UNDERLYING CAUSE OF UNTREATABLE MALASSEZIA INFECTIONS AND PODODERMATITIS IN A GOLDEN RETRIEVER: SYSTEMIC LUPUS ERYTHEMATOSUS

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Abstract:

The purpose of this case report was to point out the possible association of systemic lupus erythematosus induced malassezia and pododermatitis in a Golden Retriever. A 9 year-old Golden Retriever breed dog referred to Istanbul University Faculty of Veterinary Medicine Department of Internal Medicine with a history of pruritic vesicular lesions, diffuse hyperpigmentation on the skin, pus discharge and edema in all paws. *Malassezia pachydermatitis* was detect in the mycotic cultures made from the deeply taken hair sample. Swap specimens taken from feet and ears for bacteriological culture and antibiograms. As a result of bacteriological examination, *Staphylococcus chromogenes* and *Escherichia coli* were found in swap samples taken from the interdigital region, *Staphylococcus intermedius* and *Enterococcus faecalis* were isolated from the ear swabs. Malassezia infections and pododermatitis were try to be treated, but not successful. During this period hepatomegaly and splenomegaly were detected on the radiographic and ultrasonographic examination of the patient and also polyarthritis was formed. Pathological results of skin biopsy showed that may be an autoimmune disease in the patient. As a result, systemic lupus erythematosus (SLE) was detect in the patient by looking at the ANA test. Treatment of malassezia infections was continued and SLE was treate with cortisone. Thus, at the end of eight months, the treatment is successful.

Key words: *Systemic Lupus Erythematosus, Malassezia Infections, Pododermatitis, ANA, Dog*

Introduction:

Systemic Lupus Erythematosus (SLE) is a multi-systemic immune-mediated disease which antibodies result in immune-mediated damage to multiple organs. These antibodies bind to specific organ proteins and cause type 2 hypersensitivity, and immune complex depositions results type 3 hypersensitivity. The reason for SLE is not fully understood yet. (Stone, 2017). SLE usually develops anemia, thrombocytopenic purpura, glomerulonephritis, symmetric polyarthritis, dermatitis or thyroiditis in dogs. SLE is confirmed by laboratory findings such as positive LE cell tests, antinuclear antibodies, positive anti-globulin tests and rheumatoid factor (Lewis et al., 1965; Lewis and Schwartz, 1971). LE has a very low sensitivity for SLE diagnosis in the literature review; However, the ANA vibration is more susceptible (Scott et al., 1983; Smee et al., 2007).

Pododermatitis is a common and frequently debilitating inflammatory disease of the pedal skin of dogs (White, 1989) The clinical signs of pododermatitis include diffuse erythema and thickening of the skin, particularly in the dorsal interdigital and ventral palmoplantar regions. Numerous bacterial species, including *Methicillin-Resistant Staphylococcus aureus* and *Escherichia coli*, isolate on culture. This aggressive bacterial infection cause deep pyoderma and a moist exudate (Swaim et al, 1991).

Malassezia genus includes eleven distinct lipophilic yeast species (Batra et al., 2005). *Malassezia pachydermatis* is a opportunistic, unipolar-budding yeast of increasing importance both in humans and animals (Chryssantou et al., 2001). *M. pachydermatis* is a commensal on skin and it can be isolated of healthy dogs. Several factors have been suggested to cause overgrowth of the organism. Hypersensitivity disorders, bacterial skin infections, keratinization defects, autoimmune and endocrine diseases are some of these factors (Morris, 1999).

The purpose of this article is to emphasize that in secondary infections, the treatment success is to find and treat the primary disease. It is also underline that unconscious treatments may lead to the generation of resistant bacteria and the inability of treatment to become impossible.

Case history:

A nine years old, non-castrated male, golden retriever presented with a history of itching, alopecia and hyperpigmentation to small animal clinic in Istanbul University, Department of Internal Medicine. This patient has been having these problems for a few weeks and tries to treat with ivermectin (0.3 mg/kg/weekly), enrofloxacin (5 mg/kg/daily) and amitraz shampoo which were giving by other clinic.

First of all body temperature, respiratory and pulse rate revealed normal value by clinical examination but hyperkeratosis, edema and pyoderma were founded in all paws (Figure 3). Diffuse erosive, painfully and itchy lesions were present all of the body especially on the nose and around the eyes (Figure 1) and purulent, smelly otitis externa were determined. The dog was limping from time to time and it were present arthritis. Hepatomegaly and splenomegaly were detect on the abdominal radiograph and ultrasonography of the patient. Secondly, hematology and serum biochemical profile are show in Table 1 and all values were normal. For the parasitic examination, the final results of skin scarring was negative, and *Malassezia pachydermatitis* was detected three weeks after the mycotic culture from the hair sample. Swap specimens taken from feet and ears for bacteriological culture and antibiogram. As a result of bacteriological examination, *Staphylococcus chromogenes* and *Escherichia coli* were found in swap samples taken from the interdigital region, *Staphylococcus intermedius* and *Enterococcus faecalis* were isolated from the ear swab. Antibiogram results is shown in Table 2 and this antibiogram showed how serious the final result is. On the other hand, Total IgE test result was negative.

The treatment was start according to the results of antibiograms. Pododermatitis and otitis externa were treat with Cefepime (20 mg/kg/q12h İM) for two weeks and this period ketoconazole shampoo was used for skin lesions once a week. According to mycotic culture result; Malassezia started to treatment with itraconazole (10 mg / kg / day), but malassezia infections could not be treated despite two months.

Two months after the treatment started, the pathological results of skin biopsy showed that there may be an autoimmune disease in the patient. Lupus Erythematosus (LE) cell test was negative with the method of Modified Romanowsky, but with the IFA Method the ANA test was positive with 1/40 titer using Anti-DOG IgG conjugate. After definitive diagnosis of SLE, there was a marked improvement in skin problems at 2 months in use of prednisolone (2 mg / kg / day) and itraconazole. With the onset of cortisone use, skin problems quickly recovered (Figure 2, Figure 4). We are now trying to suppress systemic lupus erythematosus with prednisolone.

Conclusion:

Clinical cases in Veterinary Medicine have reported the cutaneous lesions due to canine SLE. But cutaneous lesions don't typical of SLE (Fournel et al., 1992). On the other hand, cutaneous drug reactions in the dog may cause papules, plaques, and erosions. Moreover, some lupus erythematosus or vasculitis cases that concern the foot may be attribute to drug treatment. Therefore, systemic lupus erythematosus, due to drug reactions, may cause pododermatitis (Breathnach et al., 2008). Similarly, in this case, because of dermatological lesions, previously used drugs are thought to trigger systemic lupus erythematosus.

The occurrence of S. intermedius resistant to all antimicrobials commonly used for systemic therapy in small animal medicine is alarming. This is of special concern, since S. intermedius has so far not presented as a therapeutic problem in pets in Europe and resistance to several antimicrobial classes appears rare (Loeffler et al., 2007). In this case only the Cefepime sensitive Staphylococcus intermedius is indicated, and when the empirical treatment is performed, antibiotic resistance should be consider. Antibiotic-resistant bacteria which grow as a result of unconscious treatments make treatment difficult.

Streptococcus spp., Staphylococcus spp. and Escherichia coli can cause dermatitis together with malassezia pachydermatis. When the treatment was evaluate in terms of success, 86% of patients using local therapy with parenteral antibiotics were successfully treated. On the other hand, 100% of patients using parenteral cortisone and azole-derived with antibiotics were successfully treated (Petrov and Mihaylov, 2008). However, the presence of an immunological disease has not been investigate for the effect of the cortisone response in these patients. We concluded that the use of azole-derived antifungal with antibiotics in this case may be ineffective in the presence of SLE in the patient. The patient was treated with antibiotics and itraconazole with cortisone.

We believe that it would be useful for veterinarians to think about infections such as Malassezia and pododermatitis in the diagnosis and treatment of systemic Lupus erythematosus as a multisystemic infection and develop appropriate protocols.

Table 1; Routin Blood Work of the Case

	Results	Reference Range		Results	Reference Range
RBC (ul)	6	5,5-8,5	**GLUCOSE** (mg/dL)	91	60-125
HGB (g/dl)	12,8	12-18	**UREA** (mg/dL)	8	7-27
PCV (%)	42	37-55	**CREATINE** (mg/dL)	0,5	0,4-1,8
WBC (1000/uL)	10,2	6-17	**AST** (U/L)	22	5-55
PLT (1000/uL)	426	200-500	**ALT** (U/L)	23	5-60
MCV (fL)	70	60-77	**ALP** (U/L)	72	10-150
MCH (pg)	21	19,5-26	**y-GT** (U/L)	2	0-10
MCHC (g/L)	30	32-36	**CHOLESTEROL** (mg/dL)	233	112-328

Table 2: Antibiogram

Antibiotic variety	Place of swab	
	Interdigital region	**External Ear Canal**
Amoxicillin/ clavulonic acid	S	R
Cefepime	**S**	**S**
Ceftiofour	S	R
Chloramphenicole	R	R
Ciprofloxacin	R	R
Enrofloxacin	S	R
Erythromycine	R	R
Gentamicin	S	R
Kanamycin	R	R
Streptomycin	R	R
Neomycin	R	R
Penicillin G	R	R
Sulbactam/ ampicillin	S	I
Sulfamethoxazole/ trimethoprime	S	R
Tetracycline	I	R
Marbofloxacin	S	R
S, Susceptible; R, Resistant; I, Intermediate		

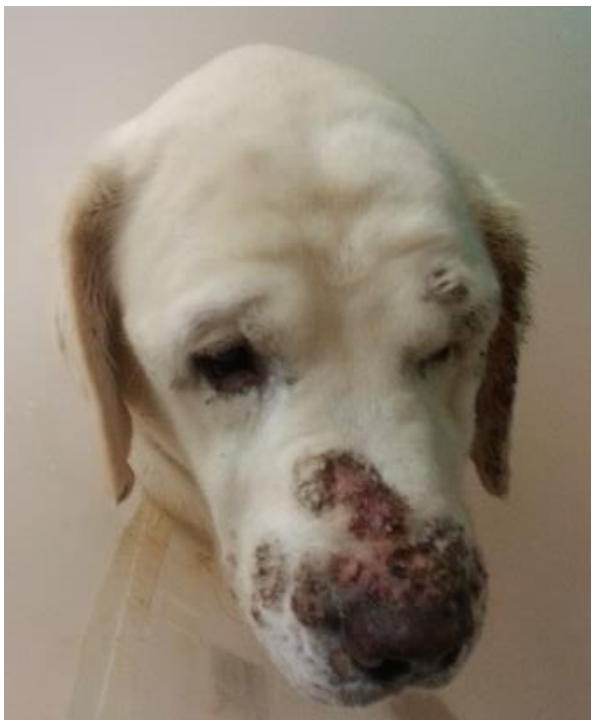

Figure 1; Lesions over the nose before treatment

Figure 2; Lesions over the nose after treatment

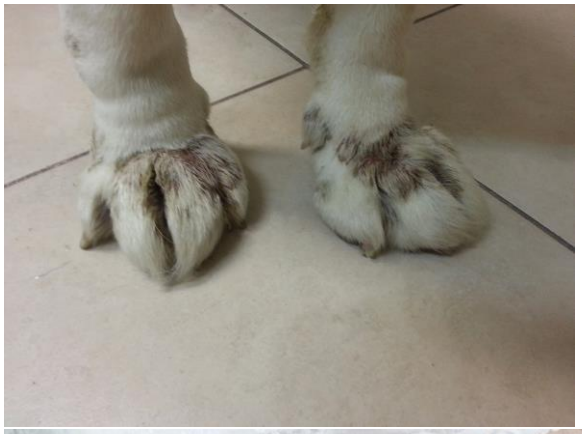

Figure 3; Lesions in the paws

Figure 4; Post-treatment status

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