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رئيس القسم: د. محمد فؤاد

البكتريا الطبيعية للجهاز التناسلي

للماشية العشر ولقاء وجودها مراحل الحمل المختلفة

شريف عفيفي، ماجد أبو العطا، طلعت شومان، السيد الصواب، كمال زكي

جمعت 23 عينة من منق الرحم لماشية عشار وسيدة مثيرة (126 بكرة و284 جاموس).

حيث وجد أن 50 عينة كانت إيجابية للفحص الجرثومي كان منها 23 من الأبقار بنسبة 45.9% و
22 من الجاموس بنسبة 14.2% كانت نسبة الحالات السلبية 23.6% و 15.1% على التوالي.

كانت نسبة الجرائيم المعزولة أثناء المرحلة الأولى من الحمل مرتفعة وكذلك برجع النسي
زيادة معدل الجرائيم إذ وصلت إلى 34.3% في الأبقار و36.0% في الجاموس، ارتفاعا طفيفا
المراحل الوسطى حيث كانت النسبة 32.6% في البقر والجاموس على التوالي. ولكن لم يحسم
أن الجرائيم كانت قليلة وبعضها اختفى تماماً أثناء الفترة الأولى من الحمل حيث لم تتجاوز النسبة
في الأبقار 24.3% وفي الجاموس 35.3%.
MICROFLORA OF THE GENITALIA OF THE PREGNANT COWS AND BUFFALOES AND THEIR CORRELATION TO THE DIFFERENT PHASES OF PREGNANCY

(With Two Tables)

M.M. AFIEFY, M. ABO-EL-ATA, M.T. SHOUMAN, S.A. EL-SAWAF and K. ZAKI
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SUMMARY

Out of 62 samples (34 from cows and 28 from buffaloes) derived from clinically healthy pregnancy bovines, 50 samples (27 from cows and 23 from buffaloes) were found to be bacteriologically positive. While the incidence of sterile samples was 20.6% in cows and buffaloes respectively.

The percentages of the isolated microorganisms in pregnant animals were higher towards late pregnancy, due to the increase of progesterone level, reaching 40.43% and 43.4% in buffaloes and cows; followed by the mid stage of pregnancy with an incidence of 38.3% and 33.66% in buffaloes and cows respectively. The early stage of pregnancy showed lower frequency of bacterial isolates (21.27% in buffaloes and 22.64% in cows).

INTRODUCTION

Many investigators performed a lot of researches on the flora of pregnant animals by collecting uterine from slaughter houses (WALL, 1915; ROEHL, 1920; CLARK and STEVENSON, 1949; GEISSLER, 1954; MOZAS-HEROLES, 1955 and DAWSON, 1959).

In Egypt, EL-SAWAF et al. (1961) applied bacteriological study on the uterine flora of 22 pregnant buffaloes, where they secured a variety of organisms like C. pyogenes, Streptococcus pyogenes, Staph. aureus and E. coli. While ZAKI et al. (1961) on the examination of the external os of 15 pregnant buffalo-cows and 9 pregnant heifers, isolated Corynebacteria, Anaerocloides, Streptococci and Micrococcii, but recovered no Sarcina, E. coli and proteus from buffalo-cows. On the other hand, BARAKAT (1965) studied the flora of 50 pregnant uteri collected from slaughter house. He proved that 9 cases were sterile and isolated from the rest different species of Corynebacteria (72%), Anaerocloides (62%), Streptococci (40%), Coliform (26%), Yeasts (18%), Sarcina (16%), Clostridium (12%), Walfhaya (10%), Staphylococci (6%) and Micrococcii (2%).

The aim of this work was to find a relation between the microflora of the genital tract of the living cows and buffaloes and the different stages of pregnancy and c. axify any changes present.

MATERIAL and METHODS

Sixty two vaginal swabs were collected from pregnant cows and buffaloes (34 and 28 respectively) in the Veterinary Clinic at Batanon, Monofia, Egypt. The examined animals were grouped according to the stages of pregnancy into:

a) Early pregnancy: are those animals in the first three months (45-100 days) of pregnancy.

b) Mid pregnancy: are those animals in 4-7 months (101-200 days) of pregnancy.

c) Late pregnancy: are those animals above 7 months pregnancy (up to 201 days) or approaching parturition.

Bacterial samples were collected from external os of the examined animals. The swabs collected were placed directly in 1% sterile glucose broth, incubated at 37°C for 24 hours and then inoculated on the following media plates (DIFCO, 1964):- Nutrient agar, 5% Sheep-blood agar, MacConkey’s liver infusion agar with gentian violet (1/200,000) and Sabaroud’s agar with actidione (1/2000). The inoculated plates were incubated at 37°C for 24-72 hrs. at least.

Growing colonies were picked and purified by further subculturing on selective media and the isolates were identified morphologically by Gram’s stain and biochemically. All biochemical reactions applied were recorded finally after five days incubation at 37°C at least.

The members of the genera Micrococcus, Staphylococcus, Sarcina, and Walfhaya were identified to species.
M.H. AFIEFY, et al.

According to ABDEL MALEK and GIBSON (1948), BREED et al. (1957) and WILSON and MILES (1964). While the members of genus Streptococcus were recognised according to SEELEMAN (1954), BREED et al. (1957) and MERCHANT and PACKER (1967).

The isolates belonging to genus Corynebacterium were identified according to schemes of BREED et al. (1957), KIELSTEIN and KOTEK (1963), COVAN and STEEL (1965) and MERCHANT and PACKER (1967). Gram-negative bacilli were differentiated according to BREED et al. (1957), MACKIE and MACCARTNEY (1960), COVAN and STEEL (1965) and EDDARDS and EWING (1969). Yeasts and moulds were identified according to the cultural character and morphological appearance.

RESULTS

Bacteriological examination of the collected samples revealed that 50 cases were positive, from which 27 cases of cows (79.4%) and 23 from buffaloes (82.1%). While 7 cows and 5 buffaloes proved to be bacteriologically negative with an incidence of 20.6% and 17.9% respectively.

In cows, out of 27 positive cases, 7 animals revealed one type of bacteria, while 14 cases showed 2 types of bacterial flora and the remaining 6 samples harboured three types of mixed infection. The incidence, frequency and species of the isolates from cows in different stages of pregnancy are tabulated in Table (1).

<table>
<thead>
<tr>
<th>Table (1): Incidence of Isolated bacterial species from pregnant cows as regard stages of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species of Isolates</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MICROCOCCUS SPECIES</td>
</tr>
<tr>
<td>Staph. aureus</td>
</tr>
<tr>
<td>Staph. epidermidis</td>
</tr>
<tr>
<td>Sarcina lutea</td>
</tr>
<tr>
<td>M. flava</td>
</tr>
<tr>
<td>M. luteus</td>
</tr>
<tr>
<td>M. varians</td>
</tr>
<tr>
<td>STREPTOCOCCUS SPECIES</td>
</tr>
<tr>
<td>Strept. durans</td>
</tr>
<tr>
<td>CORYNEBACTERIUM SPECIES</td>
</tr>
<tr>
<td>C. bovis</td>
</tr>
<tr>
<td>C. unclassified</td>
</tr>
<tr>
<td>ANTHRACOIDES</td>
</tr>
<tr>
<td>YEASTS</td>
</tr>
<tr>
<td>GRAM-NEGATIVE RODS</td>
</tr>
<tr>
<td>E. coli</td>
</tr>
<tr>
<td>K. genitalium</td>
</tr>
<tr>
<td>Pr. rettgeri</td>
</tr>
</tbody>
</table>

Total 12 22.6% 18 33.96 23 43.4 53 100.0

Generally speaking, the total bacterial flora of pregnant cows were 53 strains, where Micrococci constituted 27.7%, Yeasts 22.6%, Gram-negative rods 20.6%, Anthracoides 18.8%, Corynebacteria 9.4% and Streptococci 3.8%. The most prevalent organisms isolated in all stages of pregnancy were Yeasts, Anthracoides and E. coli.
where the remainders were recovered in one stage only.

In regarading the distribution of the flora in the three stages of pregnancy in cows, it was noticed that the most predominating organisms were isolated at the late stage, as 22 strains were recovered in an incidence of 43.4%, followed by mid stage where 19 strains were isolated (33.96%). A marked decrease in the incidence was noticed at the early stage of pregnancy (22.64%).

From 23 positive buffalo cases, 47 strains were recored from which 17 Micrococci (36.3%), 9 Gram-negative bacilli (19.0%), 6 Anthracocides (17.2%), 5 Streptococci (10.5%) and 4 strains from each of Corynebacteria and Yeasts (8.5% each). The distribution of the isolates flora from the 23 positive cases was as follows: only one type was isolated from 3 buffalo cases, two types of microorganisms from 16 cases and three species of bacteria from 4 samples. The species of the isolates, their presence in different stages of pregnancy and their incidence was summarised in Table 2. From such results, it was found that 10 strains (21.27%) were recovered in the early stage of pregnancy in buffaloes and the most prevalent organisms were Micrococcus species (4 strains). Regarding the mid pregnancy, 18 isolates were identified (38.3%) of which 8 Micrococcus species were predominant, while at late stage 19 strains were isolated (40.43%). The most prevalent organisms of this stage were Gram-negative bacilli (6) followed by Micrococci (5).

Table (2)
The incidence of bacterial species isolated from pregnant buffalo samples with regards stages of pregnancy

<table>
<thead>
<tr>
<th>Species of Isolates</th>
<th>Early</th>
<th>Mid</th>
<th>Late</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICROCOCCUS SPECIES</td>
<td>4</td>
<td>8</td>
<td>17.2</td>
<td>10.7</td>
</tr>
<tr>
<td>Staph. aureus</td>
<td>1</td>
<td>2.1</td>
<td>1</td>
<td>6.5</td>
</tr>
<tr>
<td>Staph. epidermidis</td>
<td>1</td>
<td>1</td>
<td>2.1</td>
<td>3</td>
</tr>
<tr>
<td>Sarcina lutea</td>
<td>1</td>
<td>2.1</td>
<td>2.1</td>
<td>-</td>
</tr>
<tr>
<td>M. luteus</td>
<td>2</td>
<td>2.1</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td>M. cohnogens</td>
<td>1</td>
<td>2.1</td>
<td>3</td>
<td>6.3</td>
</tr>
<tr>
<td>M. flavus</td>
<td>1</td>
<td>2.1</td>
<td>3</td>
<td>6.3</td>
</tr>
<tr>
<td>M. caseolyticus</td>
<td>1</td>
<td>2.1</td>
<td>3</td>
<td>6.3</td>
</tr>
<tr>
<td>Caffky tetragena</td>
<td>1</td>
<td>2.1</td>
<td>3</td>
<td>6.3</td>
</tr>
</tbody>
</table>

STREPTOCOCCUS SPECIES       | 1     | 2.1 | 2    | 4.2   |
Str. durans                 | -     | -   | -    | -     |
Str. bovis                  | 1     | 2.1 | 2    | 4.2   |
Str. zymogenes              | -     | -   | -    | -     |

CORYNEBACTERIUM SPECIES     | 2     | 4.2 | -    | 4.2   |
C. haemolyticum             | 1     | 2.1 | -    | 2.1   |
C. bovis                    | 1     | 2.1 | -    | 2.1   |
C. unclassified             | 1     | 2.1 | -    | 2.1   |

ANTHRACOCIDES               | 2     | 4.2 | 3    | 6.5   |
Yeasts                      | -     | -   | 3    | 6.5   |

GRAM-NEGATIVE BACILLI       | 1     | 2.1 | 2    | 4.2   |
E. coli                     | 1     | 2.1 | 2    | 4.2   |
K. genitalium               | -     | -   | -    | -     |
Aerobacter sp.              | 1     | 2.1 | -    | 2.1   |
Pr. vulgaris                | 1     | 2.1 | -    | 2.1   |

Total                      | 10    | 21.27 | 18   | 38.3  | 19 | 40.43 | 47 | 100.0

It has been noticed, that the significant important species isolated in the late stage of pregnancy either in cows or buffaloes, were E. coli; K. genitalium, Pr. vulgaris, Pr. rettgeri, Str. durans and C. haemolyticum.
The bacteriological examination of vaginal swabs from pregnant cows and buffaloes revealed the presence of sterile samples in 17.9% and 20.6% respectively. Similar results were obtained by BARAKAT (1965) who found that out of 50 pregnant uteri, 9 cases were sterile.

A variety of microorganisms were isolated in the different stages of pregnancy in both cows and buffaloes. The most prevalent species isolated were: E. coli (14), Staph. epidermidis (6), M. lataus (6), Staph. aureus (5), Sarcina lutea (4), Str. durans (4), Unclassified Corynebacterium (4) and C. bovis (4) in addition to different species of Anthracoides and Yeasts. Nearly similar findings were presented by GEISSLER (1954), PLOZAS-MORALES (1955), EL-SAWAF et al. (1961), ZAKI et al. (1961) and BARAKAT (1965).

In contrast to EL-SAWAF et al. (1961) who isolated a high incidence of Str. zymogenes (28%) and C. pyogenes (15%), these pyogenic organisms were not isolated in this work. Although ZAKI et al. (1961) recorded that E. coli and Proteus species were not isolated from the pregnant uterus, but in this work E. coli was recovered from all stages of pregnancy from both cows (17%) and buffaloes (10%). These results agreed with that of ROCHL (1920), GEISSLER (1954), PLOZAS-MORALES (1955) and EL-SAWAF et al. (1961). In case of Proteus species 2 strains of Pr. vulgaris (4.2%) were recovered from buffaloes and one strain of Pr. rettgeri (1.9%) from cows. This agreed with GEISSLER (1954) and PLOZAS-MORALES (1955).

It was evident that the percentage of the isolated strains in pregnant cattle and buffaloes was higher towards late pregnancy. This may be due to the fact that the progesterone level is becoming higher after the first trimester (ROBERTS, 1956; ABD, 1962; HAFEZ, 1974). It is universally accepted that progesterone has no bactericidal effect like oestrogen (RAWSON et al. 1953; HOURST, 1961 and SHARAF et al. 1963). Thus it is not surprising that the number of the isolates is less in the first than in the second and third trimesters.

In late pregnancy, although the oestrogen level is high, especially before parturition (ROBERTS, 1956), yet the number of isolates was high. This may be attributed to the fact that, in this period, relaxation of the genitaiia and liquification of the cervical mucus plug occurs, thus giving way to bacteria to gain entrance to the genital tract.

REFERENCES


MICROFLORA, GENITALIA, PREGNANT COWS, BUFFALOES


