ETIOLOGICAL STUDY ON EGG PERITONITIS OF LAYING AND PARENT STOCK HENS

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ABSTRACT

The aim of this study was to diagnose the etiologic agents of egg peritonitis. Sixty one chicks affected with egg peritonitis were examined clinically, pathologically, microbiologically and serologically. The results showed swelling of abdomen redding of skin, and abduction of legs. Necropsy showed peritonitis with presence of blood stained or caseated material.

The results of serology (ELISA) was negative for infectious bronchitis, Mycoplasma, Influenza and egg drop syndrome.

The microbiological examination revealed the presence of Proteus vulgaris (3 cases) (4.91%), Staphylococcus aureus (9 cases) (14.75%), Escherichia coli (48 cases) (78.68%) and Acinetobacter calcoaceticus (one case) (1.63%). The results of sensitivity test has been discussed.

دراسة لمسببات التهاب البريتيونوم في الدجاج البياض والامهات
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الخلاصه

استهدفت هذه الدراسة تشخيص الأسباب المؤدية إلى التهاب البريتيونوم في الدجاج البياض والأمهات وقد تم جمع (61) حالة مصابة بالتهاب البريتيونوم وفحصت سريرياً ومرضياً وسيرولوجياً وميكروبايولوجيًا. استتت النتائج تورم التجويف البطني مع احمرار الجلد وتتعدد الأرجل عن بعضها وعند الفحص لوحظ وجود التهاب البريتيونوم مع وجود سائل لحمي أو مادة جبنة في البطن، أما نتائج الفحص السيرولوجي (الألزام) فكان سلبياً لأمراض التهاب القصبات المعدي والمايوكلازما والأفلونزا متلازمة نقش البيض. وبينت نتائج الفحص
INTRODUCTION

The reproductive system was studied in the last decade by many workers including egg peritonitis. Egg peritonitis is the cause of high economic losses due to high antibiotic price, low egg production and high mortality (1). Many factors interfere by direct or indirect in producing egg peritonitis (2). The important of these factors are: infectious bronchitis (3), egg drop syndrome, Salmonella species (4), Pasteurella species (5), Mycoplasma gallisepticum (6), Staphylococcus aureus, Streptococcus species (7), Influenza virus (8) and Escherichia coli (9). The aim of this study was to detect the causative agents of egg peritonitis.

MATERIALS AND METHODS

This study was conducted in the years 2004, 2005 and 2006 in Mosul province in flocks of laying and parent stocks. Sixty one samples were obtained from hens showing the symptoms of dullness, swollen of abdomen faraway the legs from abdomen, redness of the skin and fever. Necropsy was made under aseptic condition. The bacteriological samples from peritonitis, oviduct and intestine were taken.

Bacterial examination: Culturing were carried out under aerobic and anaerobic condition on liquid media (nutrient broth and brain heart infusion broth) and solid media. Bacterial strains were identified by using morphological, cultural, and biochemical tests according to (9, 10, 11).

ELISA test: was performed to exclude infectious bronchitis, egg drop syndrome, mycoplasma and influenza and on later time Antigen Rapid Avian Influenza Virus Antigen Test Kit Manufactured by Animal Genetics, incorporation Korea, using cloacal swab method to check influenza.

Postmortem examination: was done to detect any gross lesions in the peritoneum, intestine, and oviduct.

Sensitivity test: Sensitivity to antimicrobial agents was tested by the disk diffusion method on Mueller – Hinton agar and as described by (12) and modified by (13). The antibiotic tested were Ampicillin (AMP 10 µg/ml), Ciprofloxacin (CIP 5 µg/ml), Enrofloxacin (EN 5 µg/ml), Erythromycin (E 15 µg/ml), Furalatadone (F 30 µg/ml), Gentamicin (GN 10 µg/ml), Imecamine (I 10 µg/ml), Norfloxacin (No 5 µg/ml), Oxytetracycline (OT 30 µg/ml) and Trimethoprim (Tr 25 µg/ml).

RESULTS

Postmortem examination of most cases affected with egg peritonitis showed thickening of peritoneum due to congestion and edema and lack of transparency. Some cases showed adhesion of peritoneum to the
The abdomen contained exudates (Fig-1). The nature of the exudates vary in consistency from turbid fluid to caseated material with bad colour (Fig-2). Some time this exudates was tense with blood and other time greenish black in colour (Fig-2). In the peritoneal cavity, free egg yolk was seen and this yolk was surrounded by caseated material. The skin of abdomen was red and the muscle was congested. The liver and spleen were congested. The result of ELISA test for infectious bronchitis, influenza, egg drop syndrome and mycoplasma infection were negative. Antigen Rapid Avian Influenza Virus Antigen test KIT, the result of cloaca faces swab was negative. Bacteriological Examination, hens showing postmortem examination positive cases of egg peritonitis and that were tested bacteriologically contained the following microorganisms: Out of 61 cases organisms isolated were E. coli (48 cases), (78.68%), Staphylococcus aureus (9 cases) (14.75%), Proteus vulgaris (3 cases) (4.91%), Acinetobacter calcoaceticus (one case) (1.63%), table (1). The results of sensitivity test was clear in table (2) for each type of bacteria.

Table 1: Bacteria isolated from egg peritonitis.

<table>
<thead>
<tr>
<th></th>
<th>Laying cases</th>
<th>Parent stock</th>
<th>Total No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cases</td>
<td>47</td>
<td>14</td>
<td>61</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>38</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>Proteus vulgaris</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Acinetobacter calcoaceticus</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2: The results of the in-vivo sensitivity test for the isolated bacteria

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Staphylococcus aureus</th>
<th>Escherichia coli</th>
<th>Proteus vulgaris</th>
<th>Acinetobacter calcoaceticus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>I</td>
</tr>
<tr>
<td>Enrofloxacin</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Furaladone</td>
<td>S</td>
<td>I</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>R</td>
<td>S</td>
<td>S</td>
<td>I</td>
</tr>
<tr>
<td>Imegyil</td>
<td>R</td>
<td>I</td>
<td>I</td>
<td>R</td>
</tr>
<tr>
<td>Oxytetracycline</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td>I</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td>I</td>
</tr>
<tr>
<td>Trimethoprin</td>
<td>I</td>
<td>S</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td>S</td>
</tr>
</tbody>
</table>

R= Resistant; S= Sensitive; I= Intermediate
Figure 1: Accumulation of exudates in the abdomen

Figure 2: The exudates caseated in nature with adhesion of intestine
DISCUSSION

Several infectious agents are considered to be the causes of egg peritonitis in laying and parent stock hens which cause problem and observed in several flocks in Mosul province (14). There are many agents inerminated in such problem and this in agreement with (15). Concerning the microorganism E. coli, Staphylococcus aureus, Proteus vulgaris but the newest thing in this research is the detection of Acinetobacter calcoaceticus for the first time.

This may be the cause of the failure of treatment in the field cases in the last few years and recurrence of the disease condition in spite of the use of the most common drugs. Therefore, this study was done to isolate the possible associating bacterial agents and study their in vitro sensitivity to get the suitable treatment. It seem that presence of egg yolk helps in the multiplication of microorganisms to set up the lesions and initiation of these changes which is in agreement with (16). There is no significant alteration in alkaline phosphates, this different from the observation by (17), this may be due to good production and no change in calcium. In conclusion the present study adds further evidence about Acinetobacter calcoaceticus infection beside others organisms causing egg peritonitis.

REFERENCES


