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Sertoli cell tumours (SCTs) in dogs: Incidence profile, cytological and haematobiochemical findings from 19 cases

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Abstract
Sertoli cell tumour (SCT) was diagnosed in 19 dogs based on cytological examination of samples from tumour suspected masses. The highest incidence was recorded in Spitz and German shepherd breeds and in dogs of age group more than 5 years old in breed and age wise analysis of SCTs. Cytologic examination revealed neoplastic cells arranged both as individually scattered solitary cells and as loosely cohesive cell aggregates with cytological features of mild to moderate anisocytosis and anisokaryosis, round to oval nuclei containing coarse chromatin and moderate amount of basophilic cytoplasm containing variably sized coarse clear cytoplasmic vacuoles.

Keywords: Dog, tumours, canine testicular tumour, sertoli cell tumour, SCTs, hyperestrogenism syndrome, cytology

Introduction
The important genital tumours of male dogs encountered in clinical practice include testicular tumours and transmissible venereal tumours (TVTs). Testicular tumours comprise seminoma, sertoli cell tumour (SCT) or sustentacular cell tumour, and Leydig cell tumour. In addition to the testicular tumours which commonly present as a visible or palpable enlargement of one or both testicles, several non-neoplastic conditions such as congenital and developmental anomalies, inflammatory conditions such as orchitis, testicular hyperplasia, and other pathological changes such as haemorrhage and necrosis within the testicular tissue can also cause testicular enlargement in dogs.
Nodtvedt *et al*. (2011) [8] stated that testicular tumours are the most common neoplasms in male dogs and Manuali *et al*. (2020) [7] reported a population incidence of 19.7%. TVT, on the other hand, is a contagious round cell neoplasm that primarily affects sexually active male and female dogs through coitus or direct contact with tumour-infected tissues (Subapriya *et al*., 2025) [12]. The authors recorded a population incidence of 11.31% for TVT in dogs in their study.
Considering the etiology of testicular tumours, Quartuccio *et al*. (2012) [9] stated that although the exact etiology of testicular tumours remains unidentified, increasing age, breed-specific environmental conditions and cryptorchidism act as major risk factors. Sivasudharsan *et al*. (2017) [11] further stated that cryptorchidism significantly increases the risk of testicular tumour development, with cryptorchid dogs showing a higher likelihood of developing Sertoli cell tumours than seminomas.
Clinically, SCTs typically present as unilateral enlargement of one or both testicles, with or without radiographic evidence of metastasis. According to Borbil and Catoi (2007) [2], SCTs are almost always benign, with a metastasis rate of less than 10% and the regional lymph nodes being the most common metastatic sites. The primary sites of metastasis are iliac, sublumbar and pelvic lymph nodes, peritoneum and other abdominal organs [1].
Interestingly, SCTs are unique among canine testicular neoplasms as features of feminization

are appreciable in the affected male dogs. The incidence of feminization increases from approximately 15% in scrotally located tumours to 70% in abdominally retained tumours and about one-fourth of dogs with SCT exhibiting feminization attract other male dogs, similar to a bitch in estrus (Borbil and Catoi, 2007) [2]. Herzog *et al*. (2023) [5] attributed the clinical manifestations of feminization seen in dogs with sertoli cell tumours such as bilaterally symmetrical alopecia of the trunk and flanks, inguinal hyperpigmentation, gynecomastia, pendulous prepuce, squamous metaplasia of the prostate and attraction shown by male dogs to hyperestrogenism arising from the secretory nature of SCTs.

Testicular tumours should be thoroughly evaluated in male dogs especially aged male dogs exhibiting visible or palpable enlargement of one or both the testicles, pain on palpation of the scrotal area, history of constipation, signs of feminization syndrome like bilateral symmetrical alopecia and others by clinical examination, radiography and ultrasound and by retorting to pathological aids such as cytology and histopathology to confirm the type of testicular tumour (Subapriya *et al.* 2019) [13]. With the abovementioned information, the manuscript provides a detailed account of the epidemiological, haematobiochemical and cytological characteristics of SCTs in dogs.

Materials and Methods

Clinical samples collected from client-owned dogs presented with complaints of testicular enlargement to the Small Animal Surgery Outpatient Ward and the Small Animal Operation Theatre, Department of Surgery, Madras Veterinary College Teaching Hospital (MVCTH), Chennai-07, for the diagnosis of testicular tumours were the subject of our study. The samples collected included blood, serum, fine-needle aspiration cytology (FNAC) samples, and impression smears from dogs suspected of having testicular tumours. All samples were processed at the Centralized Clinical Laboratory, Madras Veterinary College, Chennai-07. Cytological smears were stained using the Leishman-Giemsa (LG) cocktail stain and examined for neoplastic features as per the criteria described by Subapriya (2019) [14]. For each confirmed case of SCT, details such as breed and age were documented to assess the possible influence of these factors on the development of SCT.

Results and Discussion

Incidence

During the study period, Sertoli cell tumours (SCTs) were confirmed by cytological examination in 19 dogs that were clinically and radiographically suspected of having testicular tumours. These confirmed cases accounted for an incidence of 0.34% of all tumours diagnosed in dogs during the study period.

Among the nineteen confirmed SCT cases, four dogs exhibited dermatopathological changes in addition to testicular enlargement, as recorded in the sample processing requisition forms. Recognition of such dermatological alterations in dogs presenting with testicular enlargement is clinically significant, as they aid in differentiating SCT from seminoma, both of which may present with similar testicular changes. Dermatological manifestations such as hyperpigmentation and bilateral symmetrical alopecia around the genital region are more frequently associated with SCT than seminoma, owing to estrogen overproduction and the development of hyperestrogenism syndrome in SCT inflicted dogs. Hence dermatological manifestations of feminization in dogs with testicular enlargement provide an added probability for the testicular tumour to be clinically suspected for SCT which can be further confirmed by pathological screening. Early identification of such characteristic dermatological signs also enables timely initiation of appropriate medical management to counteract the systemic effects of hyperestrogenism in the SCT affected dogs in addition to the surgical intervention of resecting the tumour masses.

Breed

SCTs were identified across six dog breeds in the study, with the highest incidence recorded in Spitz (n=7), German shepherd (n=4), and Dobermann (n=3) breeds, followed by other breeds (Fig. 1). Similar to our findings, Weaver (1983) [15] have also recorded higher occurrence of SCTs in German shepherd breed.

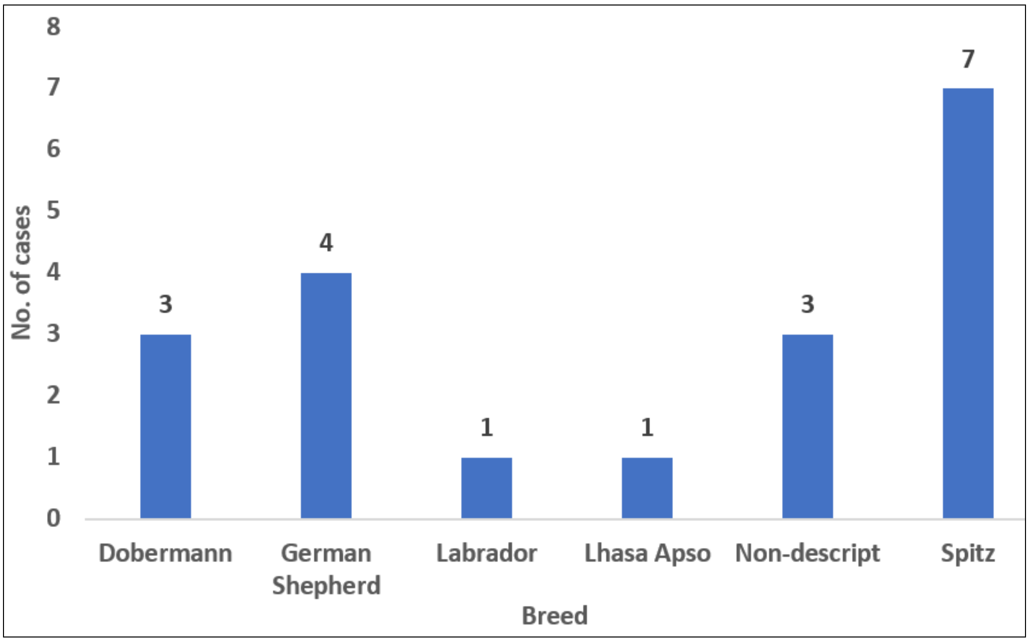

Fig 1: Breed wise incidence of canine SCT(n=19)

Age

Regarding age wise distribution, the highest number of SCT cases was recorded in adult dogs aged 5-10 years (n = 11), followed by senior dogs over 10 years of age (n = 6), and young adults between 1-5 years (n = 2). The overall age of affected dogs ranged from 3 to 15 years. These findings are consistent with Gazin *et al*. (2022) [4], who reported an age range of 2 to15 years and a mean age of 9.4 years for dogs diagnosed with SCT. Among the geriatric cases in the present study, SCTs were recorded in a 15-year-old male Spitz and a 14-year-old male German Shepherd. No cases were identified in dogs younger than one year of age (Fig. 2).

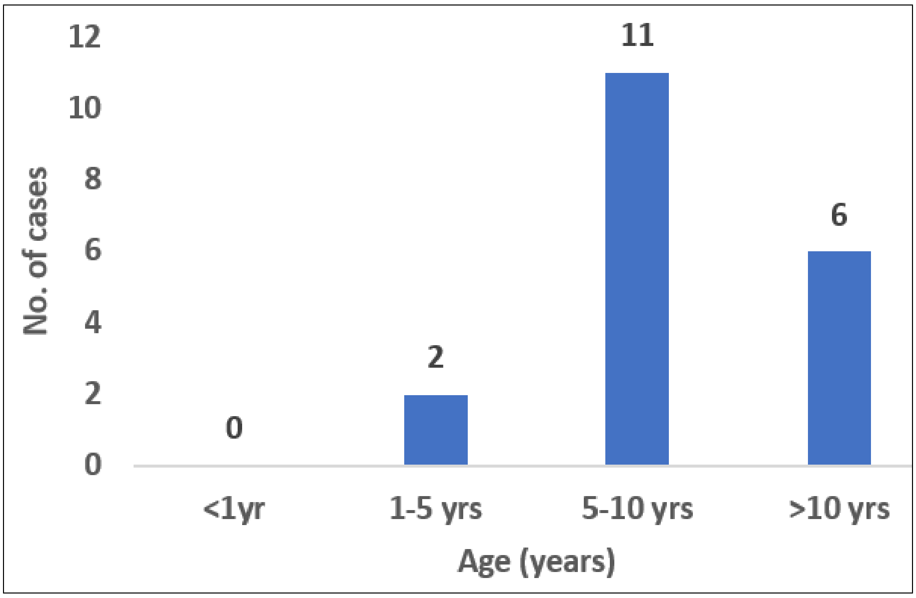

Fig 2: Age wise incidence of canine SCT(n=19)

Cytological findings

Cytological evaluation of the SCT cases revealed neoplastic cells arranged both as individually scattered solitary cells and as loosely cohesive cell aggregates. The tumour cells exhibited mild to moderate anisocytosis and anisokaryosis. Nuclei were round to oval with coarse chromatin and contained either prominent single to multiple nucleoli in most of the cases and inconspicuous nucleoli in few cases. The neoplastic cells showed a moderate amount of basophilic cytoplasm, often containing variably sized coarse clear cytoplasmic vacuoles. An altered nuclear-to-cytoplasmic ratio was evident, and mitotic figures were rarely observed. The cytological characteristics of SCT observed in the study were consistent with the descriptions of SCT reported by Sharkey *et al*. (2010) [10] and Burton (2017) [3]. Representative cytological findings are shown in Fig.3, 4.

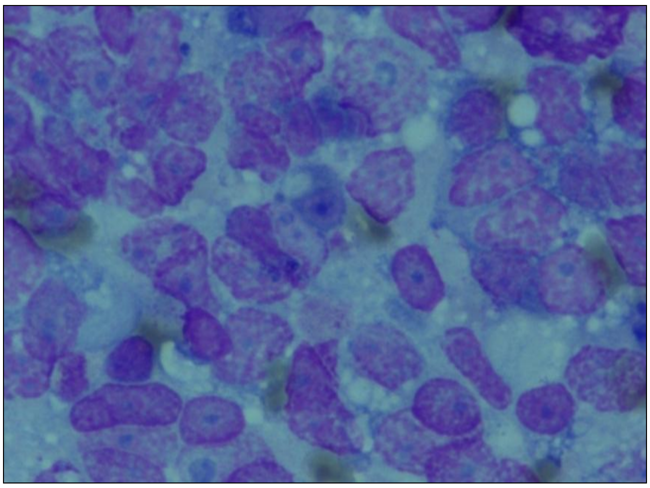

Fig 3: SCT- Anisocytosis and anisokaryosis - Prominent nucleoli - LG x 1000

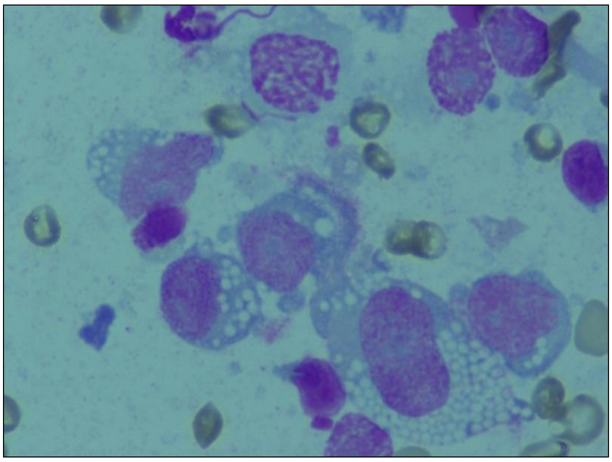

Fig 4: SCT - Cytoplasmic vacuolation- Multiple, varying sized clear vacuoles LG x 1000

Haematobiochemical changes

Serum biochemical analysis of samples from confirmed Sertoli cell tumour (SCT) cases revealed all parameters to be within normal reference range. Haematological evaluation showed that, among the nineteen SCT-positive dogs, anaemia was recorded in five cases, as evidenced by reduced haemoglobin (Hb g/dL), packed cell volume (PCV %), and total erythrocyte count (millions/cmm) in automated haematology analysis, and further supported by microscopic examination of Leishman-Giemsa stained blood smears. Leukocytosis, characterized by neutrophilia, was observed in two cases, while thrombocytopenia was recorded in three cases. Borbil and Catoi (2007) [2] described the haematological consequences of SCT in dogs stating that due to SCT, severe bone marrow suppression occurs in the affected dogs with resultant increased granulocytopoiesis and neutrophilic leukocytosis for a transient period followed by decreased hematopoiesis leading to progressive leukopenia, thrombocytopenia, and nonregenerative anemia. In this direction, the authors further stated that, subsequent to reduction in blood cells on bone marrow suppression, death may also happen in dogs affected with SCTs due to hemorrhagic episodes occurring due to thrombocytopenia and overwhelming bacterial infection occurring due to leukopenia. Similarly, Kazarian *et al.* (2025) [6] also recorded haematological changes such as anemia and leukocytosis in a 13-year-old male dog diagnosed with SCT. The above statements are in support of the haematological findings of anaemia, leukocytosis and thrombocytopenia recorded in dogs cytologically diagnosed with SCTs in our study.

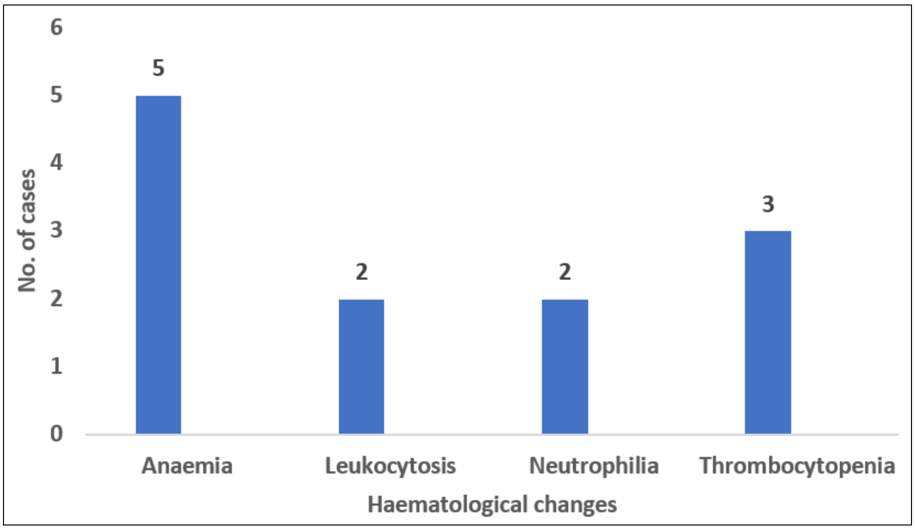

Fig 5: Haematological changes in canine SCT(n=19)

Conclusion

Cytology proved to be a simple, rapid, and minimally invasive diagnostic tool for the identification of SCTs in the present study. Ancillary diagnostic modalities for SCT diagnosis include radiography, ultrasonography, and computed tomography. In cases where cytological features are inconclusive, histopathological examination of tumour-suspected testicular tissue is recommended for definitive diagnosis of SCT, as SCTs and seminomas exhibit overlapping cytological characteristics.

SCTs are commonly associated with feminization syndrome and estrogen-mediated systemic effects such as bone marrow suppression and hence assessment of the endocrine profile in tumour affected dogs is advisable. Evaluation of hormonal markers, including oestradiol, estrone sulphate, serum anti-Müllerian hormone (AMH), inhibin-B, and testosterone, can guide appropriate medical management to counteract the adverse effects of hyperestrogenism. Following diagnosis, the prognosis for SCT tend to be favourable when the tumour is unilateral and managed through surgical excision. In contrast, cases involving bilateral testicular involvement or metastatic spread may carry a guarded to poor prognosis.

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Conflict of Interest

Not available.

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References

1. Agnew DW, MacLachlan NJ. Tumors of the genital systems. In: Tumors in domestic animals. Ames: Wiley; 2016. p. 689-722.
2. Borbil S, Catoi C. Canine Sertoli cell tumor: Case report. Bulletin USAMV-CN. 2007;64(1-2):68-71.
3. Burton AG. Clinical atlas of small animal cytology. U.S.A.: John Wiley and Sons; 2017. p.285-287.
4. Gazin AA, Vatnikov YA, Sturov NV, Kulikov EV, *et al.* Canine testicular tumors: an 11-year retrospective study of 358 cases in Moscow Region, Russia. Veterinary World. 2022;15(2):483-490.
5. Herzog F, Adams D, Blanc AS, Lee J, *et al.* Canine Sertoli cell tumor: anti-Müllerian hormone, inhibin B, and estrone sulphate. Clinical Theriogenology. 2023;15:1-7.
6. Kazarian AG, Ashbrook CQ, Timmons CF, Peters CA, *et al.* Case report of a Sertoli cell tumor with unique presentation including fevers, weight loss, and leukocytosis in a 13-year-old male. Urology Case Reports. 2025;58:102884.
7. Manuali E, Forte C, Porcellato I, Brachelente C, *et al.* A five-year cohort study on testicular tumors from a population-based canine cancer registry in central Italy (Umbria). Preventive Veterinary Medicine. 2020;185:105201.
8. Nodtvedt A, Gamlem H, Gunnes G, Grotmol T, *et al.* Breed differences in the proportional morbidity of testicular tumours and distribution of histopathologic types in a population-based canine cancer registry. Veterinary Comparative Oncology. 2011;9:45-54.
9. Quartuccio M, Marino G, Garufi G, Cristarella S, *et al.* Sertoli cell tumors associated with feminizing syndrome and spermatic cord torsion in two cryptorchid dogs. Journal of Veterinary Science. 2012;13(2):207-209.
10. Sharkey LC, Radin MJ, Seelig DM. Veterinary cytology. U.S.A.: John Wiley and Sons; 2020. p.503-505.
11. Sivasudharsan L, Devarathan J, Mahesh R, Kamalalar G, Rambabu K, Sumiran N, *et al.* Sertoli cell tumor in a dog: a case report. Indian Journal of Canine Practice. 2017;9(1):75-77.
12. Subapriya S, Vairamuthu S, Ali MM, Mageswari JU, *et al.* Transmissible venereal tumours (TVTs) in dogs: a review of 636 cases in Chennai. International Journal of

Veterinary Sciences and Animal Husbandry. 2025;10(6):157-161.
13. Subapriya S, Vairamuthu S, Ramesh S, Areshkumar M, *et al*. A case report of seminoma in a boxer dog. Science Ocean. 2019;2(4):17-20.
14. Subapriya S. Pathological and molecular studies in canine cutaneous neoplasms [PhD thesis]. Chennai: Tamil Nadu Veterinary and Animal Sciences University; 2019.
15. Weaver AD. Survey with follow-up of 67 dogs with testicular Sertoli cell tumours. Veterinary Record. 1983;113(5):105-107.

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