SHORT COMMUNICATION **(Open Access)**

Bilateral uterine horn hypoplasia associated with severe ovarian hypoplasia or suspected aplasia in a seven-month-old domestic shorthair cat

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Abstract

Congenital abnormalities of the feline reproductive tract are uncommon and may be detected incidentally during elective ovariohysterectomy. This short communication describes marked bilateral reproductive tract underdevelopment in a seven-month-old domestic shorthair female cat presented for routine sterilization. The cat weighed 1.58 kg, was noticeably smaller and less physically developed than an age-matched cat from the same household, and the owner had not observed signs of oestrus. During ventral midline ovariohysterectomy, both uterine horns were markedly thin, fragile and approximately symmetrically hypoplastic. The gonadal structures at the expected ovarian locations were also markedly underdeveloped, consistent macroscopically with severe bilateral ovarian hypoplasia or suspected aplasia. Gross comparison with the reproductive tract of an age-matched seven-month-old female cat undergoing ovariohysterectomy on the same day demonstrated a striking difference in uterine and ovarian development. Histopathological and cytogenetic or molecular genetic examinations were not performed; therefore, complete ovarian aplasia and a specific genetic aetiology could not be confirmed. The case highlights the value of careful inspection of the entire reproductive tract during routine ovariohysterectomy and cautious interpretation of developmental abnormalities when confirmatory pathology and genetic testing are unavailable.

Keywords: cat; congenital anomaly; disorder of sexual development; ovarian hypoplasia; ovariohysterectomy; uterine horn hypoplasia

1. Introduction

Congenital and developmental abnormalities of the female reproductive tract are uncommon in cats and may involve the ovaries, uterine tubes, uterus, cervix or vagina. Contemporary terminology considers congenital or developmental abnormalities affecting the reproductive tract within the spectrum of disorders of sexual development (DSDs), although definitive classification may require determination of sex chromosomes, gonadal type and relevant developmental genes [3]. In a large study of 53,258 cats undergoing elective ovariohysterectomy, suspected congenital uterine anomalies were identified in only 0.09% of animals; uterine horn hypoplasia was recorded in a single cat [4]. Published feline reports more often describe unilateral or segmental Müllerian abnormalities, sometimes accompanied by ipsilateral renal agenesis [2,1]. The present report documents a young cat with approximately symmetrical bilateral uterine horn hypoplasia together with severe bilateral ovarian underdevelopment detected incidentally during elective ovariohysterectomy.

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2. Material and Methods

Case description

A seven-month-old female domestic shorthair cat was presented for routine elective sterilization. The cat weighed 1.58 kg and was noticeably smaller and less physically developed than another female cat of the same age living in the same household. The owner reported that no signs of oestrus had been observed. Although the cat was clearly small for age, its appearance was not considered typical of disproportionate dwarfism.

Routine ovariohysterectomy was performed through a ventral midline incision. On exteriorization of the reproductive tract, both uterine horns were markedly reduced in diameter, thin and fragile in appearance (Figures 1 and 2). The abnormality was bilateral and approximately symmetrical. Examination of the cranial ends of both uterine horns revealed extremely small gonadal structures at the expected anatomical locations of the ovaries. On gross inspection, these findings were considered consistent with severe bilateral ovarian hypoplasia or possible aplasia (Figures 3–6). Because histopathological examination was not performed, complete ovarian aplasia could not be confirmed.

To facilitate interpretation of the findings and their explanation to the owner, a gross anatomical comparison was made between the reproductive tract of the affected cat and that of another seven-month-old female cat undergoing ovariohysterectomy on the same day (Figures 7–8). The comparison cat had normal somatic development and body condition and showed substantially larger uterine horns and readily identifiable ovaries. Photographs of the two cats living in the same household also documented the marked difference in body size and physical development (Figures 9 and 10).

3. Results and Discussion

The findings in this cat are consistent with a congenital developmental abnormality involving multiple components of the female reproductive tract. The approximately symmetrical bilateral involvement is noteworthy because much of the published feline literature concerns unilateral uterine horn agenesis or segmental aplasia. McIntyre et al [4] identified suspected congenital uterine anomalies in 49 of 53,258 cats (0.09%); uterine horn hypoplasia was identified in only one cat, while both ovaries and both uterine tubes were present in most animals with uterine anomalies. Other feline case reports describe segmental uterine aplasia associated with renal agenesis, emphasizing the developmental relationship among components of the urogenital system [2,1].

Foster [3] emphasizes that gonadal hypoplasia and other developmental abnormalities in cats may form part of the spectrum of DSDs and that full characterization requires identification of gonadal tissue and, where indicated, chromosome and molecular genetic assessment. In the present cat, the structures at the expected ovarian locations were markedly underdeveloped. Gross morphology alone, however, cannot reliably distinguish extreme ovarian hypoplasia from complete aplasia or gonadal dysgenesis. For this reason, the description “severe bilateral ovarian hypoplasia or suspected aplasia” is preferred to a definitive diagnosis of bilateral ovarian aplasia.

The absence of observed oestrus by seven months of age is compatible with reduced ovarian activity but is not diagnostic, because the timing of puberty in cats is variable. Similarly, the affected cat’s reduced body size and physical development are clinically interesting but cannot be causally attributed to the reproductive abnormality. A chromosomal or other genetic basis is biologically plausible for some developmental reproductive disorders, but no such aetiology can be assigned in this case without cytogenetic or molecular evidence.

The principal limitation of this report is the absence of histopathological examination of the uterine and gonadal tissues. Histology would have helped confirm uterine hypoplasia and establish whether the rudimentary gonadal structures contained ovarian tissue. Karyotyping and targeted molecular genetic investigation would also have permitted more precise classification of a possible DSD. These limitations prevent definitive conclusions regarding a chromosomal or genetic cause.

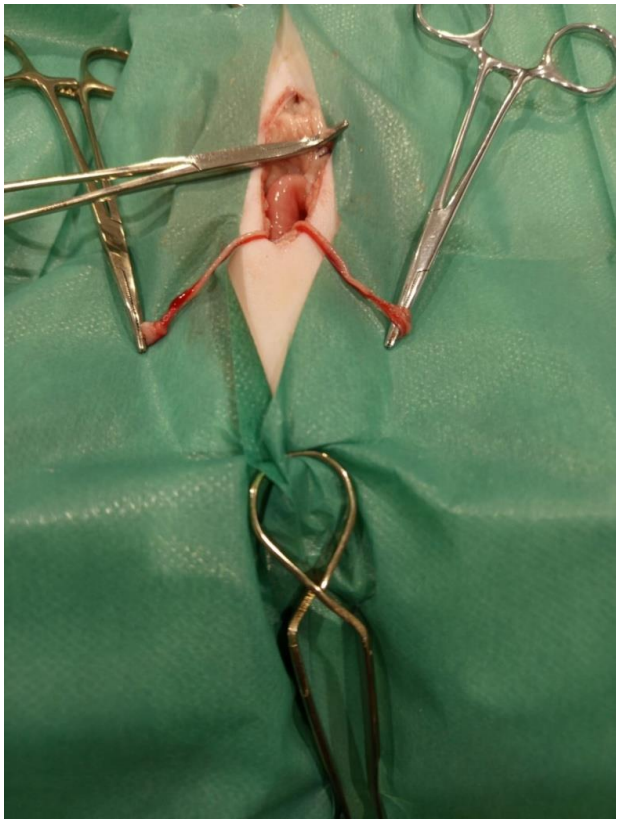


Figure 1. Uterine horn hypoplasia observed during ovariohysterectomy



Figure 2. Hypoplastic uterine horn with a markedly reduced diameter and fragile appearance.

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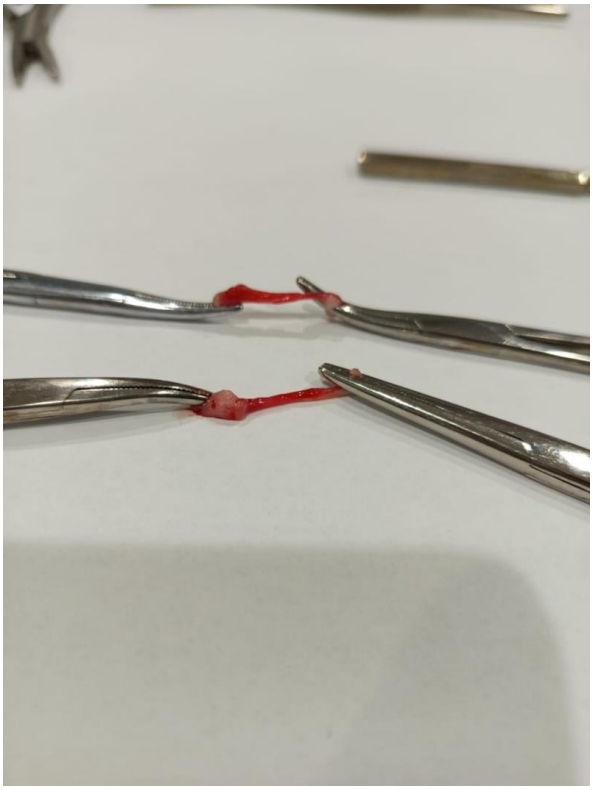


Figure 3. Gross view of both hypoplastic uterine horns held with forceps. The uterine horn hypoplasia was associated with bilateral ovarian hypoplasia or suspected aplasia.



Figure 4. Both hypoplastic uterine horns held with forceps and photographed from a different angle.

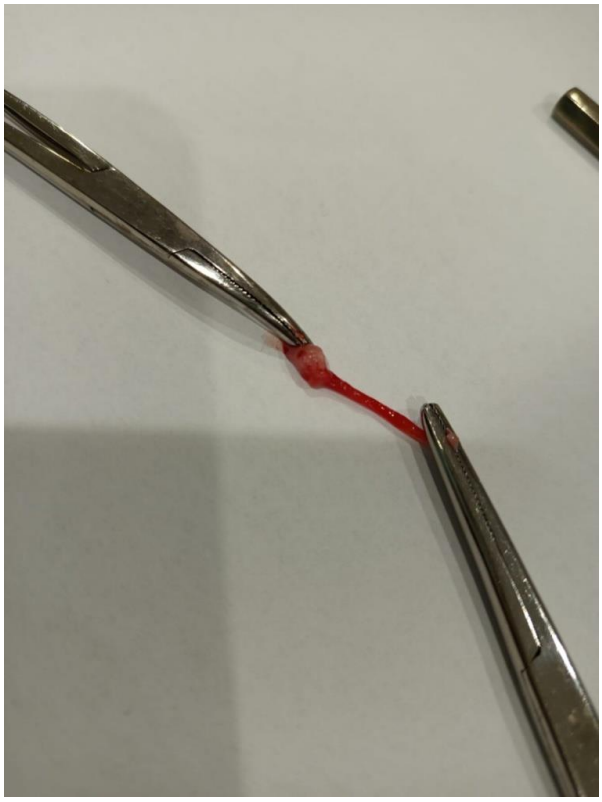


Figure 5. Close-up of one hypoplastic uterine horn held between two forceps.



Figure 6. Both hypoplastic uterine horns placed side by side for comparison.

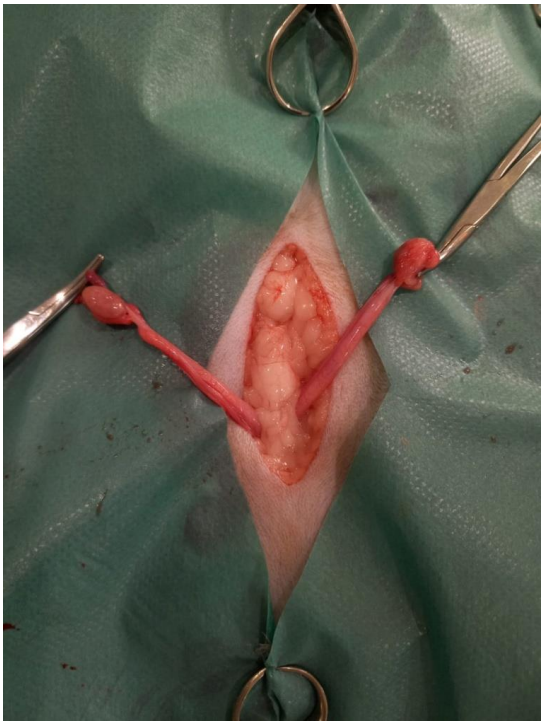


Figure 7. Uterine horns and ovaries of an age-matched seven-month-old female cat with normal somatic development and body condition, undergoing ovariohysterectomy on the same day as the affected cat.

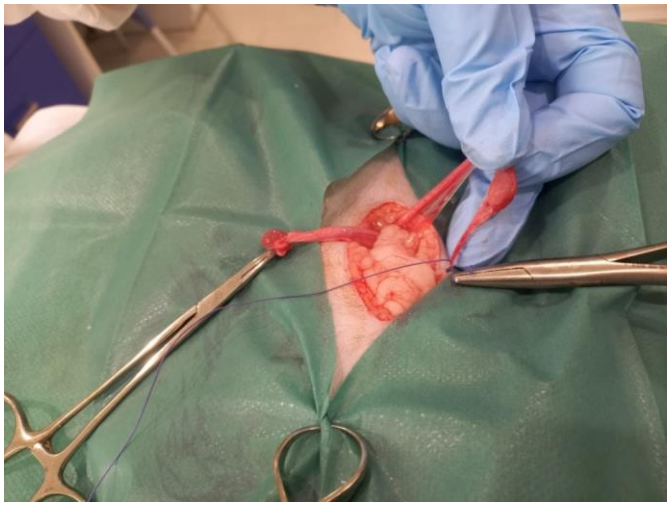


Figure 8. Uterine horns and ovaries of the same age-matched seven-month-old female cat, showing normal reproductive tract development for gross anatomical comparison with the affected cat.



Figure 9. Difference in body size and physical development between two age-matched, seven-month-old female cats living in the same household. The predominantly white affected cat is shown on the right.



Figure 10. A second view of the two age-matched, seven-month-old female cats living in the same household. The predominantly white affected cat, shown on the right, had a smaller body size and lower body condition and was subsequently found to have markedly underdeveloped reproductive organs.

4. Conclusions

This case documents marked, approximately symmetrical bilateral uterine horn hypoplasia associated with severe bilateral ovarian hypoplasia or suspected aplasia in a seven-month-old domestic shorthair cat. The abnormalities were detected incidentally during routine ovariohysterectomy and occurred in a cat with noticeably reduced somatic development compared with an age-matched cat from the same household, however, no causal relationship between the somatic and reproductive findings can be established from this case. Although the gross findings strongly support a congenital developmental disorder, histopathology and cytogenetic or molecular genetic testing would be required for definitive characterization. When similar abnormalities are encountered, owners should be informed of their probable congenital nature, the limitations of a diagnosis based solely on gross morphology, and the potential value of further diagnostic investigation and clinical follow-up.

5. Acknowledgements

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6. References

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