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Bilateral Diffuse Leydig Cell Tumour of Testicles in a Golden Retriever Dog

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Abstract

A seven year old male Golden Retriever dog was presented with a history of unilateral scrotal swelling noticed for the last 20 days. The animal was obese and without any clinical signs. Physical examination revealed hard, freely movable enlarged and painless right testicle and hard and nodular left testicle. Ultrasonography revealed circumscribed, hypoechoic and irregular masses within the parenchyma of both testicles suggesting tumour of the testicle. Bilateral orchiectomy was performed as per standard surgical procedure under general anaesthesia. The animal had an uneventful recovery. Histopathology of tumour mass revealed diffuse Leydig cell tumour of both testicles.

Keywords: Testis, leydig cell tumour, histopathology, dog, diagnosis

Testicular tumours in male dogs represent 90 per cent of all the tumours affecting male genitalia. The most common type of testicular tumour includes interstitial cell tumour/Leydig cell tumour, Sertoli cell tumour and seminomas. The prevalence of Leydig cell tumour and seminomas is 90 per cent whereas Sertoli cell tumour is 8 per cent. Leydig cell tumours are the most common type of sex cord stromal tumour frequently seen in scrotal testis of aged animals. These tumours have frequently soft, having bulging surface of bright orange, often containing cysts with blood or clear fluid and metastasis is infrequent (Liao *et al.*, 2009). The present case reports bilateral diffuse Leydig cell tumour of scrotal testicles in a Golden Retriever dog, its diagnosis and treatment.

Case History and Observations

A seven year old male Golden Retriever dog was presented with a complaint of unilateral scrotal swelling noticed for the last 20 days. The pet was treated

by a veterinarian for 15 days, but did not elicit any response to treatment. Animal was active, but obese. On palpation testicles were hard, freely movable in scrotum and without any pain. Right testicle was moderately enlarged and left one was nodular. Ultrasonography revealed circumscribed, hypoechoic and irregular structure within the parenchyma of testicles suggesting tumour of testicles. Mediastinum testis could not be identified on ultrasonography (Fig. 1).

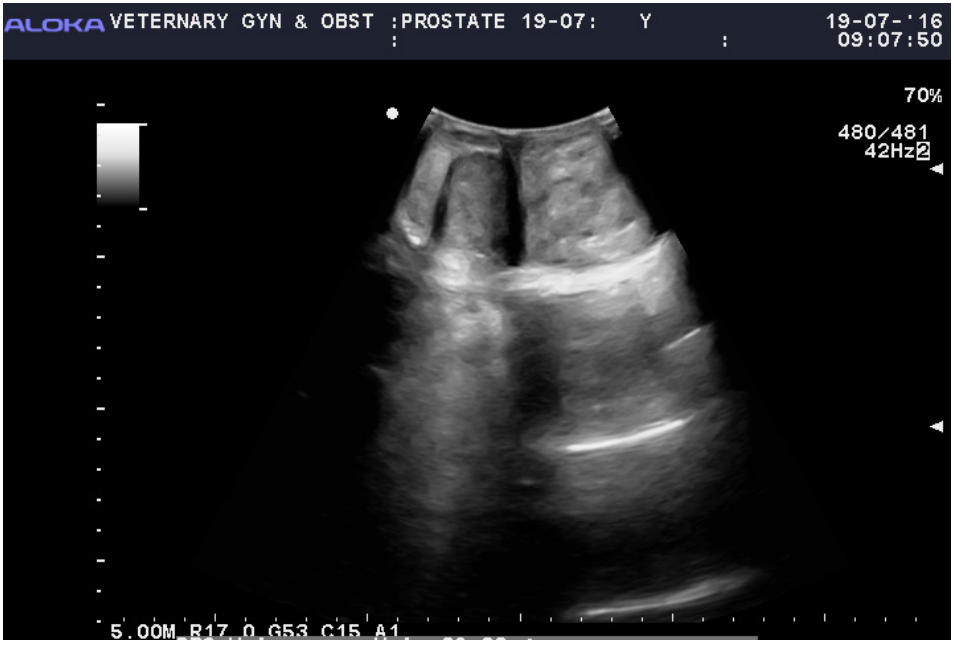

Fig. 1: Ultrasonography showing circumscribed, hypoechoic and irregular masses within the parenchyma of testicles

Haematology revealed a total RBC count of 6.13 millions/µl (Ref. range: 5.5–8.5 millions/µl), WBC count of 5900/µl (Ref. range: 6000–17,000/µl), PCV 41.7% (Ref. range: 37–55%), Haemoglobin 12.3 g/dl (Ref. range: 12–18 g/dl), platelet count of 1,64,000/µl (Ref. range: 2,00,000–5,00,000/µl) and serum creatinine and ALT levels of 0.9 mg/dl (Ref. range: 1.0–2.2 mg/dl) and 28 U/L (Ref. range: 10–109 U/L), respectively. Haematological parameters were within the normal range. It was decided to castrate in order to prevent further complications and metastasis.

Treatment and Discussion

The male dog was castrated under general anaesthesia using 2.5 per cent

thiopentone sodium after premedication with 1.2 mg atropine sulphate and 35 mg xylazine. Bilateral orchiectomy was performed through mid ventral pre-pubic incision and surgical wound was closed as per standard surgical procedure.

On gross examination, the left testicle was of normal size, smooth and hard with nodular appearance on surface. Right testicle was round in shape, larger in size (4×4×4 cm) and hard to palpate. Cut section of left testicle showed several well-circumscribed soft brownish-orange nodules of 1 cm in size. Cut section of right testicle showed a single large round nodule occupying almost the entire parenchyma (Fig. 2). Representative tissue samples were collected from both testicles, preserved in 10 per cent buffered formol saline and processed for histopathological studies.

Fig. 2: Cut section of testicles (Multiple nodules in left and a single large nodule in right testicle)

Histopathology of testicles had morphologic characteristics of diffuse Leydig cell tumour. Polyhedral shaped tumour cells were arranged in diffuse sheets in the interstitium with delicate strands of fibrous tissue. Seminiferous tubules were misshaped and atrophic. Cells were well-delineated, deeply staining with eosinophilic cytoplasm. Clear vacuoles of various sizes were present in cytoplasm with brown granules. Nuclei were small and round with hyperchromatic fine chromatin granules and prominent nucleoli (Fig. 3).

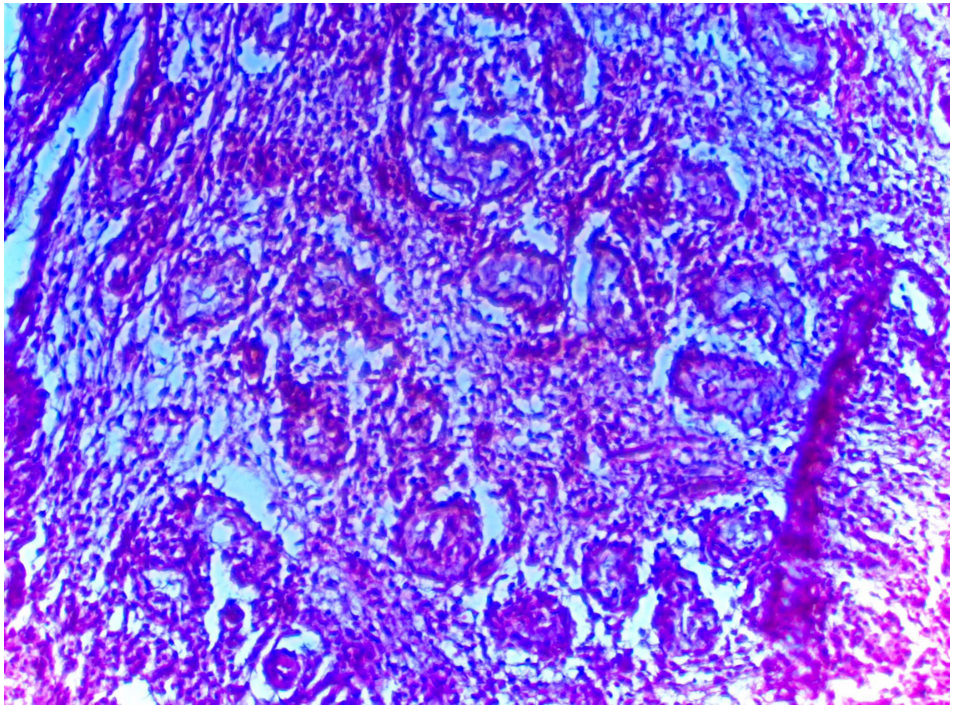

Fig. 3: Histopathology showing atrophic seminiferous tubules with proliferated interstitium

Normal Leydig cell lies in the interstitium between seminiferous tubules and constitutes about 20 % of the testis (Guyton and Hall, 1996). Under stimulus of LH hormone it secretes androgens. Leydig cell tumour is the most common tumour identified in clinically normal testis with no signs of testicular tumours, feminisation or cryptorchidism. The tumorogenesis may appear slowly than the other canine tumours. So it is not identified until the tumour become large enough to be differentiated, mostly in old age (Grieco *et al.*, 2008). Dogs with Leydig cell tumour had a greater concentration of estradiol in venous blood and testosterone concentration is lower in testicular venous blood (Peter *et al.*, 2000).

Ciaputa *et al.* (2012) opined that Leydig cell tumour originated from uncontrolled proliferation of interstitial cells. Mac Lachlan and Kennedy (2002) reported Leydig cell tumour as small foci of yellow to brown colour frequently with haemorrhagic foci.

Bigham *et al.* (2009) reported Leydigoma in a cryptorchid testis. Histopathology of the affected tumour cells containing polyhedral tumour cells with eosinophilic cytoplasm. Tumour cells were arranged in sheet type pattern and had filled areas between atrophic seminiferous tubules. Neoplastic cells

included round or multiangular cells with vacuolated cytoplasm. Cell nuclei were small, round, accentric and rarely have mitotic figure. Nielsen and Lein (1974) reported solid diffuse Leydig cell tumour as nodular hyperplasia of the Leydig cells.

Leydig cell tumour rarely produces clinically evident manifestation or metastasis. Histopathology of testicular tumour is very complex. So along with anamnesis, clinical manifestation and microscopic tumour characteristic of the neoplastic cells can establish a correct diagnosis and the treatment of the tumour.

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