قسم طب الحيوان
كلية الطب البيطري - جامعة الإسكندرية
رئيس القسم: د/ متولي الشناري

بعض الدراسات على التهاب الضرع الخفي في الأبقار

عبد الكريم عبد التواب

استخدم اختبار شامل واختبار فريزوز للاكتشاف مرضاً للضرع الخفي في 113 بقرة.
وقد أثبتت النتائج أن درجة الاكتشاف على اختبار شامل في تشخيص هذا المرض
أعلى من اختبار فريزوز.

أما بالنسبة للميكروبات التي تم عزلها وهي الميكروب السبحي اجالكتيـهـا
وـدـبـيـلاـكـتـيـاـ والميكروب العنقودي الذهبي والشيريات القولونية فقد كانت درجة
حساسيتها معملاً للمضادات الحيوية هي جنتاماسين، نيوماسين، وبنسلين كاماماسـين
وـاستـروـبـامـاسـين على التوالي والاختلافات في تأثير المضادات الحيوية على الحيوان نفسه
و الداخل المعمل قد تم أخذها في الاعتبار وقد نوقشت هذه النتائج.
SOME STUDIES ON SUBCLINICAL MASTITIS
IN DAIRY CATTLE
(With 4 Tables)

By
A.A. MAHMOUD
(Received at 1/11/1987)

SUMMARY

Schalm and Freiso tests were used as a routine tests for the
detection of subclinical mastitis amongst dairy herd of 112 Fries-
ian cows was found that the reliability of Schalm test (96.3%)
was superior than Freiso test (89.5%).

The isolated micro-organisms (Strept. agalactiae, Strept dysagelac-
tiue, Staph. aureus and E. coli) were sensitive to the following
antibiotics in descending order: Gentamycin, Neomycin, penicillin,
Kanamycin, and Streptomycin. Variation in the vitro and in
vivo action of antibiotics was encountered, and the results
are discussed.

INTRODUCTION

Subclinical mastitis act as an obscure infection hence it is necessary to detect the disea-
se as early as possible because of its public health and economic importance (ANDBERG and

the development of body-cell screening field tests, help in the quick detection of patholog-
ical changes associated with inflammation in the quarter from which tested milk was drawn
and thus the adequate method needed to cope with periodic whole herd testing was intro-
duced. Application of these tests offers a potent tool to aid in selection of cows for either
production or therapy (KHALIL, et al. 1972).

The indiscriminate use of antibiotics in the treatment of mastitis as well as in other
bacterial diseases may cause the development of strains that are resistant to one or more
of these antibiotic. For this reason, it is advisable to carry out the in vitro sensitivity test
before clinical application since it would be of value in choosing the suitable antibiotic
(FARRAG and OOF, 1967). On the other hand when interpreting antibiotic sensitivity results,
one should remain aware that sensitivity in the laboratory does not always indicate the relative
effectiveness of drug when infused into an infected quarter, (PHILPOT, 1969), since this rela-
tionship is depending on many factors that take place inside the mammary gland such as pH,
tissue protein binding, and milk components as calcium (DAVIDSON, 1980).

Therefore the aim of this work is to evaluate the efficiency of Schalm and Freiso tests
in detection of subclinical mastitis as well as to try the treatment after application of sensiti-
vity test.
MATERIAL and METHODS

Samples:
Milk samples were collected from 112 of apparently normal quarters milking friesian cows belonging to Rasas-El-Soda dairy farm of the Ministry of Defense at Alexandria.

Chemical tests:
Chemical testing of apparently normal quarter milk samples by Schalm test (SCHALM, et al. 1971) and Frieso test (according to instruction of the manufacture supplied by wellcome).

Bacteriological examination: Each milk sample was collected aseptically in sterile screw capped bottle and incubated at 37°C for 12hr, then centrifuged for 5 minutes at 1500 RPM. Loopfuls of the sediment were streaked on blood agar, MacConkey's agar media and Edwards medium and incubated at 37°C for 24hrs - 5 days. Pure colonies were identified according to CRICKSHANK, et al. (1975).

Sensitivity test:
Sensitivities of the isolated mastitis pathogens were tested against five antibiotics: penicillin (10 U), Streptomycin (10 Ug), Kanamycin (30 Ug), Neomycin (30 Ug) and Gentamycin (10 Ug).

Treatment:
were applied according to the results of the in vitro sensitivity tests. 89 cows received Gentamycin 80mg dissolved in 10 ml normal saline solution and infused intramammary twice daily for 5 days. Also, 6 animals received Neomycin 500 mg, quarter dissolved in 10 ml saline and infused intramammary for 3 days.

Success of treatment was depending on the negative results of milk culture 14 days treatment.

RESULTS

The reliability of the Schalm and Frieso tests and the percentage agreement of its results as compared to the bacteriological findings are recorded in table (1 & 2).

The sensitivity of isolated micro-organisms to certain antibiotic is recorded in table (3).

The results of relationship between the in vitro and the in vivo sensitivity test are recorded in tables (3 & 4).

DISCUSSION

Mastitis is considered the main problem to our dairy industry, causing heavy losses every year. Through, in a majority of cases, the etiology of mastitis is common to staphylococcal and strepto-coccal organisms, which are amenable to treatment with penicillin and streptomycin, it emerges out as a problem because it is diagnosed very late, with further complications and induration of udder tissues resulting in the complete loss of udder. The only solution to prevent this loss is to detect the disease at an early stage and to treat with proper remedies (DEORE and KHANDE, 1972).
SUBCLINICAL MASTITIS

These results were agreement with CHAKRABORTY and HAZARIKA (1977), RINDSING, et al. (1979) and EGAN (1982), all of whom approved that the agreement between positive schalm test and bacteriological isolation is high.

On contrary, such findings were disagreement with that obtained by FRUGANT and VALENTE (1980) and NARENDRA, et al. (1982), they consider schalm test with limited value for combating subclinical mastitis and the agreement between the test and bacteriological isolation was low.

The results of two tests obtained in our study means that, there is no one test could be depend completely upon as some cases escapes from being detected by any test. For this reason, we must seek for another more reliable field test or retesting all the animals periodically at one month intervals.

The results of sensitivity tests of the organisms isolated to antibiotics showed that, the most effective antibiotic was Gentamycin. It was effective on (69.4%), then Neumycin (62.7%), penicillin (53.7%), kanamycin (40.3%) and streptomycin (31.3%). The superior effect of Gentamycin than other antibiotics might be due to the fact that Gentamycin seldom used as a treatment for mastitis in contrast to other antibiotics which most frequently used and may lead to the development of resistant strain.

The results of tables (3 & 4) showed indefinite relationship between in vitro and in vivo sensitivities, which was demanding the awareness of PHILPOT (1969), as this relationship was depending on many factors (DAVIDSON, 1980).

It is concluded that the in vitro sensitivities may be expensive, beside being inconvenient to culture all quarters but it would be more effective if conducted on several representative isolates each time a herd is cultured for the selection of antibiotic of low probability of resistance to the suspected pathogenic organism that cause subclinical mastitis.

REFERENCES


A.A. MAHMOUD


Table (1)

<table>
<thead>
<tr>
<th>Scores</th>
<th>No. of samples</th>
<th>Bacteriological results</th>
<th>Agreement %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>+ve</td>
<td>-ve</td>
</tr>
<tr>
<td>-</td>
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<td>2</td>
<td>276</td>
</tr>
<tr>
<td>+</td>
<td>62</td>
<td>48</td>
<td>14</td>
</tr>
<tr>
<td>++</td>
<td>54</td>
<td>54</td>
<td>-</td>
</tr>
<tr>
<td>+++</td>
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<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>427</td>
<td>137</td>
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</tr>
</tbody>
</table>

Reliability (96.3%).

Table (2)

<table>
<thead>
<tr>
<th>Scores</th>
<th>No. of samples</th>
<th>Bacteriological results</th>
<th>Agreement %</th>
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</thead>
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<td></td>
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<td>-ve</td>
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<td>+++</td>
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<td>62</td>
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</tr>
<tr>
<td>Total</td>
<td>427</td>
<td>137</td>
<td>-</td>
</tr>
</tbody>
</table>

Reliability (89.5%).

- negative + weak positive.
- + moderate positive. +++ strong positive/

Reliability % = (No. of true positive samples + No. of true negative samples) / total No. of samples x 100%
<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Confrontation</th>
<th>Cattle serum</th>
<th>Group sera</th>
<th>Group sera</th>
<th>Group sera</th>
<th>Group sera</th>
<th>Group sera</th>
<th>Group sera</th>
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<th>Group sera</th>
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</thead>
<tbody>
<tr>
<td>Lactococcus</td>
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<td>10</td>
<td>01</td>
<td>82</td>
<td>90</td>
<td>9</td>
<td>15</td>
<td>49</td>
<td>3</td>
<td>2</td>
<td>01</td>
<td>82</td>
<td>90</td>
<td>9</td>
<td>15</td>
<td>49</td>
</tr>
</tbody>
</table>

Results of treatment of subclinical mastitis quarters according to sensitivity tests

Table (4)

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>++ Highly sensitive</th>
<th>++ Moderate sensitive</th>
<th>+ Weak positive</th>
<th>- Negative</th>
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</thead>
<tbody>
<tr>
<td>Lactococcus</td>
<td>69.4%</td>
<td>73%</td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td>Cattle serum</td>
<td>81%</td>
<td>1%</td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td>Group sera</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>7%</td>
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</table>

The sensitivity of bovine mastitis quarters to certain antibiotics

Table (3)