Health Indicators Monitoring During Treatment with Milteforan in Dog Positive for Leishmania

Veterinary Medicine

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Abstract

Leishmaniasis is a complex disease caused by parasitic protozoans which are transmitted to a susceptible host by phlebotomine sand flies. Leishmania parasites cause leishmaniasis, with diverse epidemiological and clinical patterns. Owned dogs appeared to be a permanent, all seasons, source of infestation. Depending on the conditions of the area, some areas such as Kruja (Albania) have ideal conditions for the presence of the vector and looked to be at a higher risk of exposure to phlebotomes. The relatively high number of owned dogs found positive for leishmaniasis, indicated that leishmaniasis should be taken seriously into consideration as a disease of zoonotic importance. Dog owners were usually willing to accept euthanasia as the first choice for their dogs. For the treatment of positive cases it were used melgumine antimoniate (glucantime), 100 mg/b.w., every day, s/c, for 20-30 days in a row and allopurinol 15 -20 mg/kg b.w., per os, twice daily for 30 days. Sometimes two drugs used usually combined together. In the case of treatment and recurrence are already cost and serious injuries to bring these preparations or their combined use in the liver and kidney. On the other hand, the study shows that Milteforan can be used with high efficiency against leishmaniasis at the dogs. Monitoring of haematological and biochemical indicators showed that the dog did not even care about the liver and kidneys.

1. Introduction

Leishmania is observed to be more common in dogs of western lowland and hilly areas (Ashford RW, 2000; Gramiccia M, and Gradoni L, 2007). In Albania the disease has a prevalence of 10% in non-endemic areas and about 15 % in endemic areas (Bizhga B, *et al*., 2013). Prevalence varies a lot considering the area, races and ages. According to the data collected from the Petlife Hospital in Tirana these prevalence's are very different and are indicated from the age, sex, dogs breed, region etc. The setter dog checked in this hospital in the last 2 years resulted to have the highest seropositive for leishmaniasis in comparison with other races. Case brought in this study represents a dog which was presented in the hospital with a pathology which is accompanied also with epistaxis. Clinical status was evaluated according to criteria suggested by Abranches *et al*. 1995. After clinical evaluation, dog resulted with two clinical signs of leishmaniasis (weight loss, dermatitis, hair loss, mouth and skin ulcers, enlarged lymph nodes, arthritis, and keratoconjuctivitis). Considering its history, the area from which it came, hemorrhage and its possible cause trombocitopenia was suspected and diagnosed for leishmaniasis (Ashford RW, 2000).

Miltefosina per os is the actual solution for handling leishmaniasis in dogs diagnosed positive (Davidson RN, 1998). Each ml from the solution contains 20 mg miltefosine. Indication of the drug is medication of leishmaniasis in dogs (Baneth G, and Shaw SE, 2002). Drug is administered

at a dose of 2 mg / kg weight, once daily for 28 days by mouth. Drug is well mixed in food or a part of it (Berman J, 2005).

2. Material and Methods

Animal

Clinical case presented to the hospital on October 29, 2012. Dog breed Rottweiler, male sex, age 2 years, weighted 40 kg, with good physical condition, was presented to the clinic because he had hemorrhagic leak from the nose. Were suspected for leishmaniasis and was undertaken relevant test which proved positive. After rapid test animal was confirmed for positivity with ELISA technique with which even this technique resulted positive (Gramiccia M, and Gradoni L, 2007). The dog lives in the region of Kruja (Albania). The only thing that could have interest from history was that during one year he had external parasite (ticks and other). The client had not treated the dog before for the ectoparasites. Once the dog was diagnosed with visceral leishmaniasis was proposed to start the treatment with Milteforan for 29 days (Pearson RD, 2003).

Indicators and time

Before starting the treatment, we carried out haematological and biochemical analyzes in order to check the status of the blood elements HCT and PLT, and kidney and liver biochemical panels (Bianciardi P, *et al*., 2009).

The tests were done before Oct 29, 2012 and then we started the treatment with Milteforan 1ml/kg weight per os. We repeated the tests again on Nov 03, 2012. On 03/11/2012, 03/11/2012 again and tests were carried out after the date 01/12/2012. During the treatment of the dog (14-15 treatments), there was not any health problem except one day in which the dog had a slight diarrhea. Also during the time of treatment, there were spontaneous leakage from the nose (bleeding) and in these case was used vitamin K.

The Hematological and Biochemical values monitored for the treated dog.

Blood was taken with EDTA and the monitoring was realized at Small Animal Hospital Petlife, in Tirana. Haematological examinations were carried out using the automatic Analyzer Sysmex. Biochemical indicators were studied in biochemical analyzer Cobra. Pet success during the examination of the blood parts realized the preparation directly to the animal, but also in the laboratory while following the asepsis rules.

Microscopic examination identified changes in the blood picture and the presence of parasites. The microscopic evaluation of blood smear was conducted to identify the parameters of leukocyte formula.

3. Results and Discussion

Table 1: Results of haematological examination on 31st October 2012

Indicator	Value	Indicator	Value
E.o.	3 370 000	MCV	63
WBC	6 900	MCH	20.4
Hct	24.4	MCHC	32.4
Hgb	7,9 g/%	Trombocites	156 000

a. The results of biochemical examination on 29th October, 2012.

- Glucose 96 mg%
- Urea 24.6 mg%
- GOT 42 U l
- GPT 20 U l
- Creatinine 0,70 mg%

In the dog was very evident anemia and thrombocytopenia. According to the recommendations from the drug manufacturers, milteforan had unsuccessful results when the hematocrit is below 30%. In this case hematocrit resulted in 24.4. After consultation it was decided early treatment for 2 reasons. First, the animal owner's insistence and second, considering the general condition of the animal. Treatment began on 1st October 2012 with milteforan. The dose was 1 ml/10 kg body weight per os. During 29 days of treatment, the dog was treated with 4 ml per day which was thrown to him using a syringe in the mouth. Milteforan was exclusively from Virbac. While we perform full haemato-biochemical examination after two days from the start of the treatment. The reason was to follow the trend of haemato-biochemical examination (value of HCT) and the indicators of starting treatment.

Table 2: The results of haematological examination on 3rd November 2012

Indicator	Value	Indicator	Value
E.O	3 710 000	MCV	62.8
WBC	8 200	MCH	19.9
Hct	23.3	MCHC	31
Hgb	7,4 g/%	Trombocites	156 000

Animal medication started before 2 days and goes on to note the deepening of the state of anemia almost all indicators. Only the number of red blood cells remained constant whiles all the values of all indicators of the erythrocytes and hemoglobin is reduced. We examined that the level of hematocrit continues to fall.

b. The results of biochemical examination on 3rd November 2012.

- Urea 19.5 mg%
- GOT 74 U l
- GPT 16 U l
- Creatinine 0,71 mg%

We repeated the full examination after two weeks since the begin of the treatment. In this time we expect the impact on the indicators of kidney function and liver.

Table 3. The results of haematological examination on 17th November 2012

Indicator	Value	Indicator	Value
E.O	3 850 000	MCV	62.9
WBC	10 200	MCH	20.6
Hct	26.3	MCHC	30.8
Hgb	8,0 g/%	Trombocites	234 000

In the beginning of the third week of treatment, there was a tendency of reduction of anemia in the entire indicators (Mateo M, *et al*., 2009.

Clinically after 2 weeks since the begin of the treatment, the dog began to present problems with the gastrointestinal system, which consisted in the absence of appetite, nausea and vomiting and diarrhea, this happened on the 14th and 15th day of the treatment. At the same time the treatment with Milteforan was continued and the clinical signs were stopped after symptomatic treatment (Miro´ G, *et al*., 2008).

c. Biochemical examination on 17th November 2012.

- Urea 59.5 mg%
- GOT 84 U l
- GPT 66 U l
- Creatinine 0,85 mg%

The last full examinations were conducted two days after the treatment finish. In this time we can see the last haemato-biochemical changes because the Milteforan can be used only after six months (Denerolle P, *et al*., 1999).

Table 4: The results of haematological examination on 1st December 2012, a day after the first session of treatment

Indicator	Value	Indicator	Value
E.O	4 600 000	MCV	57.8
WBC	12 100	MCH	20.4
Hct	29.2	MCHC	31.5
Hgb	9,0 g/%	Trombocites	394 000

Monitoring on the first day after the end of the first session of treatment was observed the tendency of reduction of anemia in the entire indicators (Noli C, and Auxilia ST, 2005). We notice the highest number ever observed of leukocyte and the largest number of red blood cells which caused nausea, vomiting and diarrhea on the day of 14th and 15th. (Verma NK, and Dey CS, 2004). These symptoms were interrupted after symptomatic treatment. However hematological indicators show that the situation was improving significantly on November 3rd.

d. The results of biochemical examination on 1st December 2012.

Urea 27.8 mg%
GOT 66 U l
GPT 20 U l
Creatinine 0,97 mg%

Despite that treatment has continued without interruption, and was discontinued only the first 2 days we noticed a significant improvement compared with biochemical indicators on 17th November when they reached the peak and were observed also clinical signs related to the gastrointestinal tract (Pearson RD, 2003).

The BUN level results are approximately 2 times lower compared to the peak founded on 17 November (Costa F, *et al*., 2003). GOT levels decreased while the level of GPT results almost 3 times lower than 17th November. Creatinine level had no insignificant variations along the treatment curve (Rodrigues ML, *et al*., 1999).. Clinical condition of the animal on 3rd December was quite satisfactory.

Fig. 1. The dog before and after the treatment.

The seropositive dog during almost every moment of laboratory examinations was evaluated and for the blood smears indicators. At the time of treatment, during the blood morphocytometric examination, was identified only increasing tendency of monocyte. At the same time, the leukocytosis resulted not evident.

4. Conclusions

- Treatment with Milteforan results is highly effective for the treatment of dogs diagnosed seropositive for leishmaniasis.
- Milteforan does not affect to the indicators of kidney and liver.
- Milteforan could conceive of effective and following manufacturer's criteria. Appreciating the side effects are almost negligible and this medicine can be used even when HCT is under 30 when the animal biological indicators enable its use.
- Seropositivity leishmaniasis disease in dogs can be accomplished with rapid diagnostic kits. In most cases, ELISA confirms the effectiveness of rapid diagnostic Kitty.
- Leukocytosis is not evident indication in sick animal with leishmaniasis.
- Thrombocytopenia may serve as a key moment of the diagnosis of the disease, especially in case of the lack of disease clinic. The presence of blood monocytosis is very helpful in diagnosing the disease.

5. References

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