

DIOCTOPHYMA RENALE IN DOGS: CASE REPORTS



<https://doi.org/10.56238/arev7n2-260>

Submitted on: 01/22/2025

Publication date: 02/22/2025

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ABSTRACT

Diectophyma renale is popularly known as the "giant kidney worm", its occurrence has already been reported in several countries, being the largest nematode described parasitizing animals. The right kidney is presented as an organ of predilection for the parasite, but there are reports of it being found in other locations. It is a pathology described as asymptomatic, and the presence of the parasite is found mainly accidentally, in surgical procedures and necropsies. Thus, the present study aimed to report four cases of dioctophimosis in domestic dogs living in Blumenau, Santa Catarina, two of which were located in the right kidney and the other two in the abdominal cavity, in addition to addressing the morphology of the parasite, its biological cycle, pathophysiology, as well as its forms of diagnosis and treatment.

Keywords: Pets. Veterinary surgery. Nematodes. Parasites. Kidney.

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INTRODUCTION

Diectophyma renale is the largest nematode described parasitizing animals (Mech; Tracy, 2001), belonging to the order Enoplidae, family Dioctophymetidae, superfamily Dioctophymatoidea, popularly known as giant kidney worm (De Souza *et al.*, 2019), and can measure up to one meter in length (Freitas *et al.*, 2018).

It is characterized by being the only endoparasite to colonize the kidney, where it penetrates the renal capsule, resulting in destruction of the parenchyma. The process of renal destruction occurs due to the histolytic action of the secretion of the esophageal glands, which are abundant in this parasite (Kommers; Island; Barros, 1999; Fortes, 2004).

It mainly affects the right kidney of domestic and wild mammals, but there are reports of it being found free in the abdominal cavity, inside the uterus, ovary, urinary gallbladder, urethra, stomach, scrotum and even present in mammary glands (Zardo *et al.*, 2012; Pedrassani *et al.*, 2014; Jerônimo *et al.*, 2017), having already been reported to be partially inserted into the thoracic cavity, penetrating the diaphragm (Zabott *et al.*, 2012) and also free within the chest (Sapin *et al.*, 2017).

It is a disease that mainly affects dogs with a stray life and non-selective eating habits. Most of the infection is associated with rural areas and with wild fauna being the main reservoirs (Pedrassani; Nascimento, 2015; Perera *et al.*, 2017).

It is discussed as a zoonotic potential (Capella *et al.*, 2022) since it has already been reported in humans. When described in humans, dioctophimosis is related to hematuria and renal colic, due to the presence of the parasite inside the kidney (Monteiro; Sallis; Stainki, 2002).

Reports of cases of dogs with *Diectophyma renale* in Santa Catarina have been more frequent, especially in the mountainous region and north of the state (Figure 1). There have already been cases described in Concórdia (Guimarães *et al.*, 2022), Curitiba (Rocha, 2017), Lages (Neves *et al.*, 1980), Três Barras (Pedrassani *et al.*, 2009), in the capital Florianópolis (Monteiro *et al.*, 2021) and now reported in Blumenau, and the possible infection of the dogs was during wild boar hunting in Campos Novos.

Figure 1. Map of Santa Catarina, indicating the places where there have been reports of cases of *Diectophyma renale*.



Source: Matias (2020), edited by the authors

It is considered an uncommon disease, usually the infection in dogs is subclinical and clinical signs are very nonspecific, and may present apathy, anorexia, weight loss and hematuria (Alves; Silva; Neves, 2007). Usually only one kidney is parasitized. In this way, the healthy kidney suffers compensatory hypertrophy, due to the lack of infected kidney (Forte, 2004). In addition, peritonitis and uremia due to kidney failure may be observed (Da Silva *et al.*, 2018).

There is a report of the adult nematode causing hydronephrosis due to obstruction of the internal ureteral ostium, which deliberates atrophy with the conservation of the pelvic epithelium, which is important for the evolution of the clinical picture of renal failure (Silveira *et al.*, 2015).

Accidental diagnosis, during necropsy or surgical procedure is the most reported diagnostic form (Silva *et al.*, 2015), but it is also possible to obtain the diagnosis through the urinalysis test, where the parasite eggs are visualized in the microscopic evaluation of the urine, there are also reports of the adult parasite being eliminated through the urine, and it is possible to diagnose by macroscopic evaluation (Pereira *et al.*, 2017). Abdominal ultrasonography is also a method described, where the appearance of the kidney is

evaluated, the presence of adult worms in renal topography, and the evaluation of other organs in the cavity is also performed, which may show lesions or the presence of free adult parasites in the abdominal cavity (Ruiz *et al.*, 2014).

No effective parasitic pharmacological alternative for this pathology has been described (Santos *et al.*, 2022). Taking into account that, even if the use of anthelmintics acted on the parasite, its removal would be extremely complicated, as a result of being inside the kidney and due to its size and thickness. Therefore, almost all cases have surgery as the outcome (Pedrassani *et al.*, 2009).

Thus, this article aimed to report four cases of diotrophimosis in domestic dogs in Santa Catarina, with different clinical presentations and outcomes, demonstrating the clinical importance for veterinarians in the region, since it substantiates the presence of the parasite in the population of dogs in the region.

CASE REPORTS

Four wild boar hunting dogs (*Sus scrofa*) from the region of Campos Novos in Santa Catarina, with a previous diagnosis of diotrophimosis, were referred to the Veterinary School Hospital (HEV) of the Regional University of Blumenau, Santa Catarina (Table 1). The dogs present in the report hunted in a region of crops, where there were more flooded places with the presence of fish and frogs.

Dogs 1, 2 and 3 did not show clinical signs, but were taken by the owner to a veterinary office in the city for *check-up*, after one of the dogs on the same property died as a result of parasitism by *Dioctophyma renale*. Blood tests, ultrasound, and urinalysis were performed.

Dog 4 was diagnosed one year after the diagnosis of the others, presenting bleeding in both ears with no defined cause, suspected of hemoparasitosis. Blood and imaging tests were performed, where the adult parasite was located in the right kidney.

Table 1 Identification of dogs with diotrophimosis and location of the parasite in the host

	Patient 1	Patient 2	Patient 3	Patient 4
Race	Foxhound Americano	Foxhound Americano	Spanish Greyhound	Foxhound Americano
Gender	Female	Male	Female	Female
Age	2 years	2 years	4 years	4 years
Neutered	No	No	No	No
Location of the parasite	Right kidney	Abdominal cavity	Abdominal cavity	Right kidney

Eggs in Urinalysis	Positive	Negative	Negative	Not realized
Weight (kg)	20.10 kg	24.85 kg	12 kg	25.10 kg

Source: Survey data (2023)

All patients underwent surgical procedures after diagnosis of laparotomy to remove the free parasite in the abdominal cavity (cases 2 and 3) or nephrectomy in cases of kidney invasion (cases 1 and 4). Preoperative blood tests and abdominal ultrasonography were performed in all of them.

Anesthetic premedication with methadone and dexmedetomidine, induction with propofol and ketamine, intubation with an endotracheal tube and maintenance with isoflurane were performed. Meloxicam was used as an anti-inflammatory and cefazolin as an antibiotic prophylaxis 30 minutes before the beginning of the procedure in the four patients.

After extensive trichotomy and antisepsis, an incision was made in the midline of the xiphoid abdoid in a caudal direction, up to the pre-umbilical region in dogs 1 and 4. After visualization of the right kidney, double ligation was performed in the renal artery and vein, near the renal hilum region with 2-0 absorbable suture, then double ligation was performed in the ureter, near the bladder with 2-0 absorbable suture, and then the right kidney and ureter were removed. To close the muscles, a Sultan suture was performed, from the subcutaneous continuous simple suture, both with 2-0 absorbable suture. Finally, 3-0 nylon and Sultan stitch were used on the skin.

Dogs 2 and 3 were referred for exploratory laparotomy surgery, since they had the parasite free in the abdominal cavity. A median ventral incision was made, pre-retro umbilical, to open the abdominal cavity, then the entire abdominal cavity was inspected to identify lesions in any organ or tissue not identified by ultrasonography, until the parasite was located in the cavity.

In the postoperative period, antibiotics (Cephalexin 30mg/kg, every 12 hours, for 7 days), non-steroidal anti-inflammatory drugs (Meloxicam 0.1mg/kg, once a day, for 3 days), and analgesics (Dipyrone 25mg/kg, every 8 hours, for 3 days) were prescribed. Local cleaning with 0.9% saline solution was indicated, followed by topical application with rifamycin spray, three times a day until the stitches were removed. It was recommended to wear surgical clothing or an Elizabethan collar and rest until return.

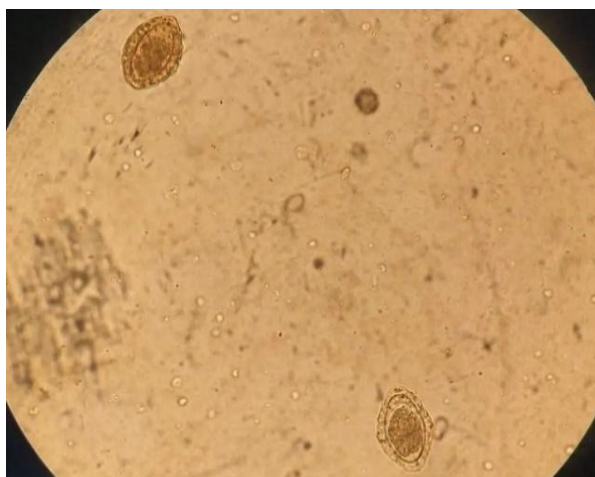
Below is specific information about the four individual cases.

CASE 1

Regarding the blood tests of patient 1, eosinophilia was observed in the blood count with 4250/ μ L. (Reference Value (RV): 100 to 1250/ μ L), and the other parameters of the blood count and biochemical tests were within the normal range.

For urinalysis, the urine sample was obtained by cystocentesis, and in physical analysis urine of clear yellow color and density 1.024 was observed. In biochemical analysis, traces of occult blood and alkaline pH were found. In the microscopic analysis, an increased number of leukocytes and erythrocytes per field was observed, as well as the presence of a small amount of triple phosphate crystals, bacteria, fat and eggs of *Dioctophyma renale* (Figure 2).

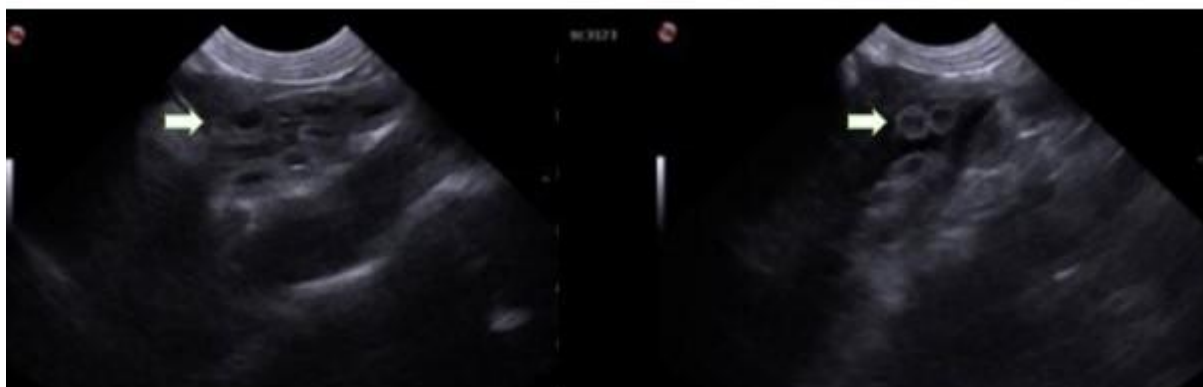
Figure 2. *Dioctophyma renale* eggs in urine sample from patient 4: dog, female, American Foxhound, 4 years. Blumenau, SC., 2022.



Source: VETEX Laboratory (2021)

On ultrasound, it was highlighted that the left kidney was in usual topography, with regular contours, preserved architecture, normal size (ER 7.60 cm - longitudinal axis), preserved cortico-medullary relationship and maintained echogenicity. The right kidney was not visualized, but in its topography there was the presence of cylindrical structures with hypoechoic centers and hyperechoic borders, images characteristic of the presence of *Dioctophyma renale* (Figure 3).

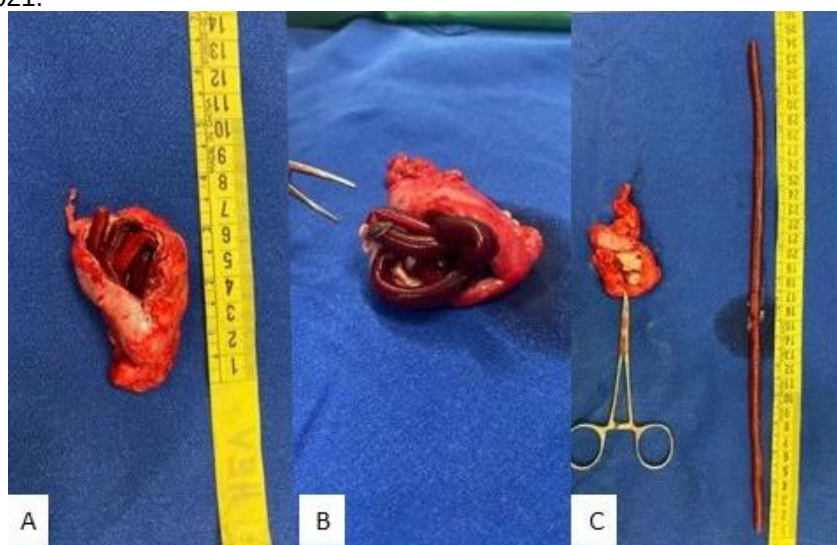
Figure 3. Topography of the right kidney indicating the presence of *Dioctophyma renale* in patient 1: dog, female, American Foxhound, 2 years old. Blumenau, SC., 2021.



Source: Natalia Upnmoor, Veterinary Sonography (2021)

After the procedure, the removed kidney was opened and inspected, confirming the presence of *Dioctophyma renale* inside, with the presence of a specimen of the parasite measuring 34 cm in length (Figure 4).

Figure 4. Right kidney after nephrectomy of patient 1: dog, female, American Foxhound, 2 years old. Blumenau, SC., 2021.



Legend: A. Kidney parasitized by *D. renale* measuring about 7 cm. B. Incision in the kidney and exposure of the parasite C. Right kidney together with the parasite measuring 34 cm. Source: Personal archive (2021)

CASE 2

In the blood count of patient 2, there was eosinophilia with 4806/ μ L. (RV: 100 to 1250/ μ L), leukocytosis of 17.80 thousand/ μ L (RV 6.00 to 17.00 thousand/ μ L), hyperproteinemia of 8.20 g/dL (RV 6.0 to 8.0 g/dL) and presence of circulating microfilariae.

For urinalysis, urine was collected through spontaneous urination, in the physical analysis, the urine showed a dark yellow, clear color and density greater than 1.040. In biochemical analysis, traces of protein and alkaline pH were found. In the microscopic analysis, the presence of leukocytes and erythrocytes, transitional epithelial cells, a large amount of triple phosphate crystals, bacteria and spermatozoa were observed. The presence of *Dioctophyma renale* eggs was not found in this examination.

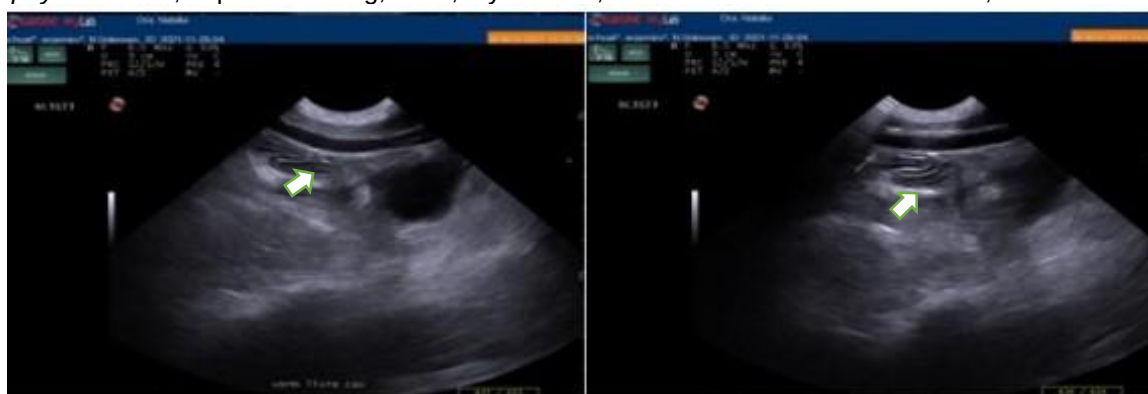
Abdominal ultrasonography showed an inflammatory/infectious process in the urinary vesicle (Figure 5), splenomegaly, and the presence of a cylindrical structure with a hypoechoic center and free hyperechogenic borders in the abdominal cavity, in the region of the left and central caudal abdomen, suggestive of *Dioctophyma renale* (Figure 6).

Figure 5. Ultrasound image of a dog's urinary vesicle with wall thickening, indicating an inflammatory/infectious process in patient 2: dog, male, 2 years old, American Foxhound. Blumenau, SC., 2021.



Source: Natalia Upnmoor, Veterinary Sonography (2021)

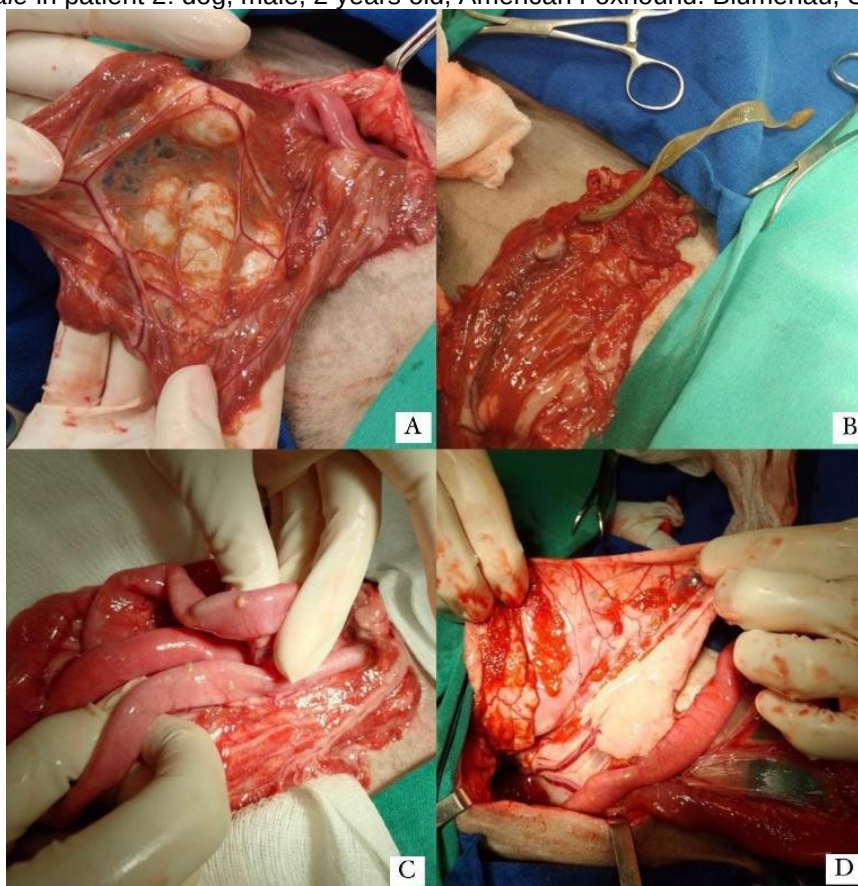
Figure 6. Ultrasonographic image of a free cylindrical structure in the abdominal cavity, suggestive of *Dioctophyma renale*, in patient 2: dog, male, 2 years old, American Foxhound. Blumenau, SC. 2021..



Source: Natalia Upnmoor, Veterinary Sonography (2021)

During the inspection of the cavity, only one specimen of the parasite was found, already lifeless, free in the abdomen, it was possible to observe that the omentum had a reddish color, with micronodular formations adhered to intestinal loops (Figure 7). After removal of the *Dioctophyma renale* (Figure 8), inspection of the entire abdominal cavity, a complete synthesis of the abdominal wall was performed, respecting its suture planes.

Figure 7 Abdominal cavity during surgical procedure, with presence of peritonitis and presence of lifeless *Dioctophyma renale* in patient 2: dog, male, 2 years old, American Foxhound. Blumenau, SC., 2021.



Legend: A) Hyperemic omentum. B) Parasite partially inserted into the abdominal cavity. C and D) Inflammatory reaction in organs and tissues. Source: Personal archive (2021).

Figure 8. *Dioctophyma renale* measuring 40 cm after its removal from the abdominal cavity of patient 2: dog, male, 2 years, American Foxhound. Blumenau, SC., 2021.



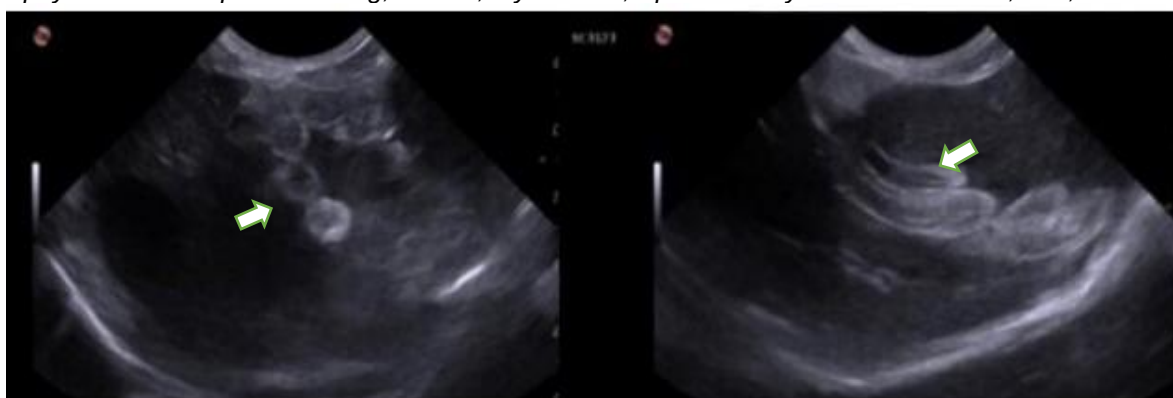
Source: Personal archive (2021)

CASE 3

Patient 3 received a complete blood count and biochemical tests, with no significant changes. Urine was collected through cystocentesis, and urine of clear yellow color and density 1.006 was observed in physical analysis. In the biochemical analysis, all parameters were within the reference values. In the microscopic analysis, there was the presence of rare bacteria, fat and mucus. No eggs were observed.

Abdominal ultrasonography showed the presence of a cystic and anechogenic structure in the caudal portion of the left kidney measuring 0.46 x 0.45 cm, a characteristic image of the presence of *Dioctophyma renale* between the hepatic lobes or in the parenchyma of the organ (Figure 9), suggesting exploratory laparotomy to elucidate the location and removal.

Figure 9. Ultrasonographic image of the caudal portion of the left kidney containing structures suggestive of *Dioctophyma renale* in patient 3: dog, female, 4 years old, Spanish Greyhound. Blumenau, SC., 2021.



Source: Natalia Upnmoor, Veterinary Ultrasonography (2021).

During the inspection of the abdominal cavity, the presence of a living specimen of *D. renale* measuring 52 cm in length was detected (Figure 10). After the removal of the *Dioctophyma renale* and inspection of the entire abdominal cavity, a complete synthesis of the abdominal wall was performed, respecting its suture planes.

Figure 10. *Diocotophyma renale* measuring 52 cm after its removal from the abdominal cavity of patient 3: dog, female, 4 years old, Spanish Greyhound. Blumenau, SC. 2021.



Source: Personal archive (2021)

CASE 4

In patient 4, three comparative blood counts were performed, due to the alterations presented in the first examination, with hematocrit of 26% (RV 37 to 55%), monocytopenia with 73 / μ L (RV 150 to 1350 / μ L) and thrombocytopenia of 31 thousand/ μ L (RV 175 to 500 thousand/ μ L). Mild anisocytosis, mild polychromatophilia, along with the presence of metarubricides that indicate a regenerative response of the bone marrow, and reactive lymphocytes that are related to inflammatory processes were observed. In the hematozoan survey, the sample was negative. At first, no biochemical examination was requested.

In the second examination, the picture of regenerative anemia was maintained with hematocrit of 27%, monocytopenia of 115/ μ L and thrombocytopenia of 44 thousand/ μ L, but with a slight increase in values, compared to the previous examination. In the red series, moderate anisocytosis, mild polychromatophily was observed together with an increase in metarubrocytes, indicating continuity of the regenerative response of the spinal cord. In the platelet evaluation, it was possible to observe the presence of macroplatelets, a finding that could be correlated with platelet consumption by the body and/or ongoing hemoparasitosis.

In the biochemical profile, the albumin/globulin ratio was decreased with 0.42 (RV 0.50 to 1.70) due to the albumin value that presented 1.47 g/dL (RV 2.3 to 3.8 g/dL), the values of urea and creatinine were considerably high, indicating azotemia, with urea at 116.00 mg/dL (RV 10.0 to 60.0 mg/dL) and creatinine at 1.70 mg/dL (RV 0.5 to 1.4 mg/dL).

Clinical treatment was then instituted by the veterinarian due to the suspicion of hemoparasitosis with antibiotic therapy based on Doxycycline, 5mg/kg every 12/12 hours, for 21 days, iron-based supplementation (Erythros) for 30 days and Prevegest for 3 days to

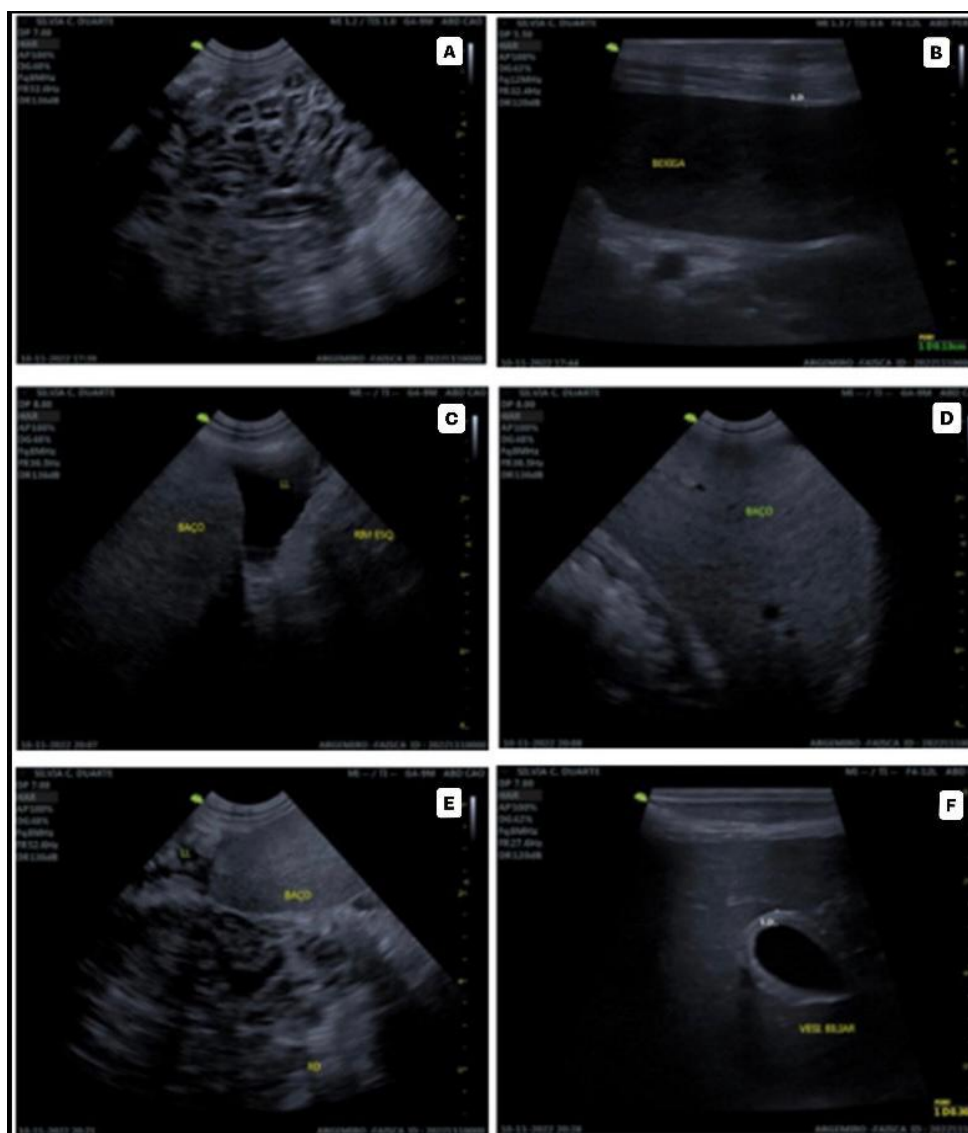
cease heat, since the patient had erythrogram below normal. After treatment, a new examination was performed.

In the third examination, the erythrogram values improved, although still with monocytopenia of 142 / μ L, but with better values when compared to the previous examinations. Platelet values were regularized, excluding thrombocytopenia. ALT values increased considerably in relation to the previous test, from 35.00 IU/L to 111.00 IU/L (RV 7 to 92 IU/L), indicating a possible liver injury. Urea and creatinine values decreased, urea from 116.00 mg/dL to 65.00 mg/dL and creatinine from 1.70 mg/dL to 1.46 mg/dL, approaching the reference values, and the albumin/globulin ratio increased from 0.42 to 0.49, because the albumin value normalized to 2.4g/dL.

Abdominal ultrasonography of patient 4 (Figure 11) showed splenomegaly, a gallbladder with diffuse wall thickening (0.30 cm thick), filled with anichogenic and homogeneous content, indicating fasting and correlated with an inflammatory process, cholecystitis. It was not possible to visualize the pancreas due to the enlargement of the right kidney.

The left kidney was in the usual topography, measuring 8.06 cm, in a sagittal plane, with regular contours with preserved corticomedullary distinction and cortical echogenicity within normal limits. In the topography of the right kidney, no characteristic structures of the organ were visualized, the presence of cylindrical structures with hypoechoic centers and hyperechoic borders (measuring 5.78cm), surrounded by a capsule, suggestive of the presence of *Dioctophyma renale* in the topography of the right kidney. The bladder had adequate liquid distension, thin walls, regular mucosa and anichogenic content with discrete echogenic points, being sediment and/or cellularity. In the abdominal cavity, the presence of free fluid in moderate amounts, with low cellularity around the spleen, right kidney and left kidney, was observed.

Figure 11. Ultrasound examination of patient 4: dog, female, American Foxhound, 4 years old. Blumenau, SC., 2022.

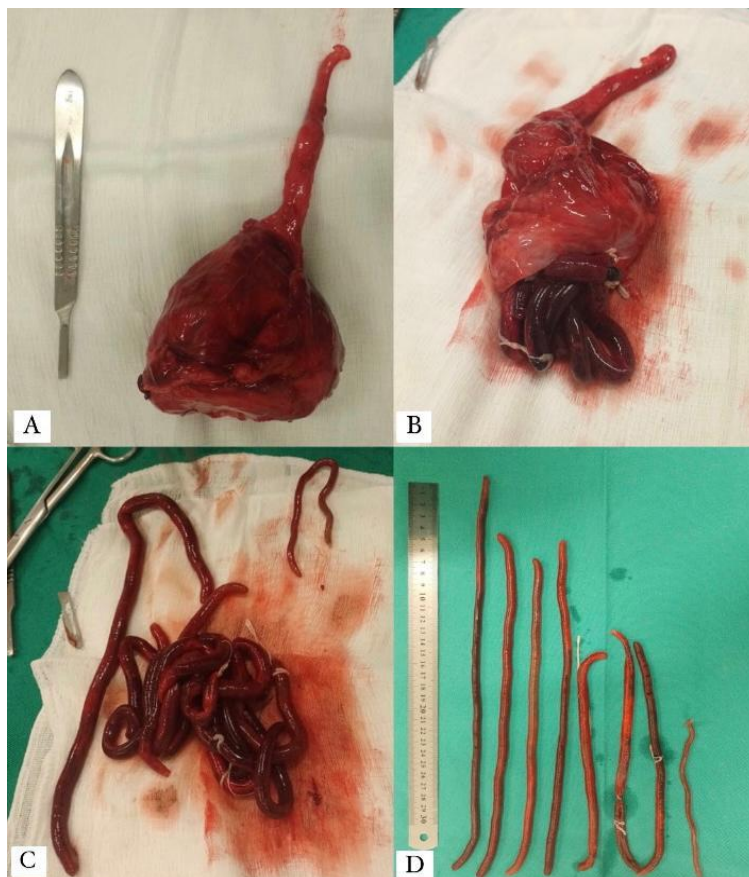


Legend: A) Presence of cylindrical structures with hypoechoic center and hyperechoic edges, suggestive of *Diocotophyma renale*. B) Bladder with the presence of sediment. C) Left kidney in usual topography. D) Spleen indicating splenomegaly. E) Distension of the spleen approaching the right kidney. F) Gallbladder with diffuse wall thickening with anechogenic and homogeneous content. Source: Silvia C. Duarte, Veterinary Ultrasonography (2022)

After performing the exams and treatment, the patient was referred for a surgical procedure of nephrectomy of the right kidney.

On inspection of the kidney removed from patient 4, eight specimens of the nematode *Diocotophyma renale* were found (Figure 12).

Figure 12. Right kidney after nephrectomy of patient 4: dog, female, American Foxhound, 4 years old. Blumenau, SC., 2022.



Legend: A) Kidney with alteration in morphology. B) Incision in renal capsule and exposure of parasites. C and D) Eight specimens of *Dioctophyma renale* measuring between 10 and 40 cm. Source: Personal archive (2022).

DISCUSSION

There are reports of dioctophimosis in several countries as described by Pedrassani and Nascimento (2015), in Brazil, its appearance has been described mainly in the southern region, in Santa Catarina, Rio Grande do Sul and Paraná (Zanchett; Pedrassani, 2020). Some authors report that the incidence of parasitism is higher in stray dogs with non-selective eating habits (Perera *et al.*, 2017), data also present in the case, which although dogs are not strays, have a non-selective eating habit, given the practice of hunting.

The dogs present in the report are residents of Blumenau, Santa Catarina and had the habit of hunting wild boar in the region of Campos Novos, the animals hunted in a flooded region where there was the presence of fish and frogs, species in which it was reported by Silveira *et al.* (2015) as intermediate and paratenic hosts of the parasite, which explains the contamination of dogs through the possible ingestion of these animals. Dog owners report that during the hunt they found dead coati and when they opened, parasites

similar to those found in dogs were visualized, suspecting the presence of the parasite in the region.

As already described by Zardo et al. (2012), the right kidney is the parasite's organ of predilection, as found in dogs 1 and 4, however, the same authors also report its free presence in the abdominal cavity, as described in dogs 2 and 3.

As reported by Kommers, Ilha and Barros (1999), *D. renale* manifests itself asymptotically in dogs, being found mostly in surgical procedures and necropsies accidentally, this fact can also be verified in the present report, where the dogs did not present specific clinical signs and the parasite was located during routine examinations, after one of the dogs on the property died from dirofilariosis.

The search for the parasites took place through urinalysis and ultrasound exams. Ruiz et al. (2014) report that it is possible to visualize the parasite's eggs in the microscopic evaluation of urine, as verified in dog 1.

In the cases described in this study, ultrasonography was extremely important to confirm the diagnosis and location of the parasite, indicating the correct treatment. In this examination, it was possible to observe the alterations caused by *Dioctophyma renale*, such as the destruction of the renal parenchyma, and its reduction to the capsule, data similar to those found in the literature (Kommers; Island; Barros, 1999; Fortes, 2004).

Abdominal ultrasound, according to Ruiz et al., is a descriptive method, where it is possible to visualize the appearance of the kidney along with the presence of the parasite in renal topography, and it is also possible to visualize the abdominal cavity together with the organs present. Through this method, it was possible to reach the diagnosis of dogs 2 and 3, where the parasite was free in the abdominal cavity, and dogs 1 and 4, where the parasite was located in the right kidney.

Carvalho (2014) describes that through ultrasound examination it is possible to observe the renal capsule containing the parasites internally, being possible to visualize them in longitudinal and transverse sections, presenting themselves as cylindrical and rounded structures, usually surrounded by fluid, similar data were seen in the ultrasound examinations of dogs 1 and 4.

Trojan et al. (2018) report that the alterations found in the blood count are usually nonspecific, but in some cases they may indicate an inflammatory process, or the presence of eosinophilia, also found in cases 1 and 2, which is consistent with the findings in the

literature related to the presence of the parasite, such a finding may be similarly related to the appearance of *Ancylostoma* sp. in the coproparasitological examination of the dog 1.

In the blood count of dog 2 it was also possible to observe leukocytosis with inflammatory characteristics, slight hyperproteinemia that associated with urine density greater than 1040, could indicate dehydration, even if the hematocrit was within normal values. According to Bush (2004), dehydration decreases plasma volume and increases the concentration of plasma proteins and red blood cells.

Also in the blood count of dog 2, it was possible to observe the presence of circulating microfilariae, such a finding requires a more precise search to differentiate between the main species of microfilariae found in dogs, *Dirofilaria immitis* or *Acanthocheilonema reconditum*, where *D. immitis* is considered a pathogenic species, responsible for canine heartworm disease, and *A. reconditum*, is not considered a pathogenic species.

In the blood count of dogs 3 and 4, it was possible to observe anemia, in both cases, this finding may be due to the action of the parasite, Nelson and Couto (2015) explain that the parasite leads to this condition due to its ability to destroy the renal parenchyma, hindering the production of erythropoietin by the kidneys, which is, an important hormone that participates in erythropoiesis.

Comparing the exams of dog 4, it was possible to observe an improvement in the patient's condition, where the parameters evaluated became adequate to the reference values even before the surgery, given the previous treatment performed.

Before performing nephrectomy, it is indicated to evaluate renal function by determining the glomerular filtration rate (GFR) through the use of an exogenous marker or by scintigraphy, in cases of bilateral renal dysfunction, the prognosis becomes cautious (Fossum, 2014), however this test was not performed in these patients, because urea and creatinine values were normal or close to normal (dog 4) before the surgical procedure.

In patient 4, the urea and creatinine values initially obtained were high, but even before surgery, they decreased, reaching close to the reference values. The serum levels of these substances, when elevated, characterize azotemia disorder, in this case of renal origin, which according to Lima et al. (2016) is a consequence of the loss of renal parenchyma, caused by diroctophimosis.

Proper treatment depends on the location of the parasite and the destruction it causes at the site. Pedrassani et al. (2009) indicate the surgical removal of the parasite by

means of nephrotomy when it is located inside the renal capsule, keeping the renal tissue still viable, or as indicated by Ruiz et al. (2014), a nephrectomy, where the kidney is removed when there is destruction of the renal parenchyma. In the present case, the surgical procedure performed on dogs 1 and 4 was unilateral nephrectomy, since there was total destruction of the renal parenchyma pointed out by Ruiz et al. (2014).

In dogs 2 and 3, where the parasite was located in the abdominal cavity, exploratory laparotomy was performed, which according to Oliveira (2018), is the technique used to access the abdominal cavity, and the most frequently used in small animals.

Patient 2 also observed peritonitis during the inspection of the cavity, and the omentum was reddish in color, with micronodular formations adhered to intestinal loops, corroborating a report published by Silveira *et al.* (2015), who report that *D. renale* was found free in the abdominal cavity of dogs, with the presence of marked peritonitis, however in this report the authors observed a characteristic of serous exudate with yellowish color and fibrin filaments.

Santos et al. (2022) state that no effective pharmacological alternative for the treatment of diotrophimosis has been described, Pedrassani et al. (2009) explain that the location of the parasite along with its size and thickness would make it difficult to remove, so most cases have surgery as an outcome.

FINAL CONSIDERATIONS

As it is a disease that is difficult to diagnose early, with no reports in Blumenau, the present study academically exposes the occurrence of diotrophimosis in the region, a determining factor for veterinarians to pay attention to this pathology.

It can be seen that parasitism by *Dioctophyma renale* can result in irreversible consequences for the host, since it leads to total loss of the affected kidney or kidneys. This fact highlights the need for preventive care of dogs used in risky practices, such as hunting wild animals. In addition, it is important to guide their owners about the risks of using dogs for hunting and possible consequences from this practice.

The patients in this study had a good prognosis since the removal of the parasite, either from the abdominal cavity or through nephrectomy of the affected kidney, allowing survival and quality of life, however, care should be taken in order to avoid new contamination, emphasizing the importance of periodic check-up of patients, promoting early diagnosis and appropriate treatment.

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