

PREVALENCE OF MAMMARY AND GENITAL DISORDERS IN DOGS FROM TWO EUROPEAN CLINICS

CERCETĂRI PRIVIND PREVALENȚA PRINCIPALELOR AFECȚIUNI MAMARE ȘI GENITALE LA CANIDE ÎN DOUĂ CLINICI EUROPENE

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ABSTRACT | REZUMAT

This study aimed to assess prevalence of the reproductive pathologies in dogs, one of the most commonly encountered pets in veterinary practice. The retrospective study was carried out by collecting and analysing the data recorded between January 2021 and December 2022 in two veterinary clinics that are specialised in the treatment of reproductive pathologies: the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, from the Faculty of Veterinary Medicine (University of Life Sciences, Iasi, Romania) and the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, from the University Veterinary Hospital (University of Naples "Federico II", Naples, Italy). The study included a total of 240 canids in Iasi and 212 canids in Naples. The highest prevalence of reproductive pathologies in Iasi was represented by pyometra (32.88%) in bitches and balanoposthitis (25%) in dogs, and in Naples, pseudopregnancy (29.58%) in bitches and cryptorchidism (32.73%) in dogs. Regarding mammary gland diseases, mammary gland tumours had the highest prevalence in Iasi (78.94%), while in Naples pseudopregnancy (52.5%) was the most prevalent disorder, followed by mammary gland tumours (40%). Our results highlight the main reproductive pathologies and point out the increased prevalence of mammary tumours in canids.

Keywords: prevalence, canids, genital diseases, breast diseases

Scopul acestui studiu retrospectiv a fost acela de a determina prevalența patologiilor aparatului reproducător la canide, una dintre cele mai întâlnite specii în practica medicală a animalelor de companie. Studiul retrospectiv a fost realizat prin colectarea și analizarea datelor înregistrate în perioada ianuarie 2021 – decembrie 2022 la două clinici specializate în tratarea patologiilor aparatului genital: Clinica de Obstetrică, Ginecologie și Andrologie Veterinară din cadrul Facultății de Medicină Veterinară (Universitatea pentru Științele Vieții „Ion Ionescu de la Brad” Iași, România), și Clinica de Obstetrică, Ginecologie și Andrologie Veterinară din cadrul Spitalului Veterinar Universitar Didactic (Universitatea de Studii Federico II, Napoli, Italia). Studiul a inclus un total de 240 canide în Iași și 212 canide în Napoli. Cele mai mari prevalențe ale patologiilor reproductive în Iași au fost reprezentate de piometru (32,88%) la cățea și balanopostită (25%) la câine, iar în Napoli lactație falsă (29,58%) la cățea și criptorhidie (32,73%) la câine. În ceea ce privește afecțiunile glandei mamare, tumorile glandei mamare au înregistrat cea mai mare prevalență în Iași (78,94%), în timp ce în Napoli cazurile de lactație falsă au avut cea mai mare prevalență (52,5%), urmate imediat de tumorile glandei mamare (40%). Rezultatele obținute evidențiază principalele afecțiuni reproductive și atenționează asupra prevalenței universal crescute a tumorilor mamare la canide.

Cuvinte cheie: prevalență, canide, afecțiuni genitale, afecțiuni mamare

Canids are one of the most common species in small animal practice. In Europe in 2022, the canine population registered as pets exceeded 104 million (2). However, information on the prevalence of reproductive disorders is scarce. This pathological category is extensive, including both genital and mammary gland conditions. The second one is less frequent but has increased importance due to the fact that it can

affect both individuals: the sick female and the newborns (11). The main diseases of the female genital system are represented by pyometra, cystic endometrial hyperplasia, mucometra, hydrometra, post-partum metritis, and uterine neoplasms (12). Regarding the mammary gland, the main pathologies encountered are: mammary gland tumours, pseudopregnancy, mastitis, galactostasis, and agalaxia (5, 6, 10, 13).

Urbanisation and the increased desire for pets contributed to a higher frequency of reproductive conditions in veterinary medical practice; therefore, studies in this area are necessary.

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MATERIALS AND METHODS

In order to establish the prevalence of the main reproductive disorders in canines, we collected data from two clinics: the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, from the Faculty of Veterinary Medicine, University of Life Sciences, Iasi, Romania and the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, from the University Veterinary Hospital, University of Naples "Federico II", Naples, Italy. All the clinical information between January 2021 and December 2022 was collected and analysed.

The prevalence of reproductive pathologies in this species was calculated, considering also the seasonal incidence: spring (March, April, May), summer (June, July, August), autumn (September, October, November), and winter (December, January, and February).

For a more comprehensive analysis of the situation in the clinic, the total number of females has been systematised into 4 main categories according to the reason for consultation: mammary gland disorders (mammary gland tumours, pseudopregnancy, mastitis, and mammary hyperplasia), gynaecological disorders (vaginitis, vaginal hyperplasia, vaginal/uterine prolapse, endometritis/metritis, vaginal/uterine/ovarian neoplasia, ovarian cysts, and ROS), parturition therapies and pathologies (dystocia, caesarean section, and foetal membrane retention), and other non-pathological cases (OVH, pregnancy diagnosis, and genitally healthy animals). The same principle was followed in males, whose pathologies were classified into 5 main categories: penile and prepuce disorders (lesions, balanoposthitis, paraphimosis, and Sticker sarcoma), scrotal disorders (lesions and scrotal der-

Table 1
Gynaecological and andrological cases recorded in dogs from 2 veterinary clinics

| | | Iasi | | Napoli | |
|---|-------------------------------------|------------|-------------|------------|-------------|
| | | NO | MPC % | NO | MPC % |
| Mammary gland pathologies | Mammary tumours | 15 | | 16 | |
| | Pseudopregnancy | 2 | 10% | 21 | 30% |
| | Mastitis | 2 | | 1 | |
| | Mammary gland hyperplasia | | | 2 | |
| Gynaecological pathologies | Endometritis | | | 1 | |
| | Pyometra | 24 | | 19 | |
| | Vulvo-vaginal lesion | 1 | | | |
| | GT neoplasia | 1 | | 5 | |
| | Clitoral hyperplasia | 1 | | 1 | |
| | Vaginitis | 3 | 21% | | 22% |
| | Vaginal hyperplasia | 5 | | | |
| | Vaginal and uterine ptosis/prolapse | 5 | | | |
| | Ovarian cysts | | | 1 | |
| | ROS | | | 1 | |
| PTPP | Hermaphroditism | | | 1 | |
| | Dystocia/C-section | 12 | | 2 | 2% |
| Non-pathological | Foetal membrane retention | 2 | 8% | | |
| | Ovariohysterectomy | 82 | | 14 | |
| | Consultation - Healthy | 21 | 61% | 40 | 46% |
| | Artificial Insemination | 2 | | 4 | |
| | Pregnancy diagnosis | 11 | | 3 | |
| TOTAL FEMALE | | 189 | 100% | 132 | 100% |
| Pathologies of the penis and prepuce | Prepuce/penile lesions | 1 | | 1 | |
| | Balanoposthitis | 4 | 16% | 1 | 4% |
| | Paraphimosis | 2 | | 1 | |
| | Sticker sarcoma | 1 | | | |
| Pathologies of the scrotum | Dermatitis/Scrotal lesion | 1 | 2% | 3 | 4% |
| Testicular pathologies | Orchitis | 2 | | 2 | |
| | Epididymitis | | | 2 | |
| | Cryptorchidism | 3 | 10% | 18 | 39% |
| | Testicular neoplasia | | | 9 | |
| Pathologies of the adnexal glands | Prostatic hypertrophy | 1 | 4% | 11 | 22% |
| | Prostatic cysts | 1 | | 7 | |
| Non-pathological | Orchiectomy | 30 | | 1 | |
| | Consultation - Healthy | 4 | 68% | 12 | 31% |
| | Andrological consultation | 1 | | 12 | |
| TOTAL MALE | | 51 | 100% | 80 | 100% |
| TOTAL | | 240 | 100% | 212 | 100% |

Legend: PTPP: pathologies and therapies in parturition and puerperium; GT: genital tract; MPC: main pathological categories; ROS: remnant ovarian syndrome

matitis), testicular and epididymal pathologies (epididymitis, orchitis, testicular neoplasia, and cryptorchidism), adnexal gland pathologies (prostatic hypertrophy and prostatic cystic fibrosis), and non-pathological cases (orchietomies, andrological consultation, and clinically healthy). In females, a large percentage of the consulted animals included in the "Consultation - Healthy" category were actually in different phases of the heat cycle or came for evaluation prior to the ovariohysterectomy intervention. Another category included here is represented by patients who did not have pathologies of the reproductive system and were redirected to other clinics for further investigations.

RESULTS AND DISCUSSIONS

Prevalence of mammary and genital disorders in dogs from the Faculty of Veterinary Medicine, University of Life Sciences, Iasi

From January 2021 to December 15, 2022, 240 canids (189 females and 51 males) were studied in the Reproduction Clinic in Iasi.

Out of the total cases registered in bitches, a majority percentage (61%) was represented by the "non-pathological" category. From the category of pathological conditions, the most frequent were gynaecological pathologies (21%), mammary gland pathologies (10%), followed by pathologies and therapies in parturition and puerperium (8%). Similar to the values obtained in females, a majority percentage (68%) of the registered male dogs required convenience inter-

ventions. From the pathological category, the most common were penile and prepuce pathologies (16%), followed by testicular pathologies (10%) (Table 1).

Figure 1 illustrates the prevalence of all pathologies encountered in bitches from the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Iasi, Romania between January 2021 and December 2022. Excluding the majority number given by animals that underwent convenience procedures, the top 3 conditions in terms of frequency were represented by: pyometra (12.7%), mammary tumours (7.94%), and dystocia/caesarean section (6.35%). Additionally, the least common conditions were vulvo-vaginal lesions, genital tract neoplasia, and clitoral hyperplasia, all of which accounted for 0.53%.

In Figure 2, it can be seen that, similar to females, a high percentage of the dogs registered (58.52%) had undergone convenience spaying.

The main reproductive pathologies encountered in males were balanoposthitis (7.84%) and cryptorchidism (5.88%), while prostatic cysts, prostatic hypertrophy, and Sticker tumours were less frequently diagnosed (1.96%).

In terms of seasonal incidence in canids, both female and male, the graph tends to follow the same trajectory.

The most cases were recorded in the spring, with 86 females and 20 males, while the winter season had the fewest cases. In winter, there were about 4 and 3 times fewer cases of bitches and dogs, respectively, than in spring (Fig. 3).

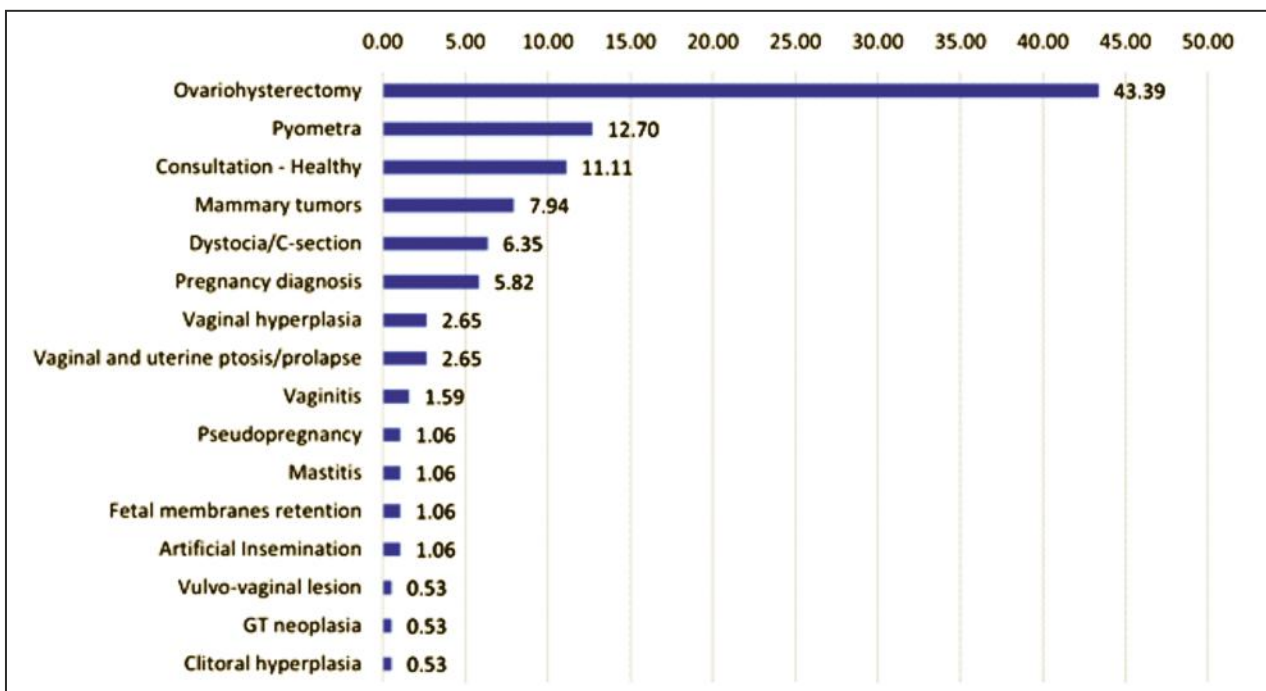


Fig. 1. Prevalence of reproductive disorders in bitches. Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Iasi, Romania

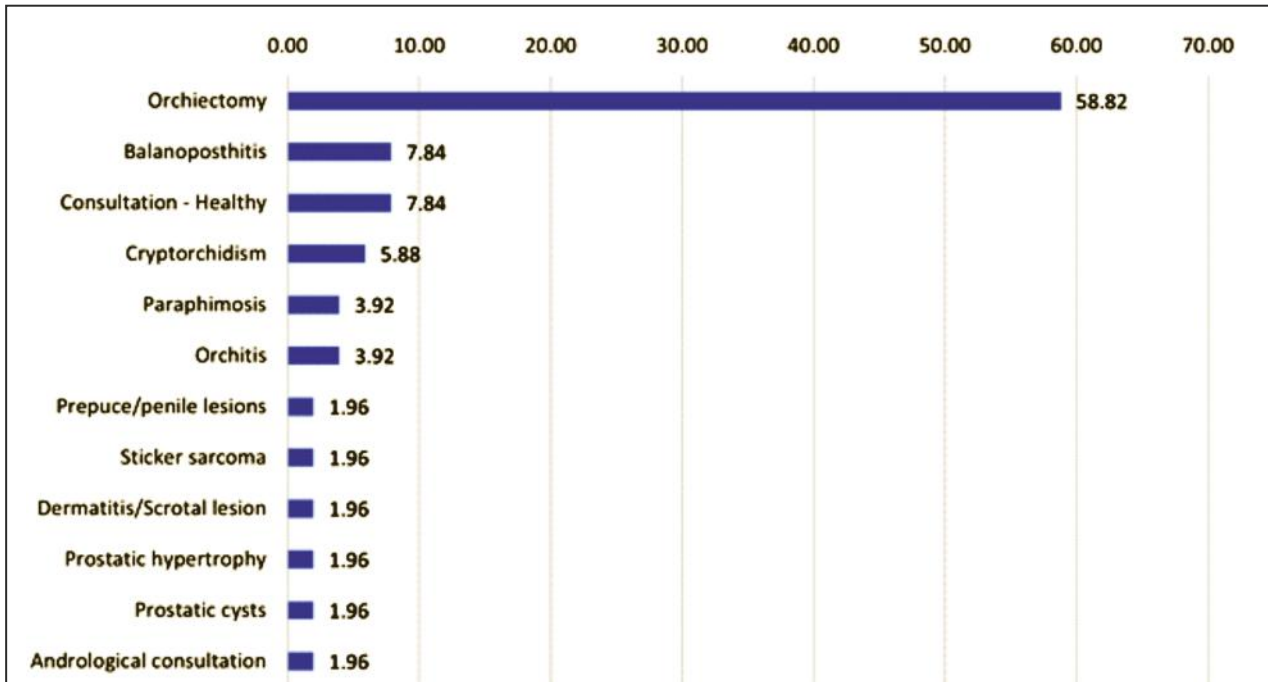


Fig. 2. Prevalence of reproductive disorders in dogs. Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Iasi, Romania

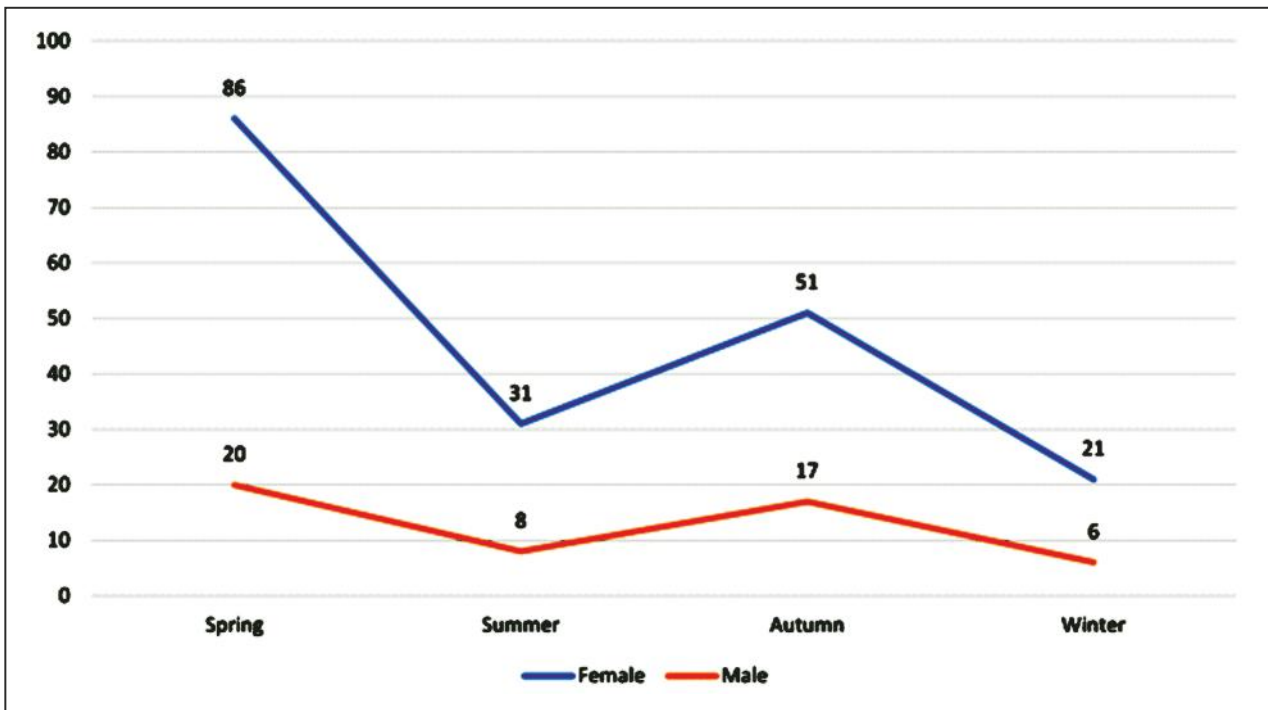


Fig. 3. Seasonal incidence of genital pathologies in canids. Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Iasi, Romania

Prevalence of mammary and genital disorders in dogs from the Faculty of Veterinary Medicine, University of Naples "Federico II", Italy

From January 2021 to December 15, 2022, 212 canids (132 females and 80 males) were studied in the Reproduction Clinic in Naples, Italy.

Of the total cases recorded in bitches, the highest percentage (46%) was represented by the "non-pathological" category. Of the pathological conditions, the most frequent were mammary gland pathologies (30%) and gynaecological pathologies (22%), followed by pathologies and therapies in parturition and puerperium

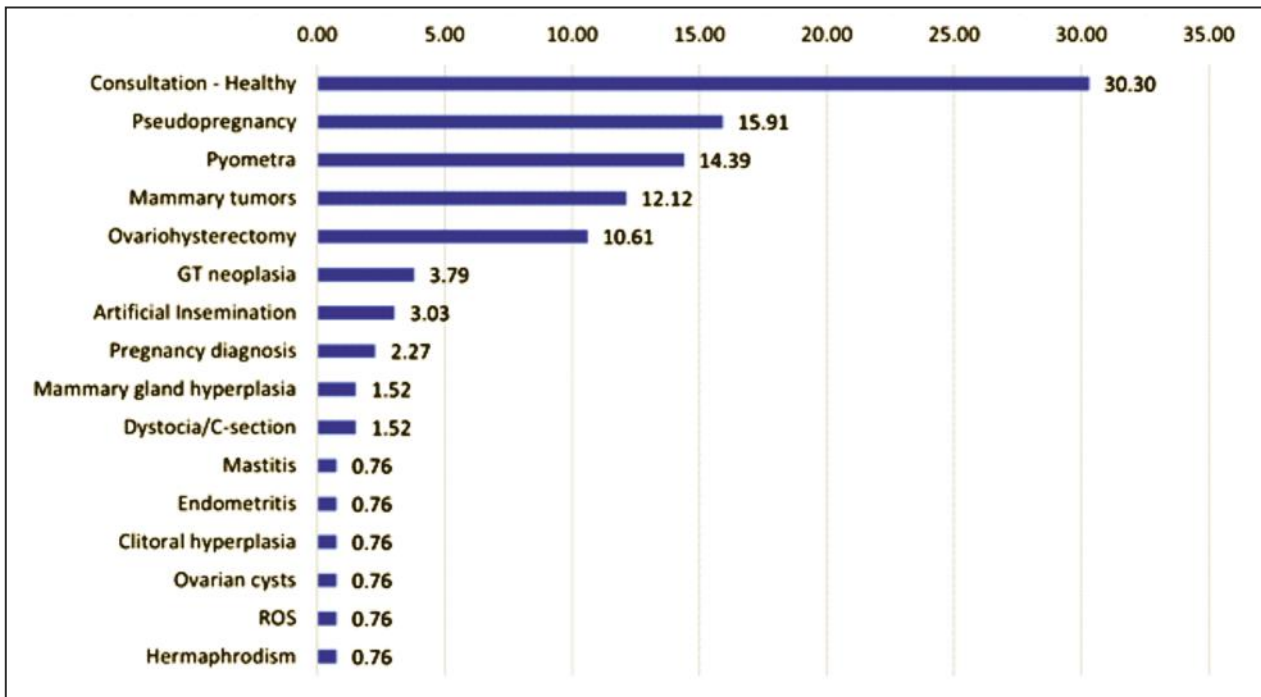


Fig. 4. Prevalence of reproductive disorders in bitches.
Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Napoli, Italy

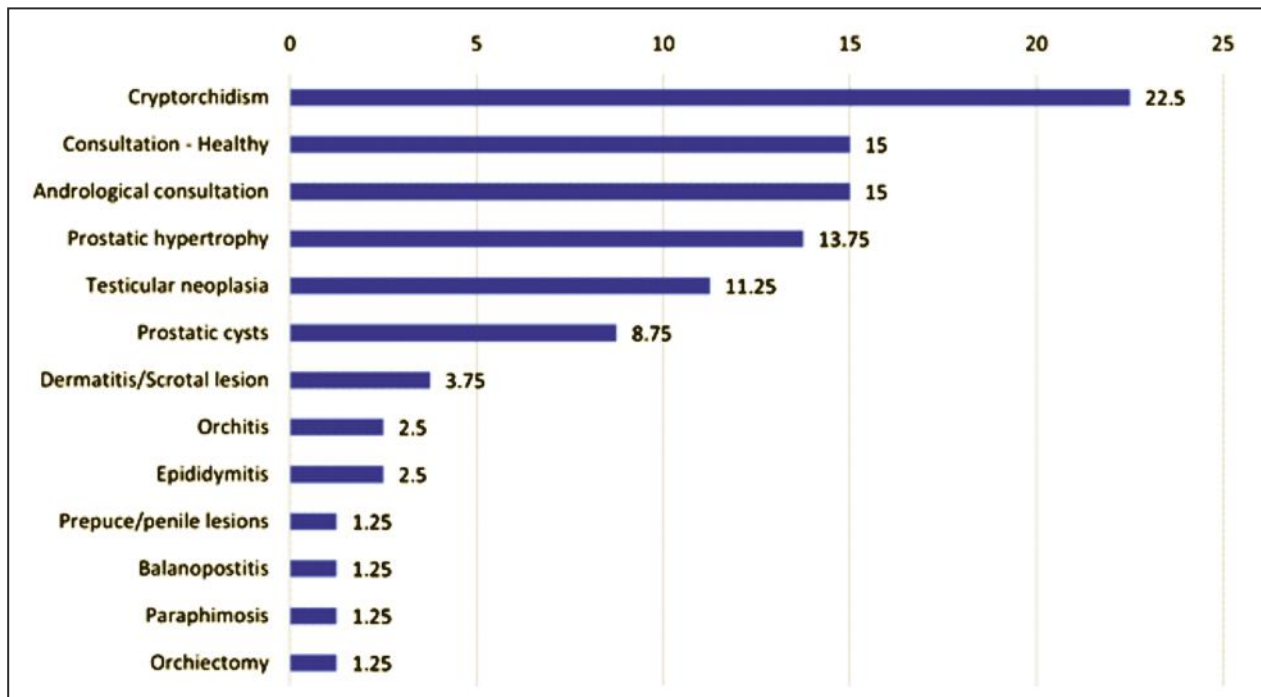


Fig. 5. Prevalence of reproductive pathologies in dogs.
Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Naples, Italy

(2%). In dogs, the largest category of conditions was represented by testicular pathologies (39%), followed by pathologies of the adnexal glands (22%), pathologies of the penis, prepuce, and scrotum (4%) (Table 1).

Figure 4 illustrates the prevalence of all cases recorded in bitches from the Obstetrics, Gynaecology, and

Veterinary Andrology Clinic in Naples, Italy, from January 2021 to December 2022. Excluding the majority number given by the animals that underwent convenience procedures, the top 3 conditions in terms of frequency were represented by: false lactations (15.91%), pyometra (14.39%), and mammary tumours (12.12%).

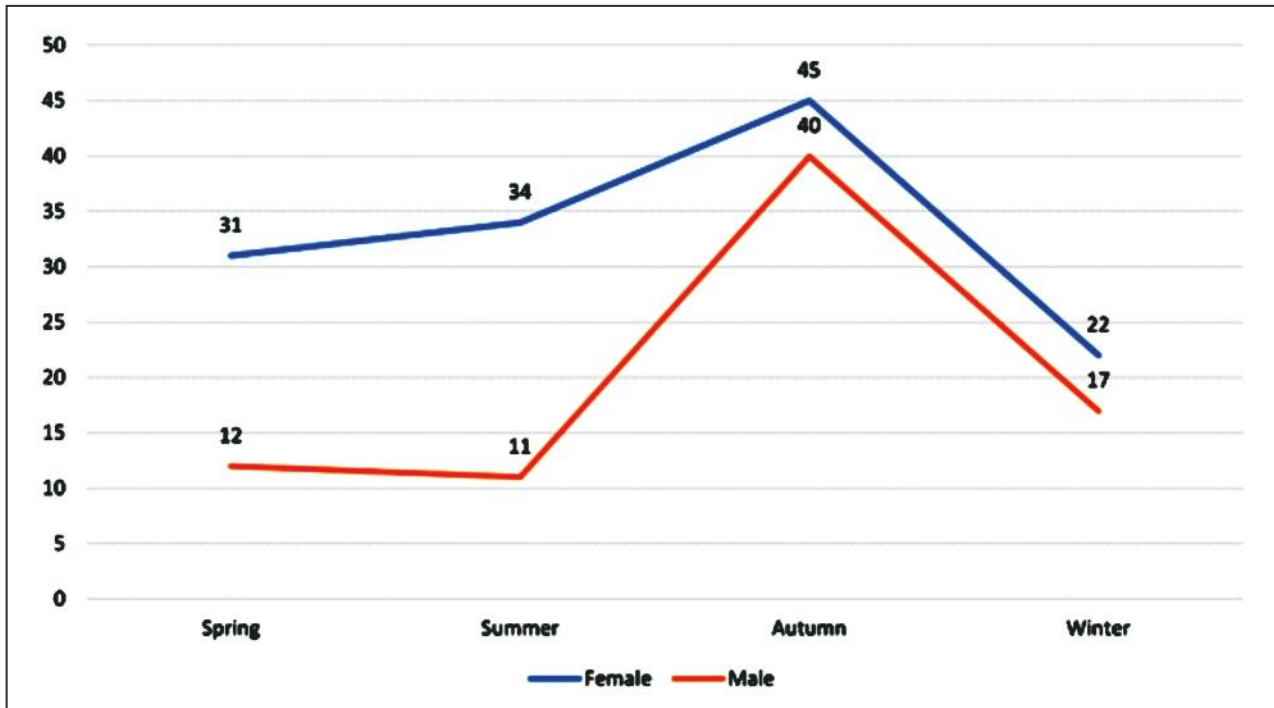


Fig. 6. Seasonal incidence of genital pathology in canids.
Clinic of Obstetrics, Gynaecology, and Veterinary Andrology, Naples, Italy

At the opposite pole, the least common conditions were clitoral hyperplasia, hermaphroditism, ORS, ovarian cysts, and mastitis, all of which accounted for 0.76%.

According to the prevalence shown in Figure 5, it can be seen that the main pathology encountered in males of this species was cryptorchidism (22.5%), followed by prostatic hypertrophy (13.75%) and testicular neoplasia (11.25%). In this clinic, the percentage of convenience orchiectomy was low (1.25%), together with paraphimosis, balanoposthitis, and lesions of the external genitalia (1.25%).

Regarding the seasonal incidence (Fig. 6), both in females and males, most cases were recorded in autumn (45 and 40, respectively). The lowest number of cases was found in bitches in the spring season, while in males in the spring-summer period (there was only a difference of 1 case between the 2 seasons).

For non-pathological cases (including elective ovariohysterectomy, diagnosis of gestation, and consultation after which the animal was declared clinically healthy), the results in Iasi (61%) showed higher percentages than in Naples (46%) and exceeded 29.46%, the value found in other study (9). In Iasi, a high percentage of canines and felines are brought to the clinic for orchiectomies and ovariectomies of convenience. In Italy, however, it is not compulsory by law to sterilise dogs without pedigree, and at the same time, more importance is given to the long-term effects of certain breeds of dogs following castration (1, 8). For this reason, there are many unneutered animals and such a low

rate of sterilisation in the reproduction clinic of the faculty compared to the one in Iasi.

Although in Iasi elective ovariohysterectomies are performed in a high percentage of bitches, pyometra and mammary tumours have been encountered in large numbers. This can be explained by the fact that uncontrolled administration of drugs to interrupt and delay oestrus in bitches is a common practice. Similar to the results obtained in Iasi, pyometra was the main condition encountered in bitches in other studies: 48.8% (3), 23.25% (4), and 20.3% (9). In contrast to our results regarding the prevalence of mammary tumours, some authors indicate a much lower percentage of 4.65% (9). However, there are also studies in which mammary tumours rank second in prevalence, similar to the results obtained in Iasi (4).

In dogs, in Naples, the most frequent pathology of the genital apparatus was cryptorchidism, followed by prostatic hypertrophy and testicular neoplasia, while in Iasi, the main pathology was an inflammatory condition called balanoposthitis, and cryptorchidism was the second most prevalent. The andrological results obtained by us contrast with those described by Dhami et al., 2020, in which the highest prevalence was found for Sticker sarcoma (31.76%), scrotal dermatitis (18.82%) and orchidectomies of convenience (12.94%) (4). This region, however, stands out in several studies with a high percentage of the prevalence of transmissible venereal tumours (7).

Mammary tumours accounted for the majority of the

cases, while mastitis was very rare in both clinics.

Pseudopregnancy is the one that showed variations, explained by the low percentage of elective neutering performed in Naples: it recorded a high frequency in Naples, second in prevalence, while in Iasi its value was average.

CONCLUSIONS

Our results highlight the increased prevalence of life-threatening pathologies in canids and highlight the importance of prophylactic strategies for reproductive diseases in this species, targeting both veterinarians and breeders. It also warns and raises awareness of the side effects of uncontrolled administration of drugs to interrupt or delay oestrus.

Acknowledgments

We would like to express our sincere gratitude to the personnel from the Clinic of Obstetrics, Gynaecology, and Veterinary Andrology in Naples, Italy, for the constant support and resources provided in this study.

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