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CASE REPORT

Companion or pet animals

Ovarian remnant syndrome in a rabbit (*Oryctolagus cuniculus*): Diagnosis and medical management

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Abstract

Ovarian remnant syndrome results from the persistence of functional ovarian tissue after incomplete ovariectomy. While documented in dogs, cats and ferrets, it has not been previously reported in rabbits. This case describes a 1-year-old, spayed, female lop rabbit with persistent sexual behaviour. Physical exam and bloodwork were unremarkable. Abdominal ultrasound showed bilateral, hypoechoic, vascularised structures caudal to the kidneys, consistent with ovarian tissue. Serum estradiol was elevated, indicating active ovarian tissue. As surgery was declined, a 4.7 mg deslorelin acetate implant was placed. One month later, sexual behaviour had resolved without adverse effects. This case suggests that ovarian remnant syndrome should be considered in spayed rabbits showing oestrus signs and that deslorelin may offer a practical temporary alternative to surgery.

BACKGROUND

Ovarian remnant syndrome (ORS) is characterised by the presence of residual functional ovarian tissue following an incomplete ovariectomy or due to revascularised ectopic ovarian fragments. While well-described in other domestic species such as dogs, cats and ferrets,[1,2] it has not yet been reported in rabbits.

Diagnosis of ORS can be challenging. Diagnostic suspicion of ORS may arise from clinical signs such as mounting behaviour and lordosis, which can mimic those typically seen in entire females. Diagnostic imaging, particularly abdominal ultrasonography,[3] in combination with hormonal assays,[4,5] plays a crucial role in identifying functional residual ovarian tissue.

In cases where surgery is not an option, medical alternatives such as deslorelin implants have been proposed, although supporting evidence in rabbits remains limited.[6,7] This report describes a case of ORS in a spayed female rabbit, successfully managed with deslorelin acetate.

CASE PRESENTATION

A 1-year-old, spayed, female lop rabbit (*Oryctolagus cuniculus*) was presented due to persistent sexual behaviour, including frequent mounting and lordosis. The rabbit had reportedly undergone surgical sterilisation at another veterinary facility. The persistence of this behaviour raised clinical suspicion for ORS. The rabbit had a diet comprising ad libitum hay, varied greens and a few good-quality pellets. The rabbit weighed 2 kg, with a body condition score of 3/5. Physical examination was normal.

The external genitalia appeared normal, with no signs of swelling, erythema or discharge.

INVESTIGATIONS

Complete blood count and serum biochemistry were within reference ranges.[8] Abdominal ultrasonography identified bilateral, oval, hypoechoic structures located approximately 2.5 cm caudal to the renal poles (Figure 1). These structures demonstrated high vascularity on colour Doppler imaging, consistent with functional ovarian tissue (Figure 2). The right ovary measured 4.4 × 14.6 mm, and the left ovary 5.5 × 10.5 mm. No uterine horns or cervix were visualised. Both adrenal glands were identified and appeared within normal ultrasonographic limits, with the right adrenal measuring 3.6 × 9.1 mm and the left 2.9 × 7 mm.[9] To support the diagnosis, serum estradiol levels were measured, revealing a concentration of 20.88 pg/mL. This value significantly exceeded the reference interval for spayed female rabbits (<8 pg/mL), confirming hormonally active ovarian tissue.[7]

DIFFERENTIAL DIAGNOSIS

Based on clinical presentation, imaging and hormonal profile, the main differentials included ORS, ovarian neoplasia and

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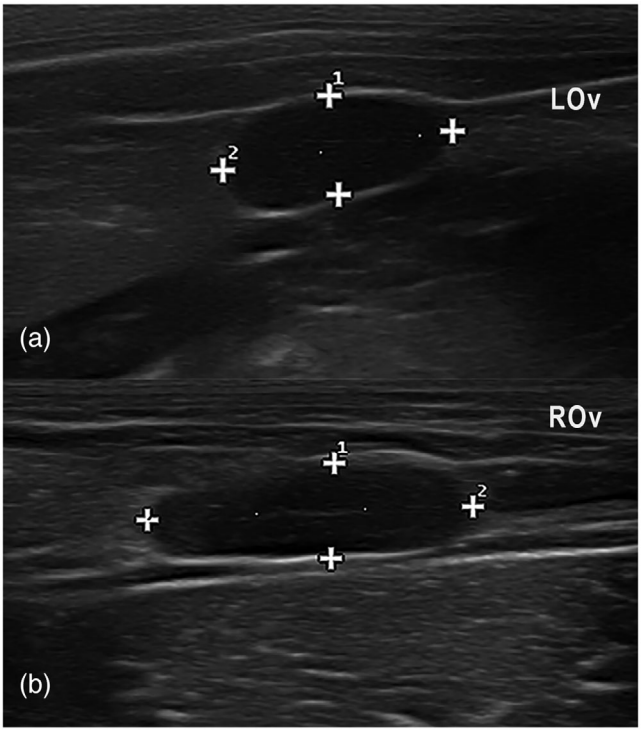

FIGURE 1 Sagittal image of the left (a) and right ovary (b). Caudal and slightly lateral to the caudal poles of both kidneys, an oval, smoothly marginated, hypoechoic structure in the abdominal fat can be observed (or identified as ovaries). LOv: left ovary; ROv: right ovary.

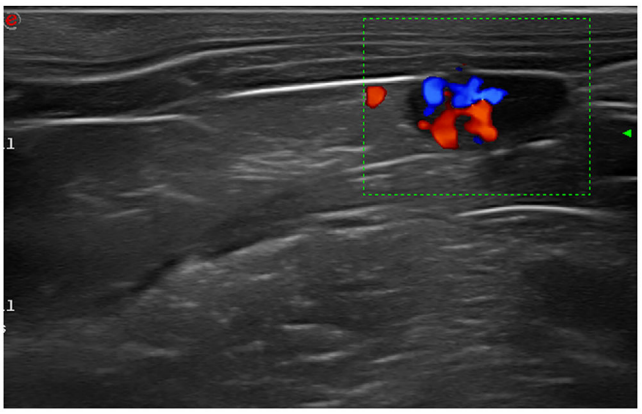

FIGURE 2 Colour Doppler of the left ovary shows normal vascularisation.

adrenal gland disease. Given the elevated estradiol concentration and the ultrasonographic finding of bilateral vascularised structures in the typical ovarian region, ORS was considered the most likely diagnosis.

TREATMENT

Although exploratory laparotomy with surgical excision of the remnant was offered as definitive treatment, the owners declined. As an alternative, a 4.7 mg deslorelin acetate implant (Suprelorin, Virbac) was administered subcutaneously.

At the 1-month follow-up, the owners reported a marked reduction in sexual behaviours. No adverse effects were observed following implant placement.

LEARNING POINTS/TAKE-HOME MESSAGES

- Ovarian remnant should be considered in spayed female rabbits exhibiting persistent or recurrent sexual behaviour.
- Ultrasonography combined with hormone assays (particularly serum estradiol) is a valuable diagnostic approach for detecting residual ovarian tissue.
- Deslorelin acetate implants can provide effective, temporary suppression of ovarian activity when surgery is declined or contraindicated.
- This case represents the first documented report of ovarian remnant syndrome in a rabbit, highlighting the need for further studies on its prevalence, diagnosis and medical management.

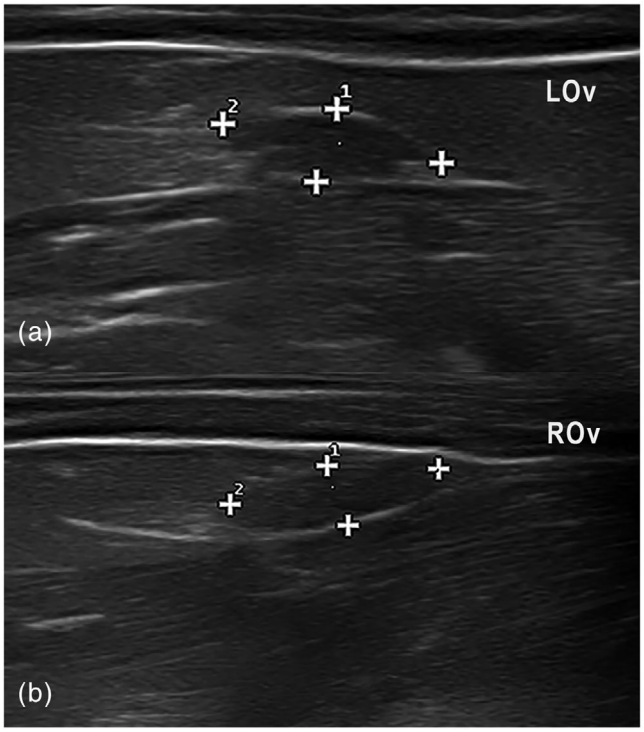

FIGURE 3 Sagittal image of the left (A) and right ovary (B) 1 year and 3 months later. Both ovaries can be identified caudal to both kidneys and show a mild reduction in their size (1 mm less) compared with the first ultrasound. LOv: left ovary; ROv: right ovary.

OUTCOME AND FOLLOW-UP

The therapeutic effect of the implant persisted for approximately 13 months, after which the rabbit again exhibited sexual behaviour, including urine spraying and cage-mate mounting. A repeat abdominal ultrasound was performed 15 months after the initial scan, revealing findings similar to those of the previous examination. Specifically, bilateral, oval, hypoechoic structures were visualised approximately 3 cm caudal to the pole of both kidneys (Figure 3). Compared to the initial ultrasound, both ovaries appeared slightly reduced in size (approximately 1 mm smaller), while maintaining normal vascularisation on Doppler evaluation (Figure 4). The right

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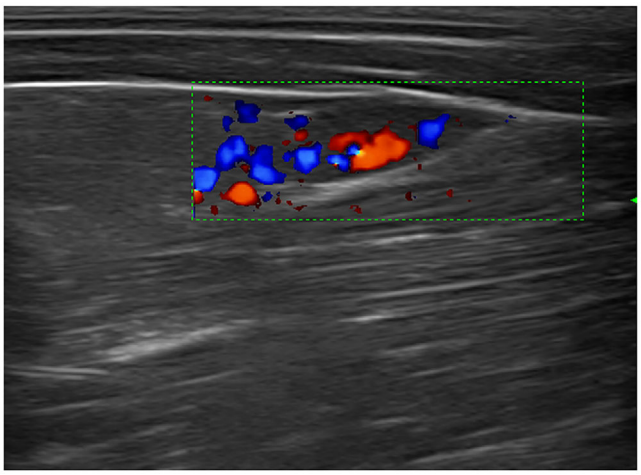

FIGURE 4 Colour Doppler of the right ovary shows normal vascularisation.

ovary measured 3.0 × 10.1 mm and the left 3.1 × 9.2 mm. The same treatment was elected, and 1 month after administration of a second deslorelin implant, the patient has not exhibited any signs consistent with oestrus. At the time of writing this report, the absence of clinical signs has persisted for approximately 8 months.

DISCUSSION

This case illustrates ORS in rabbits, a condition not previously reported in this species. Persistent sexual behaviour following spaying should prompt consideration of ORS, especially when supported by ultrasonographic evidence of vascularised structures in the typical ovarian region and elevated estradiol concentrations.

Although surgical excision and histopathological confirmation remain the gold standard for diagnosis and treatment,[1] client preference, surgical risk or financial limitations may require alternative strategies. Deslorelin implants, a long-acting GnRH agonist, while not curative, offer a valuable temporary solution by downregulating GnRH receptors, thereby suppressing the hypothalamic–pituitary–gonadal axis.[10]

At the time of writing this paper, a literature search of databases (PubMed, Google Scholar, CAB Abstracts) using the keywords 'rabbit', 'ovarian remnant', 'ORS' and 'deslorelin' did not reveal any reports.

In the case reported here, the mild decrease in ovarian size is likely attributable to the pharmacological effect of deslorelin acetate, which temporarily suppresses ovarian activity and was effective in controlling clinical signs for over a year following each administration, making it a viable interim option for managing ORS when surgery is declined or deferred.

The role of abdominal ultrasonography remains essential in association with hormone levels; however, the similarity between ovarian remnant tissue and other soft tissue lesions, such as suture granuloma, means that imaging alone is not definitively diagnostic, and histopathology is required for a definitive diagnosis.[1,11]

Furthermore, the response to deslorelin therapy suggests a functional endocrine axis responsive to GnRH modulation, providing indirect confirmation of ovarian activity. This observation may lead to further investigation of medical management strategies for ORS in rabbits, especially considering the positive long-term outcome observed in this report. The results of this case suggest the use of a 4.7 mg deslorelin acetate implant (Suprelorin, Virbac) once a year to suppress reproductive activity.

Further studies are needed to evaluate the prevalence of ORS in rabbits, refine diagnostic criteria, the long-term outcomes and optimal protocols for medical management of this syndrome in non-surgical cases.

AUTHOR CONTRIBUTIONS

Glenda Murciano managed the clinical case and wrote the article. **Yvonne Espada** performed the transabdominal ultrasound; provided the images and reviewed the article. **Jaume Martorell** managed and supervised the case; reviewed the article.

CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

ETHICS STATEMENT

The authors confirm that the ethical policies of the journal have been adhered to.

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