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NASAL AEROBIC MICROFLORA AND MYCOFLORA OF CLINICALLY HEALTHY HORSES

(With Two Tables)

By

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الميكروفلورا الهوائية وكذلك الفطريات في التجويف الأنفي للحصان

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درست البكتريا اللاهوائية والفطريات في عدد ٦٦ فحة من التجويف الأنفي من خيول سليمة اكلينيكيا بهدف التعرف على نوعية هذه الكائنات وتصنيفها ودراسة خصائصها.

SUMMARY

Microflora and mycoflora of nasal cavity of 66 apparently healthy horses was isolated and identified. Most of cases yielded more than two sapropohytic bactial isolates. Mycoflora was always accompanied by bacterial isolates while the reverse was not evident.

INTRODUCTION

Respiratory infections constitute the most costly and troublsome disease problem in equine in Egypt and probably in most, it not all, parts of the world.

Studies of microflora of respiratory system is thus very important.

SINGH (1967) could isolate 17 species of bacteria from samples obtained from trachea and lung of buffaloes. THOMSON (1968) observed that there was a relationship between the high number of bacterial species in the nasal passages and the infection by those microorganisms in the lung. MAGWOOD, et al. (1969) found that bacterial flora of nasal cavity and respiratory tract of normal calves such as saprophytic Neisseria, Micrococci and Streptococci spp. causing diseases in calves under special factors which lower the body resistance of calves.

KUMAR and KUPPUS WAMY (1973) isolated certain types of Streptococci from nasal swabs collected from normal calves and sheep.

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EL-ALLAWY, et al. (1976) isolated 11.67% Staph. aureus, 25% Staphlococcus albus, 16.67% Streptoccus pyogenes, 10% Escherishia coli, 8.32% Coryne bacterium equi, 16.67% Proteus mirbalis and 11.67% Pseudomonas aeruginosa from the pharyngeo - tonsillar portion of 60 clinically healthy donkeys at Assiut region-WEBB, et al. (1981) reported that a combined infection of adeno virus and Strept. zooepidemics is pastulated for the development of disease in 17 day old foal.

NGGLIC, et al. (1982) recorded that bronchopnuemonia was stablished in 40 adult horses and 37 foals up to a year old bacteriological examination revealed that, the commonest agent was Streptococcus zoo epidemicus (56% of samples) fallowed by E. coli (17%), Staphlycoccus aureus (9.7%), Beta haemolytic streptococci (8.5%) Alpha haemolytic or non haemolytic strept. (8.5%). KAUEMARU, et al. (1985) reported that bacteriological examination of 94 foals died from pneumonia yielded Rhodococcus equi, Esherichia coli, Streptococcus sp., zooepidemicus sp. and Actinobacillus equuli.

TAYLOR (1986) could isolate Streptococcus pneumonia from naso pharyngeal samples collected from horses in training during investigations on to respiratory diseases.

Some investigations were carried out on the mycoflora harbouring different regions of respiratory tract of healthy and diseased animals. RADCHUK (1971) could isolate different mycotic cultures from lungs of healthy and diseased swines. The isolates were 195 belonged to Aspergillus fumigatius, 82 to Mucor, spp. 146 to Candida albicans, 17 to Actino mycosis, spp., 15 to Fusarium spp., 84 to Penicillin viride. From infected lungs, Aspergillus fumigatius was isolated 12 times, Aspergillu niger 5 times, Candida albicans twice as often as from mycoflora fo healthy lungs. SHIGIDI (1973) could isolate different cultures of mycoflora from nasal swabs, lungs and branchial lymph nodes of 64 apparently healthy camels. The isolate was Aspergillus spp. 8.70%.

ABOUEL-SOUOD, et al. (1974) reported that Aspergillus spores predominated over those of any other fungal genera in the air at Assiut province, constituting 10.2% of total air-borne fungi.

ALLER and ALLER (1974) isolated fungi from 53% of sheep lungs free from lung worms. Of 166 fungal isolates, 54% were Aspergillus spp., 28% Pencillim spp. and 4% yeasts. There were 2 strains of Candida albicans. Moreover, BLAHA (1975) mentioned that 111 samples from lungs were positive for Aspergillus spp. from 660 samples and Candida albicans was found in 20 lung specimens from 617 outopisies. EL-ALLAWY, et al. (1976) studied mycoflora of the pharyngeo-tonsillar portion of 60 clinically healthy donkeys in Assiut. The percentage of mycoflora isolates were: Candida albicans 10, Candida pseudotropicalis 6.66, Aspergillus flavus 16.66 Geotrichum candidum 10, Candida krusei 3.33 Aspergillus niger 6.66, Penicillin sp. 13.33, Nocardia brasiliensis 3.33% and Allescheria boydii 3.33 ELYAS, (1982) recorded that mycroflora isolated from the nose of 185 pneumonic calves were as follows: A. fumigatus 55%, A. niger 12%, A. parasihcus 16%, A. funculosum 3%, M. racemosus 5% and Rh. oryzae 4%.

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MOHAMED (1986) mentioned that 97 from 100 nasal swabs collected from horses were positive for mycoflora. The isolates were A. fumigatus 3%, A. flavus 8%, A. nidulans 4%, A. niger 7%, Mucor spp. 11%, Rhizopus spp. 5%, Penicillium spp. 4%, Demataciae spp. 11%, Cladosporium werenkii 12%, Botrytis ceneria 15%, sporotrichium shenkii 1%, Hormodernum spp. 2%, Candida spp. 5%, Blatomyces dermatidis 1% and Humicola spp. 1%.

Concering horses, there are no much investigations about the micro and mycoflora isolates from healthy horses. So, the aim of the present work is to investigate micro and mycoflora that many harbour the nasal cavity portion of apparently healthy horses in Assiut.

MATERIAL and METHODS

I- Materials:

Sterilised swabs were used for obtaining samples from the nasal cavity of 66 apparently soundness of selected animals was proved both clinically and by ordinary laboratory investigations healthy horses samples were sent to laboratory as soon as bossible.

II- Methods:

Isolation of microflora were made by direct and enrichment culture methods. Each sample was plated onto blood agar. These samples were also inoculated into neuterient broth, both media were incubated at 37°C, after 24 h. all enrichment cultures were subcultured on MacConkey agar plates and incubated at 37°C for 24h. Obtained isolates were identified morphologically and biochemically in accordance with those described by BAILEY and SCOTT (1974).

Isolation of mycoflora was made also by the same swabs mentioned before. These swabs were directly streaked on sabourauds dextrose agar medium containing penicillin, streptomycin and chloramphenicol. Inoculated plates were incubated for 48 hours at 37°C, then left at room temperature (20-25°C) for another week before being examined.

The isolated fungi were identified according to their morphological appearance, as well as the microscopical criteria in the mycological literature and also biochemically.

RESULTS

From table (1) it appeared that from 24 cases various bacterial flora were isolated. Fifteen cases yielded two types of bacterial flora spp. while from only nine

cases three bacterial flora spp. were identified. From cases of two bacterial flora spp. isolates (Table 1) E.coli and Staph. albus were the most prevalent bacteria (nine cases) while from six cases, providencia sp. and Staph. albus were identified. With respect to three bacterial flora cases the isolated bacteria were E.coli, Providencia sp., Staph. albus, alpha non hemolytic strept.; citrobacter sp. and Proteus vulgaris.

Nasal mycoflora could not be isolated solely but in conjunction with bacterial flora (Table 2). Only one type of mycoflora, with exception to one case, was isolated from mixed cases (Table 2). Asp.flavus was the most predominant fungal isolates (15 cases) followed by Asp.fumigatus (11 cases), Asp.nige (12 cases) while Geotrecham candidum spp.; Candida albicans and Batrytis ceneria were isolated from three, two and four cases respectively.

Various types of bacterial flora were isolated in conjunction with mycoflora in the present study. In addition to the bacterial flora, previously presented in table (1), there were some other types i.e Serrati marcesens sp., Pseudomonas sp. and Klebsiella aerogenes still isolated in mixed cases (Table 2). Most of mixed cases (7 cases) yielded three type of bacterial flora while double bacterial flora were evident in seven cases and one bacterial mixed type was isolated in two cases.

DISCUSSION

The present study aimed to throw light on the myco and microflora of the nasal swabs of apparently healthy horses. Sixty six horses of both sexes and of various ages were choosed to fullfill the study. These horses are belonging to police stations at various localities of Assiut Governorate. The bacterial results indicated that the flora is an ecological entity in which the bacterial components interaction a dynamic relationship at the host cell membranes.

ELALLAWY; ATIA and AMER (1977) could isolate various types of microflora from pharyngeo - tonsilar portion of sixty clinically healthy donkeys at Assiut Governorate. The authers concluded that Staph. albus was the most prevalent bacterial (25%) while E.coli forms 10% of the isolates. This statement is also evident in this present study however, the number of isolates is still less than in the study of EL-ALLAWY, et al. (1977).

Studies on respiratory microflora in various species of animals as buffaloes (SINGH, 1967) and camels (SHIGIDI, 1973) were previously stated.

The present study indicated that all cases were harboured by either two (15 cases) or three bacterial (9 cases) species. E.coli and Staph.albus were the most prevalent microflora followed by the other bacterial flora (Table 1).

MAGWOOD, et al. (1969) examined 790 samples of nasal mucosa of calves. The nasal isolated bacterial flora were classified into basal, supplimentary and transient components.

It is more interested to pay more attention to the mycoflora of the nasal cavity of apparently healthy horses. From table (2) it appears that Asperigillus spp. were the most prevalent isolated mycoflora. This fact is completely true as the available literature indicated that ABOU EL-SOUOOD (1974) and MOUBASHER and MOUSTAFA (1974) reported that Asperigillus spores predominated over those of any other fungal genera in the air at Assiut, constituting 10.2% of the total air borne fungi. Examination of collected samples indicated that nasal cavity of apparently healthy horses acted as a carrier of many species and types of microorganisms (Table 2) these microorganisms found in the soil, water and air reach the nasal cavity either through inhalation or during drinking.

Mycoflora in the nasal swabs of clinically healthy horses were in general - accompanied by bacterial flora (Table 2). These results are in harmony with the findings of EDWAREDS and EL-ZUBAID, (1977) who reported that Asp. infection may be concomittant with other agents e.g. bacteria, viral.

As a conclusion, this study revealed firstly that microflora could exist as the only saprophytic agent in nasal swabs of clinically healthy horses while mycoflora must be accompanied by bacterial flora. Secondly it was evident that more than one or even two types of bacterial flora harboured nasal cavities of clinically healthy horses. In very rare cases, only one type of bacterial flora was isolated.

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Table (1)

Bacterial Flora of the nose from clinically 66 healthy horses

Type of micro-organism	Number of cases
E.coli + Staph. albus.	9
Providencia spp. + Staph. albus.	6
E.coli + providencia + Staph. albus.	3
Strept. (Alpha or non heamolytic strept) + Citrobacter spp. + proteus vulgaris	3
E.coli + Citrobacter spp. + proteus vulgaris	3
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Table (2)

Mixed fungal and bacterial flora of the nose from clinically 66 healthy horses

Isolated bacteria	Isolated fungi	Number of horses
E.coli + providencia + Staph. albus.	Geotracham candidum spp.	3
Citrobacter + Staph. albus + Strept. (Alpha or non haemolytic strept)	Asp. flavus.	2
Providencia + Serrati-marcesens + Staph. Albus.	Asp. fumigatus.	4
Providencia + Proteus Vulgaris + Staph. albus.	Asp. niger.	5
Providencia + Staph. albus + Strept. (Alpha or non haemolytic strept)	Candida albicans.	2
Pseudomonas + Strept. + Providencia.	Batrytis ceneria.	4
E.coli + Providencia + Proteus vulgaris.	Asp. niger.	1
E.coli + Serrati-marcescens + Staph. albus.	Asp. flavus.	3
Providencia	Asp. flavus.	2
E.coli + Serrati-marcescens + Staph. albus.	Asp. niger.	1
Providencia + Staph. albus.	Asp. fumigatus.	5
Klebsiella aerogenes + Providencia.	Asp. fumigatus.	2
Citrobacter + Providencia + Proteus vulgaris + Staph. albus.	Asp. flavus.	3
Citrobacter + Klebsiella aerogenes + Staph. albus.	Asp. flavus. + Asp. niger.	5
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