Sertolioma in a Canine: Case Report

Sertolioma em um Canino: Relato de Caso

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ABSTRACT
Sertolioma is frequent in elderly, non-castrated and cryptorchid dogs, originating from leidig, sertoli and/or seminoma cells, benign and unilateral. The objective of this study was to report the case of a canine, male, 5 years old and cryptorchid, describing the changes caused by the myelotoxicity of hyperestrogenism secondary to sertolioma. The animal showed swelling in the abdominal region, genital hyperpigmentation, pendular foreskin, generalized gynecomastia and cryptorchidism. In the blood count, severe anemia, leukopenia and thrombocytopenia were found. On ultrasound, it was possible to identify a mass in the caudal abdominal region, with an ectopic left testicle and a reduced right testicle with degeneration. An exploratory laparotomy was performed to extract the ectopic left testicle, and orchiectomy of the right testicle, requiring blood transfusions during surgery and 7 days after hospital discharge. As treatment, the patient received analgesics (dipyrone and tramadol), antibiotics (Amoxicillin + Potassium Clavulanate) and

Lithium therapy. The treatment with lithium and the surgical procedures were successful in this case, as the animal gained a survival with quality of life, following the treatment and performing periodic hemograms.

Keywords: Canine, Cryptorchid, Hyperestrogenism.

RESUMO
O sertolioma, é frequente em cães idosos, não castrados e criptorquidas, originado em células de leidig, sertoli e/ou seminoma, de caráter benigno e unilateral. O objetivo do trabalho foi relatar o caso de um canino, macho, 5 anos de idade e criptorquida, descrevendo as alterações causadas pela mielotoxicidade do hiperestrogenismo secundário ao sertolioma. O animal apresentou aumento de volume em região abdominal, hiperpigmentação genital, prepúcio pendular, ginecomastia generalizada e criptorquidismo. No hemograma, foi constatado anemia grave, leucopenia e trombocitopenia. No ultrassom, foi possível identificar uma massa em região abdominal caudal, com testículo esquerdo ectópico e testículo direito diminuído com degeneração. Foi realizado laparotomia exploratória, para extração do testículo esquerdo ectópico, e orquiectomia do testículo direito, sendo necessárias transfusões sanguíneas no transoperatório e 7 dias após alta hospitalar. Como tratamento, o paciente recebeu analgésicos (dipirona e tramadol), antibiótico (Amoxicilina + Clavulanato de Potássio) e terapia com Lítio. O tratamento com lítio e os procedimentos cirúrgicos foram sucesso neste caso, pois o animal ganhou uma sobrevida com qualidade de vida, seguindo o tratamento e realizando hemogramas periódicos.

Palavras-chave: Canino, Criptorquida, Hiperestrogenismo.

1 INTRODUCTION

Testicular neoplasms are more frequent in dogs than in other species (CIAPUTA et al., 2012; HOLST et al., 2015; HORNAKOVA et al., 2017), and the testicular region is the second most affected by tumors in dogs (CIAPUTA et al., 2012; HOLST et al., 2015). Testicular tumors originate in leidig, sertoli and/or seminoma cells, usually benign and with no metastasis (NODTVEDT et al., 2011; ARGENTA., 2017).

Sertolioma, one of the most common testicular neoplasms, is frequent in elderly, uncastrated and cryptorchid dogs, a factor that predisposes the development of this tumor, since it is commonly manifested unilaterally (MEUTEN, 2002; FARIA et al., 2017).

Animals that present this type of neoplasm, may develop signs such as hyperestrogenism with bilateral alopecia, hyperpigmentation, gynecomastia, pendular foreskin and atrophy of the penis and contralateral testicle (HOLST et al., 2015; ARGENTA., 2017), in addition to high serum levels of estrogen, considered myelotoxic, causing hypoplasia of the bone marrow, and as a consequence, can lead to hematological changes, which include thrombocytopenia, anemia, leukocytosis or leukopenia. Due to these changes and severe hematological consequences, the prognosis for sertolioma is unfavorable.

The choice of treatment is based on orchiectomy, broad-spectrum antibiotics, corticosteroids and bone marrow stimulants, and intensive therapy with blood transfusion or platelet-rich plasma SANPERA et al., 2002; Weiss, 2003; HASAN et al., 2009).

The objective of this study was to report the case of myelotoxicity of hyperestrogenism secondary to sertolioma in a cryptorchid canine.

2 MATERIALS AND METHODS

A 5-year-old male Shih-Tzu canine was treated, weighing 7 kg, whose history was of increased volume in the caudal abdominal region, prostration and hyporexia. When performing the physical examination, it was possible to notice hypostained mucous membranes, hairy rarefaction in the pectoral and lumbosacral region, hyperpigmentation in the genital regions, petechiae, ecchymosis and suffusions spread throughout the body, generalized gynecomastia, pendular foreskin, and presence of only one testicle in the scrotal sac. However, the vital parameters were unchanged.

Regarding the complementary tests, complete blood count, coagulation time (PT and APTT), serum biochemistry and total abdominal ultrasound were performed. In the blood count, severe anemia (hematocrit 19% - reference 37-55%), leukopenia (900/µL - reference 6,000-17,000) and thrombocytopenia (5000/µL - reference 200,000-500,000/µL) were observed. Biochemical analyses and coagulation times did not reveal information of clinical importance, but on ultrasound it was possible to identify a mass of 19.0cm in the caudal abdominal region, with the presence of left ectopic testicle and decreased right testicle and with degeneration. According to the results of the physical and complementary examinations, clinical signs and history of the animal, intra-abdominal sertolioma was suspected and surgical excision of the tumor and therapeutic orchiectomy were indicated.

For the excision of the ectopic testicle, exploratory laparotomy was performed, in addition to orchiectomy of the right testicle. In the procedure, a change in size was observed in both testicles, the left one slightly larger, measuring 19.0 cm and the right atrophied, which were sent for histopathological analysis, confirming the diagnosis of sertolioma. Due to the intense anemia and thrombocytopenia, a bag of packed red blood cells was requested for surgery, which was transfused into the transsurgical process.

After surgery, the patient received treatment with analgesics (Dipyrone 25mg/kg TID, 5 days and Tramadol 4mg/kg TID, 5 days) and antibiotics (Amoxicillin + Clavulanate Potassium 22mg/kg BID, until further recommendations), in addition to starting therapy with Lithium (300 mg/kg), until further recommendations.

One week after hospital discharge, the patient returned to perform postoperative control blood count, which found mild anemia (hematocrit 34%), leukopenia (3,000/µL) and thrombocytopenia (22,000/µL), in addition to creatinine analysis (0.78 mg/dL – reference 0.5 to 1.6 mg/dL). The patient was panting and had pale mucous membranes, so a new transfusion was performed, but using platelet concentrate.

After 7 days, the patient returned again, this time with normal stained mucous membranes, increased daily activity, weight gain and improvement in dermatological conditions. A new blood count was

performed, which showed (hematocrit 36%), leukopenia (2,900/µL) and thrombocytopenia (29,000/µL). Laboratory tests, such as blood count and creatinine, were performed fortnightly as a form of follow-up due to lithium therapy.

3 DISCUSSION AND RESULTS

Coinciding with the information that the occurrence of testicular tumors in cryptorchid patients is commonly reported (CIAPUTA et al., 2012; HOLST et al., 2015; ARGENTA et al., 2017; FARIA et al., 2017), being the most common sertolioma (NODTVEDT et al., 2011; CIAPUTA et al., 2012; HOLST et al., 2015; ARGENTA., 2017; FARIA et al., 2017), it was observed in this report a unilateral cryptorchid canine that developed the neoplasm.

The described clinical presentation of the patient is often reported by other researchers who claim that tumors in sertoli cells can develop hyperestrogenism secondary to neoplasia, being toxic to the bone marrow, leading to hypoplasia of all hematopoietic strains (SONTAS et al., 2009; HOLST et al., 2015; ARGENTA et al., 2017; VALENTE et al., 2017). Clinical signs such as feminization, gynecomastia, galactorrhea, pendular penis and atrophy of the contralateral testicle, associated with dermatological problems such as hyperpigmentation and alopecia (HOLST et al., 2015; ARGENTA., 2017) are also reported.

Total abdominal ultrasound is performed as a form of presumptive diagnosis for sertolioma, visualizing normal to increased size, focal or diffuse lesions of variable echotexture and not specific for the type of tumor (DOMINGOS & SALOMÃO, 2011), thus, it was possible to suggest, in this case, a neoplasm of testicular origin. For definitive diagnosis, histopathology of the surgical specimens removed in the procedure was performed. The diagnosis can also be made through fine-needle aspiration cytopathology of the tumor, guided by ultrasound, according to (DOMINGOS & SALOMÃO, 2011), but this was not the case.

Due to the hemodynamic changes of the patient, during the transsurgical period blood transfusion was necessary, and according to Sonta et al. (2009), transfusion is essential in cases of thrombocytopenias and severe anemias (transfusion of platelet-rich plasma and red blood cell concentrate the most indicated, respectively), which is why it was decided to perform transfusion with platelet-rich plasma 7 days after the procedure. Hemodynamic complications may have been caused by aplastic anemia caused by myelotoxicity caused by hyperestrogenism (WEISS, 2003; SONTA et al., 2009; MORAES & TAKAHIRA, 2010; FERREIRA et al., 2018).

Lithium was introduced as a therapy soon after surgery, because its use was successful in some cases of medullary aplasia (aplastic anemia characterized by pancytopenia in peripheral blood and hypoplasia of the three cell types: erythroid, myeloid and megakaryocytic) induced by estrogen. Therefore, lithium

stimulates the division of pluripotent stem cells (SANPERA et al., 2002; MORAES & TAKAHIRA, 2010; VALENTE et al., 2017).

The weekly/fortnightly follow-up of the patient should be performed to evaluate the response to lithium therapy, because Sanpera et al., (2002), emphasize that this drug can cause renal damage. It is noteworthy that the reevaluation of blood counts helps the veterinarian to conduct the treatment with lithium, with regard to the response of the marrow (SANPERA et al., 2002), as was done in this case.

4 CONCLUSION

The treatment with lithium associated with the surgical procedures was successful for this canine with sertolioma, and in this case the indication to follow the suggested therapy and perform periodic blood counts were appropriate generating the animal survival with quality.

REFERENCES

Zadeh LA. Is probability theory sufficient for dealing with uncertainty in AI: a negative view. In: Kanal LN and Lemmer JF, eds. Uncertainty in Artificial Intelligence. Amsterdam: Elsevier, 1986; pp. 103-16.

Argenta, F.F. et al. Neoplasmas testiculares em cães no Rio Grande do Sul, Brasil. Acta Scientiae Veterinariae, v. 44, p. 1-6, 2016.

Ciaputa, R. et al. Seminoma, sertolioma, and leydigoma in dogs: clinical and morphological correlations. Bulletin of the Veterinary Institute in Pulawy, v. 56, n. 3, p. 361-367, 2012.

Domingos, T.C.S.; Salomão, M. C. Meios de diagnóstico das principais afecções testiculares em cães: revisão de literatura. Revista Brasileira de Reprodução Animal, v. 35, n. 4, p. 393-9, 2011.

Faria, B.M. et al. Sertolioma em um canino associado à criptorquidia. PUBVET, v. 12, p. 139, 2017.

Ferreira, M.B. et al. Intra-abdominal Sertoli Cell Tumor in Dog with Local and Systemic Repercussions. Acta Scientiae Veterinariae, v. 46, p. 7, 2018.

Holst, B.S.; Dreimanis, U. Anti-Müllerian hormone: a potentially useful biomarker for the diagnosis of canine Sertoli cell tumours. BMC veterinary research, v. 11, n. 1, p. 166, 2015.

Hornakova, L. et al. The evaluation of blood concentrations of testosterone, 17β-oestradioland anti-Muellerian hormone in dogs with cryptorchidism and testicular tumours. Polish journal of veterinary sciences, 2017.

Meuten D.J. Tumors in domestic animals. Iowa State Press, Iowa 2002, pp. 561-573.

Moraes, L.F.; Takahira, R.K. Aplasia medular em cães. Revista de Ciências Agroveterinárias, v. 9, n. 1, p. 99-108, 2010.

Nodtvedt, A. et al. Breed differences in the proportional morbidity of testicular tumours and distribution of histopathologic types in a population-based canine cancer registry. Veterinary and comparative oncology, v. 9, n. 1, p. 45-54, 2011.

Sanpera, N. et al. Oestrogen-induced bone marrow aplasia in a dog with a Sertoli cell tumour. Journal of small animal practice, v. 43, n. 8, p. 365-369, 2002.

Sontas, H.B. et al. Estrogen-induced myelotoxicity in dogs: A review. The Canadian Veterinary Journal, v. 50, n. 10, p. 1054, 2009.

Valente, P.C.L.G. et al. Bone marrow bi-hypoplasia in a dog with a sertoli cell tumor. Arquivo Brasileiro de Medicina Veterinária e Zootecnia, v. 69, n. 1, p. 95-100, 2017.

Weiss, D.J. New insights into the physiology and treatment of acquired myelodysplastic syndromes and aplastic pancytopenia. The Veterinary Clinics of North America - Small Animal Practice, Philadelphia, v.33, p. 1317- 1334, 2003.