal enlargement (often mistaken for a normal pregnancy or bloat). If the

cervix suddenly relaxes ("cloudburst"), a large volume of clear fluid may be expelled from the vulva.

- **Imaging:** Transrectal or transabdominal ultrasound will reveal a massive, fluid-filled uterus with no fetus and no placentomes.
- **Vaginal examination:** The cervix is tightly closed and may be palpable through the vaginal wall.

Treatment

- **Prostaglandin F2 α (PGF2 α):** This is the treatment of choice. Administering PGF2 α will lyse (destroy) the persistent corpus luteum. Progesterone levels will drop, the cervix will open, and the accumulated fluid will be expelled. The doe will usually return to a normal estrous cycle shortly after.
- **Ovariectomy:** In chronic, recurrent cases or if the uterus is severely compromised, surgical removal of the reproductive tract may be necessary.

4. Mare

Pseudopregnancy in horses is complex and is usually a consequence of early embryonic or fetal death. Mares are seasonal breeders and their cycles are highly dependent on the presence of a corpus luteum (CL).

Causes

- **Early embryonic loss (before Day 14):** If the embryo dies before maternal recognition of pregnancy, the mare's uterus releases PGF2 α , lysing the CL. The mare returns to estrus (heat) quickly. This is technically a shortened cycle rather than a true pseudopregnancy (Kooistra and Ginther, 1976).



- Fetal loss with endometrial cups (Days 40–120): This is the true equine pseudopregnancy. If a fetus dies *after* endometrial cups (specialized cells in the uterus) have formed, these cups begin secreting equine chorionic gonadotropin (eCG). eCG stimulates the formation of secondary (accessory) corpora lutea. Even though the mare is no longer pregnant, these secondary CLs continue to pump out progesterone, preventing the mare from returning to heat.

Diagnosis:

- Imaging: Transrectal ultrasound will show the absence of a fetus. If the loss occurred after day 40, the veterinarian may be able to visualize the endometrial cups (small, raised, pale lesions on the uterine lining).
- Hormone Assays: Blood tests will show persistently high progesterone levels over several weeks, despite the absence of a pregnancy.
- Behavior: The mare may exhibit prolonged anestrus (failure to show heat signs).

Treatment:

- If before Day 35-40 (No endometrial cups): A single dose of Prostaglandin F_{2α} (PGF_{2α}) is highly effective. It will destroy the primary CL, drop progesterone levels, and bring the mare back into estrus.
- If after Day 40 (Endometrial cups are present): Endometrial cups are entirely refractory to PGF_{2α}. Prostaglandins will not work because the cups are not luteal tissue; they are independent, hormone-secreting structures.

- The Strategy: The owner must wait for the endometrial cups to naturally slough off and degenerate, which can take anywhere from 30 to over 100 days. During this time, the mare will not cycle.
- Ablation (Rare): In highly valuable mares, a veterinarian may attempt to physically ablate (destroy) the endometrial cups via ultrasound-guided transvaginal laser or physical scraping, but this is difficult, risky, and rarely performed. Usually, the mare is simply managed and bred again once the cups naturally regress.

Conclusion

Pseudopregnancy is a complex condition driven by prolonged progesterone or prolactin secretion, requiring species-specific veterinary approaches. In dogs, it is a normal physiological event managed conservatively or with dopamine agonists. Rabbit pseudopregnancy is a brief, self-limiting response to sterile mating. In goats, it manifests as hydrometra due to failed luteolysis, effectively resolved with prostaglandins. Conversely, equine pseudopregnancy is complicated by persistent endometrial cups following fetal loss, often necessitating patience for natural regression since these structures are refractory to prostaglandin therapy. Ultimately, understanding these distinct reproductive mechanisms is essential for accurate diagnosis, effective treatment.

References

Arokia RM, Shibu S, Kurien MO, Praveen S. Case Study Therapeutic management of hydrometra in a



malabari doe. The pharma innovation, 2017;6(2):1418-1420.

Carter CL, Adams JK, Czarra JA, Coan PN. an incidence of pseudopregnancy associated with the social enrichment of rabbits (*Oryctolagus cuniculi*). J Am Assoc Lab Anim Sci. 2016 55(1):98-9.

Kooistra, LH. and Ginther, OJ. Termination of pseudopregnancy by administration of prostaglandin $f_{2\alpha}$ and termination of early pregnancy by administration of prostaglandin $F_{2\alpha}$ or Colchicine or by removal of embryo in mares. American Journal of Veterinary Research, 37(1): 35-39.

Root AL, Parkin TD, Hutchison P, Warnes C, Yam PS. Canine pseudopregnancy: an evaluation of prevalence and current treatment protocols in the UK. BMC Vet Res. 2018, 24;14(1):170.

Thangamani A, Srinivas M, Chandra Prasad B, Anusha K., Sadasiva Rao K. Canine Pseudopregnancy: A Review. Research & Reviews: Journal of Veterinary Science and Technology. 2018; 7(1): 7–11.