قسم : أمراض الدواجن .
كلية الطب البيطري ـ جامعة أسيوط.
رئيس القسم : د. مصطفى عبدالمطلب شحاته .

الفئران والفراد كمصدر للاصابة بالميكوبلازما في مزارع الدواجن

عادل سليمان ، صلاح موسى ، ناهد جاد ، ريم دسوقي* ، ابراهيم سكر

* تم عزل ١٤ عترة من عترات الميكوبلازما من ٥٠ فأر تم اصطيادها من مزارع الدواجن بمحافظة أسيوط.

* أمكن اصنيف هذه الفئران على أنها م. جالسبتكيم ، م. نيوروليتكم .

* كذلك فقد تم عزل ٤٠ عترة من الميكوبلازما من القراد البالغ والبيض الناتج منه وكذلك اليرقات الفاسقة من نفس البيض، والتي تم تجميعها من مزارع الدجاج والرومي بأسيوط والوادي الجديد، وقد أمكن تصنيفها الى م جالسبتكم ، م. ميليا جريدش.

---

* قسم الصحة ـ كلية الطب البيطري ـ جامعة أسيوط.

Dept. of Poultry Diseases,
Faculty of Vet. Med., Assiut University,
Head of Dept. Dr. M.A. Shehata.

RODENTS AND TICKS AS A RESERVOIR OF MYCOPLASMAS IN POULTRY FARMS

(With 2 Tables)

By
A.M. SOLIMAN; S.A. MOUSA; NAHED GAD; REEM DESOUKY* and I.M. SOKKAR

(Received at 13/10/1987)

SUMMARY

Out of 50 trapped rats from poultry farms in Assiut province, 14 isolates of mycoplasma were recovered and identified as M.gallisepticum and M.neurolyticum.

The hemolymph of adult ticks "Argas Persicus", clusters of their eggs and hatched larvae collected from chicken and turkey farms revealed recovery of 40 mycoplasma isolates that identified as M.gallisepticum and M.meleagridis.

INTRODUCTION

Mycoplasmas have been recovered from man, animals and birds, most of these Mycoplasmas are pathogenic, producing specific diseases and spread very rapidly by direct and indirect contact.

Rodents have long been known to be carrier of diseases which are transmissible to man, animals and birds (ROWETT, 1960). VENTURA and DOMARADZKI (1967) isolated PPLO-organism from lung and nasal turbinates of rats, in addition HILL, (1979) recovered M.neurolyticum from rats.

On the other hand ticks are consedered as sucking insects which act as a reservoir and vector of some pathogenic viruses, bacteria and parasites '(CHIROV, et al. 1975 and ABD-EL Salam, 1978).

GLUKHOV, et al. (1978) succeeded to isolate M.gallisepticum from ticks collected from two fowl flocks affected with respiratory mycoplasmosis.

The aim of the present work is to investigate the role of rodents and ticks in transmission of mycoplasmas in poultry farms in the area of upper Egypt.

MATERIAL and METHODS

Samples:

1- A total of 50 apparently healthy rats were trapped from Bany - Mour and Agriculture college poultry farms and killed by electric charges, then opened aseptically and nasal, tracheal, lung and rectum swabs were collected.

* Dept. of Animal Hygeine, Fac. of Vet. Med., Assiut Univ.

2- Groups of fowl ticks "Argus persicus" were collected from the walls, cracks, crevices of windows and buildings of poultry farm of Agriculture college where the chicken of the farm suffered from respiratory mycoplasmosis. As well as groups of ticks were collected from chicken and turkey farms of New-Vally that have history of mycoplasmas infection, the collection of ticks was made with the aid of hand lens and carefully picked up by means of entemological fine smooth forceps and presented in glass petri- dishes and then put in glass tubes as (HOOGSTRAAL, 1952). Ticks were reared in the laboratory at 25-29°C and 60-70% R.H. according to (MICKS, 1951) for collection of eggs and larval stages. Hemolymph swabs were collected from adult ticks (WILLY, 1970). Eggs and larval stages were ground in a sterile morter with 5ml broth culture, then centrifuged at 3000 r.p.m. and supernatant inoculated in broth media.

Isolation:

The swabs from rats (Nasal, tracheal, lung and rectum); hemolymph and grounded eggs and larvae were collected on Brain-Heart infusion broth suplemented with horse serum, yeast extract and inhibitors, tubes were incubated at 37°C for three days then recultu red as described by (SABRY, 1968) the inoculated agar plates were incubated at 37°C in moist candel jar under reduced oxygen tension. The plates were periodically examined microscopically for appearance of the characterstic "Fried-egg" colonies.

Identification:

The suspected colonies were subjected to: purification; irreversability; differentiation of mycoplasma and a choleoplasma isolates (FREUNDT, 1979); biochemical characterization (ERNO and STIPKOVITIS, 1973) and serological identification by using Growth-inhibition (CLYDE, 1964), Growth- precipitation (KROGSGARD - JENSEN, 1972) and by indirect - immuno fluorecense antibody test (AL-AUBAIDI, et al. 1971) using carl - Zeiss microscope with dark - field condenser, BG 12/4 and BG 3/4 (Ziess) exciting filter and darrier filter No. 47 (Ziess).

Standard strains, antisera and commercial fluorescien conjugated antirabbit immunoglobulin were kindely supplied by Prof. Dr. E.A. Freundt, FAO/ WHO, Aarhus, Denmark.

RESULTS

Results of isolation and biochemical and serological identification of mycoplasma from rats, adult ticks, eggs and nymph stages are illustirated in tables 1, where the results of serological characterization revealed recovery of 7 isolates of M.gallisepticum, 5 isolates of M.neurolyticum and two untyped mycoplasma isolates from trapped rats, while isolates recovered from ticks were identified as: 10 M.gallisepticum, two unidentified isolates from adult ticks of chicken farms where eggs of these ticks revealed recovery of 5 M.gallisepticum isolates and one untyped, as well as 3 M.gallisepticum isoltes were recovered from larval stage. While hemolymph of adult ticks of turkey farm revealed recovery of 6 M.gallisepticum, 5 M.meleagridis and 2 untyped isolates, while 3 M.gallisepticum, 2 M.meleagridis and one untyped isolate were recovered and identified from eggs and nymph.

RODENTS AND TICKS

Table (1)
Results of Mycoplasma recovery from Radents and ticks in Poultry farms

Materials	No., Examined	No. of positive
Rodents		
Nose	50	5
Trachea	50	3
lung	50	4
Rectum	50	2
Adult ticks		
chicken	40	12
turkey	60 (of 5 eachpoold sample)	13
Eggs		
chicken	20*	6
turkey	15*	4
Larval stage		
chicken	12**	3
turkey	10**	2

* Clusters, each from a female tick.
** Groups of larvae, each hatched from a cluster of eggs.

Table (2)
Results of biochemical characterization and serological identification of recovered isolates

	No. of Examined isolates	Digitonine sensitivity test	Biochemical Reactions			M.neurolyticum	M.gallisepticum	M.meleagidis	untyped
			Glucose + Arginine -	Glucose - Arginine +	Glucose + Arginine +				
Rodents	14	14	12	-	2	7	5	-	2
Adult ticks									
chicken	12	12	10	-	2	-	10	-	2
turkey	13	13	6	5	2	-	6	5	2
Eggs									
chicken	6	6	5	-	1	-	5	-	1
turkey	4	4	2	1	1	-	2	1	1
larval stage									
chicken	3	3	3	-	-	-	3	-	-
turkey	2	2	1	1	-	-	1	1	-

* clusters, each from a female tick.
** groups of larvae hatched from a cluster of eggs.

DISCUSSION

Mycoplasma has been frequently demonstrated in almost all avian species in Egypt (SABRY, 1968; FAWZIA, 1976; SOLIMAN, 1982, 1985 & SOKKAR et al. 1986).

Although, rodents and ticks have long been known to harbour many infectious agents that threaten poultry populations (ROWETT, 1960; VENTURA and DOMARADZKI, 1967; HILL, 1979; CHIROV, et al. 1975; ABD-EL SALAM, 1978 and GLUKOV, et al. 1978), no studies were carried out to throw the light on their role in transmission of mycoplasmas.

From our results, not all trapped rats were found to harbour mycoplasma but the organism was recovered from the nose and rectum of 5 and 2 cases respectively.

Isolation of mycoplasma from such organs assures the role of rats as a possible source of infection via their secreta and execreta.

The recovered isolates were identified as 7 strains of M.gallisepticum, 5 of M.neurolyticum and two untyped isolates. M.gallisepticum was reported as a pathogenic organism for chickens and turkeys (BLANCO-LOIZELIER, 1960 and SOLIMAN, 1982), while further investigations are needed to study the pathogenicity of M.neurolyticum.

M.gallisepticum and M.meleagridis were recovered from adult ticks clusters of eggs and hatched larvae.

These results refere to the role played by ticks as blood sucking insects in transmission of mycoplasma to poultry farms, where they act as a possible reservoir of infection for a long time through many insect generations.

REFERENCES

Abd-Elsalam, F.A. (1978): The role of soft ticks in transmission of parasitic diseases in domestic birds in Assiut Governorate. M.V.Sc. thesis, Assiut Univ., Fac. Vet. Med., Parasitology.

Al-Aubaidi, J.M. and Fabricant, J. (1971): The practical applications of immunofluorescence "agar-block" technique for identification of mycoplasmas. Cornell Vet., 61: 519-524.

Blanco-Loizelier, A. (1960): Isolation and Identification of M.gallisepticum in some out-breaks of CRD. Rev. Patron, Biol. Animal, 6: 5-13.

Chirov, P.A.; Kadyshe, VAAM. and Grebnyuk, R.V. (1975): Ixodid ticks as a reservoir of Salmonella pullorum. Izdeatel stua llum. 128: 110-114.

Clyde, W.A. (1964): Mycoplasma species identification based upon growth inhibition test by specific antisera. J. immuonology 92: 958-965.

Erno, H. and Stipkovitis, L. (1973): Bovine mycoplasmas: Culture and Biochemical studies. Acta, Vet. Scand., 14: 436-449.

Fawzia, M.M. (1976): Studies on isolation and characterization of Mycoplasma and Achaleoplasma of ducks. M.V.Sc. thesis, Dept. of Microb., Fac. of Vet. Med., Cairo Univ.

Freundt, E.A.; Erno, H. and Lemcke, R.M. (1979): Identification of mycoplasmas. Methods of Microbioloty, Vol. 13, Academic press.

Glukhov, V.F.; Novikov, V.G.; Dorofeev, V.I. and Kravtosov, V.A. (1978): Argas Persicus as a reservoir and vector of avian mycoplasmas. Veterinariya, Moscow, USSR, 9: 53-55.

Hill, A.C. (1979): Mycoplasma isolation from the centeral nervous system of rats. Vet. Rec., 105: 102-109.

Hoogstraal, H. (1952): Notes on Egyptian ticks (Ixodoidea) I- The genus Agar (Argosidae) in the Cairo area. Proc. Egypt. Acad. Sci. 7: 114-127.

Krogsgard-Jensen, A. (1972): Mycoplasma growth-precipitation as a serodiagnostic method. App. Microb., 23: 553-558.

Micks, D.W. (1951): The laboratory rearing of the common tick Argas Persicus (Oken). J. parasitology 37 (1): 102-105.

Rowett, H.G.Q. (1960): The rats as a small mammals. 2nd. ed. Murray, London.

Sabry, M.Z. (1968): Characterization and Classification of avian mycoplasmas. Ph.D. thesis, Cornell Univ., U.S.A.

Sokkar, I.M.; Soliman, A.M. and Mousa, S. (1986): Mycoplasmosis in Pigeon in upper Egypt, Assiut Vet. Med. J. 16 (32): 243-249.

Soliman, A.M. (1982): Some studies of turkey Mycoplasmosis in Upper Egypt. M.V.Sc. thesis, Dept. of Poultry Dis., Fac. of Vet. Med., Assiut Unoiv.

Soliman, A.M. (1985): Further investigations on duck Mycoplasmosis in upper Egypt. Ph.D. thesis, Dept. of Poultry Dis., Fac. of Vet. Med., Assiut Univ.

Ventura, J. and Domaradzki, M. (1967): Role of mycoplasma infection in the development of experimental bronchiectasis in the rats. Path. Bact. J., 93: 342-348.

Willy Burgdorfer (1970): Hemolymph test, a technique for detection of Rickettsiae in ticks American Vet. J. 19 (6): 223-228.