COMPARATIVE EFFICACY OF DIFFERENT ANTIFUNGAL DRUGS IN CANINE DERMATOMYCOSIS

A.G. Dubey, A.M. Rode, N.P. Dakshinkar, A.A. Sanghai and G.R. Bhojne
Department of Veterinary Clinical Medicine, Ethics & Jurisprudence, Nagpur Veterinary College, Nagpur 440 006. Maharashtra Animal & Fishery Sciences University, Nagpur – 440 001.

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In the present study total 122 dogs with dermal infection were subjected to Woods lamp screening, direct microscopic examination of skin scraping and cultural isolation. Eighteen dogs were confirmed positive for dermatomycosis on the basis of these different laboratory tests. Dogs found positive for the dermatomycosis were randomly divided into three treatment groups containing six dogs in each group, dogs of group I were treated with Fluconazole @ 5 mg/kg body weight orally daily till recovery, group II were treated with Ketoconazole@ 10 mg/kg body weight orally daily till recovery and group III were treated with Griseofulvin @ 20 mg/kg body weight orally daily till recovery. All dogs showed complete recovery after 4 to 6 weeks of treatment with initiation of normal hair growth pattern.

Key words: Dermatomycosis, Antifungal drugs, Dog

Dermatomycosis (also known as ringworm), an important skin infection in dogs, is a fungal superficial skin infection of keratinised tissues, claws, hair, and stratum corneum caused by different species of Microsporum and Trichophyton, with Trichophyton being less common Mantelli and Sommariva, (1988); Wright, (1989). There are a number of classes of antifungal drugs. The oldest antifungal drug is Amphotericin B but it has a side effect of renal toxicity Maddison et al. (2008). The next group which is commonly used is Azole group containing Ketoconzole, Fluconazole, Itraconazole etc Maddison, (2008). Another most common antifungal drug used for treatment of dermatomycosis in dogs is Griseofulvin. Research in antifungal drugs has increased dramatically in the last two decades. As a result of this number of antifungal drugs are available in the market. As large number of dogs are presented to Teaching Veterinary Clinical Complex with complaint of skin infection. The goal of the present study is to evaluate the efficacy of different antifungal drugs against dermatomycosis in dogs.

Materials & Methods

The present study was conducted on the clinical cases of dogs suffering from dermatomycosis. Suspected dog for dermatomycosis were screened through woods lamp and microscopic examination of hair plucking and skin scraping was done to conform diagnosis Hungerford et al.(1998) and to rule out other possible infection. A total 18 of 122 dogs were screened for the dermatomycosis, eighteen dogs were found positive for dermatomycosis. These dogs were randomly divided into three treatment groups containing six dogs in each group. Each group was treated with different antifungal drug as under.

<table>
<thead>
<tr>
<th>Groups</th>
<th>No of dogs</th>
<th>Drug used for the treatment</th>
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<tbody>
<tr>
<td>I</td>
<td>6</td>
<td>Fluconazole @ 5 mg/kg body weight orally daily till recovery.</td>
</tr>
<tr>
<td>II</td>
<td>6</td>
<td>Ketoconazole@ 10 mg/kg body weight orally daily till recovery.</td>
</tr>
<tr>
<td>III</td>
<td>6</td>
<td>Griseofulvin @ 20 mg/kg body weight orally daily till recovery.</td>
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</table>

Results & Discussion

The clinical manifestations in infected dogs were diffuse and generalized circular erythematous lesions with alopecia in some dogs lesions with hyperkeratosis, papules, scales and/or crust over the body parts, neck, chest and abdomen were observed (Plate 1 & 2). Similar findings were reported by Chatterjee et al. (1980),...

During the course of treatment some adverse symptoms like vomition, diarrhea and anorexia were observed which are in agreement with Macdonald (2006) and Vandis & Knoll (2007). This might be due to gastric disturbances occurred due to azole group of drugs.

In dermatomycosis systemic therapy is routinely needed because hyphae and arthrospores develop deep within the hair follicles and shafts.

Dogs of group I were treated with fluconazole @ 5mg/kg body weight orally daily till recovery. Clinical recovery with disappearance of skin lesions and complete healthy skin coat with normal hair growth pattern was observed at the end of four weeks treatment. Observations of the present study correlate with the findings reported by Sharp et al. (1991) that antifungal drug fluconazole was highly effective at oral dose of 2.5 to 5 mg /kg bwt against canine aspergillosis. Similarly Bineesh et al. (2011) documented the efficacy of Fluconazole in dog affected with dermatomycosis @ 10 mg/ kg body weight with vitamin injections ('Beplex forte') and topical application of 5% povidone iodine solution. The dog was successfully recovered after 6 weeks of treatment. Kalita et al. (2013) found antifungal drug Fluconazole as highly effective @ 2.5 to 5mg/kg orally twice daily and ketoconazole shampoo topically twice weekly for period of 20 days and stated that fluconazole and ketoconazole topically can cure clinical cases of dogs with fungal dermatitis when used for the period 3 weeks. Sandhu (2012) noted that ketoconazole and fluconazole act on the fungal cell membrane and alter
its permeability by inhibition of ergosterol synthesis resulting in growth inhibition of fungi.

Dogs of group II were treated with Ketoconazole @ 10 mg/kg bwt orally daily till recovery. Changes were noticed after two weeks of treatment a few new hairs were noticed on face and tail and pruritis subsided after 2 weeks. After 4 weeks of treatment the lesions disappeared. Some dogs showed clinical signs like vomition and inappetance during initiation of treatment; but, further recovered. The observation –ns of the present study are in general agree -ment with the findings of Keyser & Brand -e (1983), Singh et al. (1997), Kukanich (2008), Parich (2011), Chakrabarti (2013) and Panigrahi et al. (2013). They successfu lly treated dermatomycosis cases in dogs with antifungal drug ketoconazole @ 10 -15mg/kg bwt orally per 24 hr. They also reported that efficacy of ketoconazole is better in griseofulvin resistant cases. MacDonald (2006) successfully used ketoconazole for the treatment of dermatophytosis and malassezia and systemic mycosis @ 10 to 20 mg/kg bw /day. However, he opined that high dose may result in hepatotoxicity, the most common adverse effect is gast ro intestinal disturbances and may result in vomiting and/or diarrhea. Ketoconazole may be given at 10 mg/kg once daily. Keto -co nazole may cause anorexia, vomiting, and hepatotoxicity MacDonald (2006).

Kukanich (2008) reviewed that ketoconazole is highly protein bound and typically effective for systemic treatment of dermatitis caused by Malassezia species as well as infection caused by dermatophytes.

Dogs of group III were treated with Griseofulvin @ 20mg/kg bwt (micronized) daily till recovery. Griseofulvin was admini stered for 5 to 6 weeks. Dogs showed signs of improvement after 3 weeks of therapy and complete recovery was noted after 6 weeks of treatment. The findings of the present study are in accordance with the study of Khosla et al. (1989), Bond et al. (1992), Vishwakarma et al. (1997) and Soni et al. (1999). Bond et al. (1992) treated two cases with tab griseofulvin @ 50mg /kg in divided dose twice daily and in addition 0.2 % emulsion of enilconazole was applied topically. Complete recovery was seen in one case after eight weeks of therapy. Vishwakarma et al. (1997) evaluated the efficacy of griseofulvin, in clinical cases of dermatomycosis @20mg/ kg orally daily for 20 days and noticed satisfactory improve -ment. Chakrabarti (2013) suggested the use of griseofulvin @ of 7 to 20 mg/kg bwt for 15 to 20 days. Venkataramanan et al. (2013) successfully treated dermatomycosi s in 45 day old pup with micronized griseofulvin @ 20 mg/kg body weight with fatty meal in divided doses twice daily for 4 wee ks, close haircut and wash with micodin (anti fungal and antibacterial shampoo) thre -e times on alternate days, miconazole 2 % cream was applied topically three times a day. The griseofulvin acts by interfering with the polymerization of the microtubuler protein which result into arresting the cell division of the fungal cells. It also binds to RNA and inhibits nucleic acid synthesis Sandhu (2012).

References


