

Ovarian Cystic Disease in Farm Animals: A Review of Cattle, Swine and Sheep

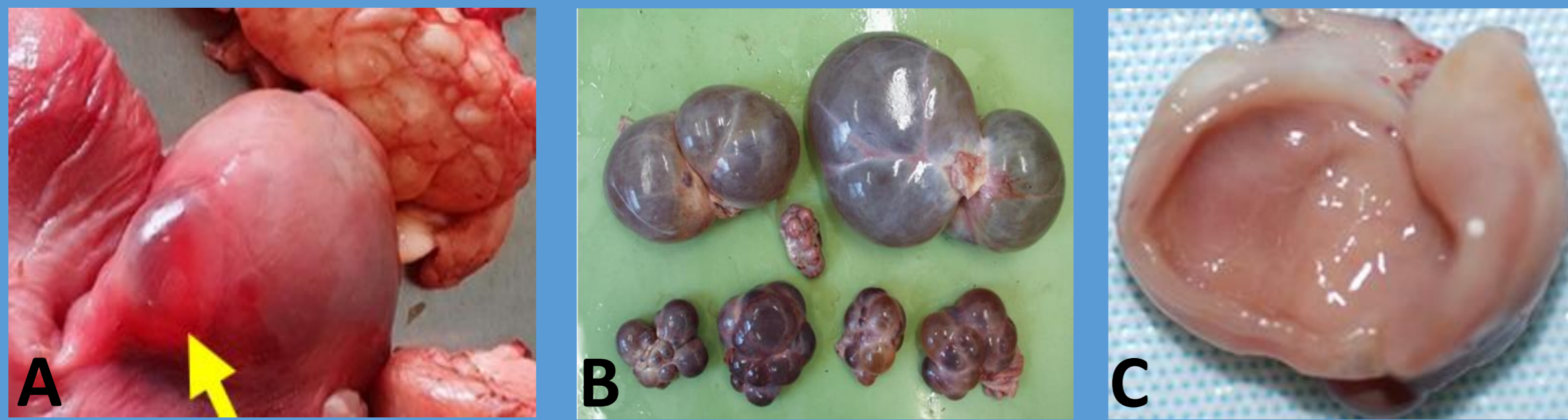
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Abstract: Ovarian cystic disease is a common reproductive disorder in farm animals, associated with infertility, irregular estrous cycles, and significant economic losses. This paper aims to provide a literature-based review of ovarian cysts in cow, sow, and sheep, with emphasis on species-specific differences in occurrence, classification, predisposing factors, etiopathogenetic mechanisms, diagnostic approaches, and therapeutic options. The incidence of the disease varies among the species included in the study, ranging from 1% to 30% in dairy cows, from 2.4% to 40% in sows, and from 0.2% to 25% in sheep. This paper analyses the conditions associated with the development of ovarian cysts, including imbalances in the hypothalamic-pituitary-gonadal axis, and the impact of stress, nutrition, and environmental factors. It also highlights species-specific differences, such as the postpartum period in cows, post-weaning stress in sows, and the role of photoperiodism in small ruminants. This approach provides an overview of ovarian cystic disease, emphasizing the importance of early diagnosis and appropriate therapeutic management in improving reproductive performance.

Introduction: Ovarian cysts are among the most common reproductive disorders in farm animals, affecting cattle, swine, and sheep through disruption of folliculogenesis and ovulation, with negative consequences on fertility and productivity. Their clinical expression varies by species: in dairy cows, ovarian cysts are a major cause of **reproductive failure and economic losses**, with follicular ovarian cysts defined as follicular structures ≥ 25 mm persisting for at least 10 days in the absence of a corpus luteum. In sows, they lead to irregular cycles and reduced conception, while in ewes, they typically appear as anovulatory follicles >10 mm, influenced by seasonality. This paper presents a literature-based **comparative analysis** of ovarian cysts in cattle, sows, and ewes, focusing on etiopathogenesis, risk factors, diagnosis, and therapeutic approaches.

Diagnosis and treatments: Diagnosis of ovarian cysts in all species is mainly based on **ultrasonography**, supported by palpation and clinical signs, while progesterone testing is less commonly used in field conditions. In cattle, diagnosis and **hormonal treatment** are well established, with GnRH, PGF2 α , and progesterone-based protocols showing good efficacy. In swine, diagnosis is more challenging and is typically performed using transabdominal ultrasonography, while treatment is less predictable, **management improvement** and culling often being preferred. In small ruminants, diagnosis is complicated by **seasonal anestrus**, and treatment relies not only on hormonal therapy but also on **management of photoperiod** and the "ram effect" to restore normal reproductive activity.



A-Follicular ovarian cyst in a cow; B-Normal and cystic ovaries in a sow; C-Opened luteinized follicular cyst (2 cm); thick wall, no ovulation papilla.

Incidence and classification of ovarian cysts: Ovarian cysts are common reproductive disorders in farm animals, with incidences ranging from **2.7–30%** in cattle, **2.4–40%** in swine, and **0.01–7.84%** in ewes. In dairy cows, especially high-producing Holsteins, cysts are a major cause of reproductive failure and are classified as **follicular or luteal**. In swine, cysts are typically **multiple and dynamic**, being associated with irregular estrus and anestrus. In ewes, ovarian cysts are less frequent and often linked to seasonal reproductive activity, usually described as **luteinized follicular cysts**. In all species, ovarian cysts negatively affect fertility and productivity.

Etiopathogenesis and risk factors: In all species, ovarian cyst development is associated with dysfunction of the **hypothalamic-pituitary-ovarian (HPO) axis**, leading to altered follicular development and ovulation. In cattle, cysts are strongly associated with **postpartum negative energy balance, high milk production, metabolic and uterine diseases, heat stress, and impaired LH secretion**. In ewes, ovarian activity is seasonally regulated by **photoperiod and melatonin**, with cyst formation linked to anovulation, reduced LH secretion, and environmental stress. In sows, follicular development is continuous and multiple ovulations are physiological; cysts occur mainly **post-weaning** and are closely related to **management stress**, hormonal treatments, mycotoxins, nutritional deficiencies, and seasonal heat stress.

Characteristic	Cow	Ewe	Sow
Follicular development	Follicular waves with clear dominance	Follicular waves without clear dominance	Continuous development (no waves)
Number of ovulatory follicles	Usually single	Single or multiple (prolific breeds)	Multiple (15–25)
Ovulatory follicle size	~15–20 mm	~5–7 mm	~6–12 mm
Incidence of ovarian cysts	Moderate to high	Variable	Low to variable
Type of cysts	Follicular or Luteal	Anovulatory follicles	Frequently multiple
Clinical importance	High	Lower	Variable
Treatment approach	Standardized (GnRH, PGF2 α)	Limited	Low efficiency
Practical management	Active treatment	Management and observation	Prevention / culling

Conclusions: Ovarian cysts are complex, multifactorial disorders with significant **species-specific nuances**. While sharing a common endocrine origin in the hypothalamic-pituitary-gonadal axis, variations in ovarian physiology dictate their clinical impact: cattle exhibit clear follicular dominance which allows for **standardised hormonal treatments**, ewes show lower clinical relevance due to **seasonality and spontaneous resolution**; and sows present inconsistent therapeutic responses due to **continuous follicular development**. These differences emphasise the need for species-specific diagnostic and therapeutic approaches, with the primary objective being the restoration of reproductive function rather than the elimination of ovarian lesions. Further research is needed, particularly in small ruminants and swine, to improve understanding and optimize management strategies.

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