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Epidemiological and Molecular Study of Dermatophytosis in Dogs and Cats in Baghdad governorate

A Dissertation

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Summery

The aim of the present study was to epidemiological, clinical study of canine and feline dermatophytosis in different district of Baghdad governorate and effect of dermatophytosis on sex ,breeds, hair coat, age of animals and effect of the seasons on percentage of infection. Also isolate and identify of the pathogenic fungi of canine and feline dermatophytosis by conventional and molecular methods, during the period from the beginning of January 2018 to the end of December 2018. The number of outpatient cases of domestic dogs and cats admitted to the Baghdad Veterinary Hospital, Veterinary private clinics, Nurseries and Veterinary shelters were 1060 animal.

Clinical and randomized cases were investigated for any visible skin lesions, only 335 (165 dogs and 170 cats) with skin lesion. The mycological diagnosis were conducted by UV light of Wood lamp which amounted to (60.7%) of the dogs and (55.6%) of the cats were positive for dermatophytes, direct microscopy and by culture the specimens on each sabouraud dextrose agar and dermatophytes test media (DTM). Two genera of derematophytes identified in pets dogs and cats *Microsporum* represented *M. canis* (74.7%) ,(71.6 %); *M. audounii* (21.8 %), (21.4 %), *M. gypseum* (3.6 %), (6.9%) and *Trichophyton spp* in which divided between *Trichophyton ruburum* (85.0 %), (66.7%) and *T. terrestre* (15.0 %), (33.3%) respectively. Overall percentage of dermatophytes infection in dogs and cats were 103 (62.42%) and 120 (70.59%) respectively.

The distribution of these fungi among pets dogs and cats were Al Kurkh district (64.6%),(75.0%) and Al Rusafa district (63.0 %), (68.18%). Moreover, relation of ages with percentage of infection in dogs and cats showed significantly at $P<0.05$ a higher percentage of infection in young age (1-12 months) (65.47%) (73.94%) and lower percentage of dermatophytosis in old age (3- 7 years) (44.44%) (50.0%) respectively.

The effect of breeds on the infection rate of canine dermatophytosis showed high infection in Rottweiler (100%), Pomeranian (83.3%) dog breeds and high infection rate in Shiraz Persian cats (75.47%) and Himalayan Persian (69.23 %) wheras, lower infection rate (40.0 %) in each of Boxer and local dog breed and

(54.55%) in local cat breed. Nevertheless, the relation of hair coat with percentage of infection showed the highest in long hair coat of dogs (69.0%) and cats (96.12%) than in short hair coat dogs (48.0%) and cats (57.14%) significantly at $P < 0.05$.

Also, no significant difference between the both sex and habitat in dogs and cats. Whereas, recorded a high infection rate in shelters habitat (67.19%), (77.36%) and lower percentage of infection in plantation habitat (56.25%), (71.15%) respectively.

Dermatophytoses in pets dogs and cats were more frequently isolated in January cold weather (71.42%) and lower percentage of infection in November dry weathers (44.4%), (25.0%) respectively. In addition the effect of season on the percentage of dermatophytosis in pets dogs and cats characteristic by a higher percentage of infection in winter (67.74%), (81.54%) and lower percentage of infection in Autumn (50.0%) (48.15%) respectively.

Chrysosporium spp. was isolated from domestic dogs and cats represented by *Nannizzia dermatitidis* which is keratinophilic filamentous fungi showing signs of itching, erythema, crust and scales about (9.1%) in dogs and (2.9%) in cats.

The molecular study was carried out using multiplex polymerase chain reaction (PCR) technique. Five standard species of dermatophytes were identified as the genus *Microsporum*, *Trichophyton* and one genus of *Chrysosporium* with DNA extraction of 115 isolates out of 180 (63.9%) clinical isolates from dogs and cats.

Analysis of the phylogenetic tree was based on the partial sequence gene 18srRNA in the local *Microsporum*, *Trichophyton* and *Chrysosporium* of dogs and cats isolates used for confirmative detection and genetic relation analysis. Therefore, phylogenetic tree for our registration accessions and with other registered accessions, showing the degree of similarities and differences among (XR 001951136.1 *Nannizzia gypsea*, USA; AY083227.1 *Microsporum canis*, Ireland; GU733362.1 *Microsporum audouinii*, Sweden; EF631606.1 *Microsporum canis*, China; AB015770.1 *Microsporum incurvatum*, Japan. Also, the degree of identify and similarity score among our isolate s with references strain is ranged from 98% to 99%.