قسم أمراض الدواجن
كلية الطب البيطري - جامعة أسوان

رئيس القسم: د. محمد عبد المطلب شحاته

الفئران والفرائض كمصادر للاصابة

بالميكوبلازما في مزارع الدواجن

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

* تم عزل 14 عفرة من عفترات الميكوبلازما من 50 فار تم اصطيادها من مزارع الدواجن بمحافظة أسوان.

* أمكن تصنيف هذه الفئران على أنها م. جالسينكيم، م. نيوروليتيكم.

* كذلك فقد تم عزل 40 عفرة من الميكوبلازما من الفئران البالغ والبيض الناتج منه وكذلك البرئات الفاصلة من نفس البيض، والتي تم تجميعها من مزارع الدجاج والرومي بسويق والوادي الجديد، وقد أمكن تصنيفها إلى م. جالسينكيم، م. ميليا جريدش.

قسم الصحة - كلية الطب البيطري - جامعة أسوان
RODENTS AND TICKS AS A RESERVOIR
OF MYCOPLASMAS IN POULTRY FARMS
(With 2 Tables)

By
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(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 men, 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 considered 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. (1976) succeeded to isolate M.gallisepticum from ticks collected from two fowl flocks affected with respiratory mycoplasmas.

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.


2- Groups of fowl ticks "Argus persicus" were collected from the walls, cracks, crevices of windows and buildings of poultry farms 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 entomological 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% RH, 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 mortar with 5ml broth culture, then centrifuged at 3000 r.p.m. and supernatant inoculated in broth media.

Isolations:

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

Identification:

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

Standard strains, antisera and commercial fluorescent conjugated antirabbit immunoglobulin were kindly 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 illustrated in tables 1, where the results of serological characterization revealed recovery of 7 isolates of M.gallisepticum, 5 isolates of M.nedolyticum and two untyped mycoplasma isolates from trapped rats, while isolates recovered from ticks were identified as 10 M.gallisepticum, two unidentifed 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 isolates were recovered from larval stage. While hemolymph of adult ticks of turkey farm revealed recovery of 6 M.gallisepticum, 9 M.meleagrisis and 2 untyped isolates, while 3 M.gallisepticum, 2 M.meleagrisis and one untyped isolate were recovered and identified from eggs and nymph.
# Rodents and Ticks

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

<table>
<thead>
<tr>
<th>Materials</th>
<th>No. Examined</th>
<th>No. of positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rodents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nose</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Trachea</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>Lung</td>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>Rectum</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>Adult ticks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>Turkey</td>
<td>60</td>
<td>13</td>
</tr>
<tr>
<td>(of 5 each pooled sample)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>20*</td>
<td>6</td>
</tr>
<tr>
<td>Turkey</td>
<td>15*</td>
<td>4</td>
</tr>
<tr>
<td>Larval stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td>12**</td>
<td>3</td>
</tr>
<tr>
<td>Turkey</td>
<td>10**</td>
<td>2</td>
</tr>
</tbody>
</table>

* Clusters, each from a female tick.

** Groups of larvae, each hatched from a cluster of eggs.
<table>
<thead>
<tr>
<th>Reaction</th>
<th>Arginine +</th>
<th>Arginine -</th>
<th>Glucose +</th>
<th>Glucose -</th>
<th>Leptin</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Diphtheria</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Examination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antisera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Denominator</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Table (2) Results of biochemical characterization and serological identification of recovered bolluses</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

** Groups of larvae hatched from a cluster of eggs. **

* Children each from a female chick. *
RODENTS AND TICKS

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 secretions and excreta.

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 refer 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


