

Animal Health Res. Inst.
Damanhour Branch

**BACTERIOLOGICAL ASPECTS OF FACIAL OEDEMA
IN NATIVE AND FOREIGN CHICKEN
AT BOHAIRA PROVINCE**
(With 5 Tables)

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(Received at 19/6/2001)

الوجهة البكتريولوجية لتورمات الوجه في الدواجن المحلية والمستوردة
بمحافظة البحيرة

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أجريت هذه الدراسة على عدد (120) عينة ممثلة لعدد 120 مزرعة دواجن تسمين، تسمين خليط، بياض في نطاق محافظة البحيرة من الحالات التي يبدو عليها تورم الوجه وكانت الأعمار تتراوح ما بين 2 إلى 6 أسابيع في تسمين و 2 إلى 10 أسابيع في الخليط و 8 إلى 15 شهر في البياض. بالفحص البكتريولوجي للعينات تم عزل وتصنيف الميكروب العنقودي الذهبي بنسبه 12% والميكروب العنقودي الطليقي (8%) والعنقودي تحت الجلدي (6%) وعترات أخرى من الميكروب العنقودي بنسب ضعيفة. كما تم عزل الميكروب السبحي البرازي والرئوي والطييري بنسبه واحدة وهي (4%) بالإضافة إلى الميكروب السبحي الصديدي والراتس والغير اكلكتي بنسب ضعيفة. وكانت أعلى نسبة عزل هي للميكروب القولوني (20%) كما أمكن عزل الهيموفيلس الطيري بنسبه (4%) والسودوموناس بنسب النسبه (4%) كما تبيّن وجود عدوى مزدوجة من كل من العنقودي الذهبي والقولوني (2.7%) والعنقودي الذهبي والسبحي بنفس النسبة.

SUMMARY

A Total of 120 samples were taken from 120 chicken flocks (Broilers, cross breed, layers) at different localities in Bohaira Governorate which showing facial edema. The age ranged from 2-10 weeks for broiler and 8-15 months for layers the bacteriological examination and identification of the collected samples revealed the isolation of *Staph. Aureus*, *Staph. epidermids*, *Staph. Saprophyticus*, *Staph. sacrolyticus* and others with different ratio as 12,6, 8, 2.7 %, respectively. Also the Streptococcus

were isolated as *Strept. avium*, *Strept. gallinarum*, *Strept. fecalis* and *Strept. Pneumonia* at the ratio of, 2,7, 4,4,4 % respectively and others with low ratios. As well as *E. Coli*, *Haemoph.*, *pseudomonas* and *providence* were isolated at the ratio of 20,4,4,3.38 % respectively.

Key words: Facial odeman , chicken

INTRODUCTION

Respiratory diseases are considered one of the most serious problems affecting chicken flocks for along time. They have resulted in serious economic losses during the fattening and laying periods. Swollen head syndrome (S.H.S) is an acute upper respiratory disease of chickens with multiple causes adversely affecting broiler livability and growth rate in many areas of the world (Alexander, 1991) and Hafez & Lohren, 1990) with varying degree of losses. The disease was initially observed in chicken in South Africa in the 70's and was later confirmed by (Morley and Thomson, 1984).

Several etiological hypothesis including viruses and bacteria have been investigated (Picautt et al., 1987 a). The condition was reported in Egypt by Ahmed (1991). Nawal and Ahmed (1996), Hebata Alah (1997), Abd – Rabu et al. (1999) Moursi (1997) and Hamouda and Amer (2000).

According to our field experience during the last few years we have observed treatment failure and recurrence of disease conditions in spite of the use of the most common antimicrobials. There for the aim of this study is to through lights on the bacterial causes accompanied with facial edema via the isolation and identification of these organisms.

Materials and Methods:

A total of 120 flocks (78, broilers, 35 cross breed and 7 layers) were undergoing this investigation, (table 1). 2 to 3 heads of affected chicken were examined as a sample of each flock.

Table 1: Numbers and breed of examined flocks.

Breed	No. of flock	Age of chickens
Broiler	78	2- 6 weeks
Cross breed	35	3- 10 weeks
Layers	7	8- 15 month

Materials:

Media for primary isolation:

- Baird parker
- Columby agar base media
- MacConky's agar
- Nutrient agar
- Pseudomonas selective media
- Semisolid media

Media for identification:

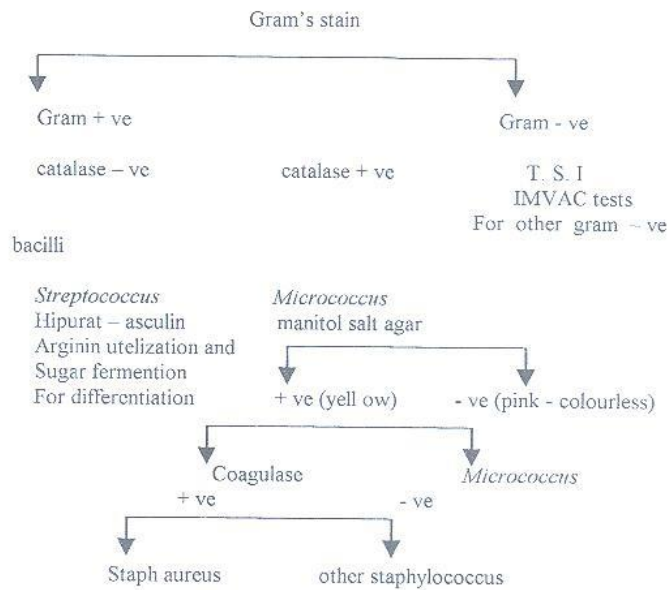
- Mannitol salt agar
- Urea (urease activity) - O.F. media (oxidation – fermentation)
- Simmon citrate media
- Peptone water (sugar media) and (indole)
- MRVP media.
- Phosphataze media

Reagents:

- Hydrogen peroxide (catalase test)
- Sterile rabbit plasma (coagulase test)

Methods:

Two to three actually diseased chickens were killed and the skin over their sinuses seared with a heated spatula. The skin is then incised with sterile scalpel blades and bacteriological loopfull is inserted inside this incision, and then streaked on different solid media (Baird parker, as selective medium for Staphylococci, Columby agar base medium for Haemophilus, Pseudomonas agar, Nutrient agar and MacConky's agar media for rather bacterial isolates. The plates incubated at 37 c for 24 hrs. The obtained colonies were picked up and stored in semisolid agar for further identifications (morphology, microscopically and biochemically (Cruickshank et al., 1975) as illustrated in the diagram.



RESULTS

Results show at Tables 2, 3, 4 and 5.

DISCUSSION

Poultry meat is considered one of the most important sources of animal protein in Egypt. Facial edema, sinusitis, infraorbital and/or wattles swelling is a problem or disease condition frequently observed in chickens by it or as symptom of other diseases.

Regarding diagnosis of the disease problem, which was investigated in this work the detected signs and disease course were indicative to S.I.S (Morley and Thomson, 1984; Alexander, 1990; Hafez and Iobren, 1990; Shane, 1991 and Hafez, 1993).

Bacteriological examination for the collected samples revealed isolation and identification of *Staphylococcus aureus*, *Staph. epidermidis*,

by Mead and Adams (1986) Who said that, Staphylococcosis in poultry has been recognized for 100 years, as well as Devriese (1980) Proved that, most Staphylococcal species are considered to be normal flora, others have the potential to be pathogenic and produce disease if allowed entry through the skin or mucous membranes. Also Devriese *et al.* (1983) mentioned that staphylococci frequently isolated from poultry include *Staph. aureus*, *Staph. epidermidis* and also *Staph. gallinarum* has been isolated from processed poultry. On the other hand, *Staph. hyicus* has been associated with fibrinophilic in chicken and turkey (Cheville *et al.* (1988).

From Table (2) Also Streptococcus species (*Strept. avium*, *Strept. gallinarum*, *Strept. Pneumoniae*, *Strept. faecalis*, *Strept. ratus* and *Strept. Dysagalactiae*) were, isolated in this work, these results nearly agreed with Farrow, *et al.* (1983) Who said that, Streptococcosis in avian species is world wide in distribution occurring as both acute septicemia and chronic infection. They also isolated different streptococcal species associated with avian diseases include *Strept. zooepidemicus* (occasionally referred to as *Strept. gallinarum*); *Strept. faecalis*; *Strept. facium* and *Strept. avium*. *Strept. dysagalactiae* has been cultured from broiler with Cellulites (Utoma *et al.*, 1990) On the other side streptococci enhance the severity of fibrin purulent plepharitis and conjunctivitis in chicken (Cheville *et al.*, 1988). Table (3) Shows the isolation of *E. Coli*, *Haemoph. avium*, *Haemoph. para-gallinarum* and others these results confirmed by Morley and Thomson (1984) who proved that S.H.S was first described in broiler in South Africa associated with *E. coli*.

As well as Periorbital inflammation is typically seen early in the disease and similarly affected bronchial associated lymphoid tissue has been shown to be an area where *E. coli* penetrate the mucus (Gross, 1995).

Anon (1985) Isolated *E. coli*, *Klebsiella pneumoniae* and *Moraxella* spp. MC Dougall and Cook (1986) Isolated *E. coli*, *Moraxella* spp. and *Pseudomonas* spp. - Zellen (1988) isolated *E. coli* from outbreak of S.H.S in Canada. Lijts *et al.* (1989) isolated *Staphylococcus aureus* and *E. coli*. Hafez (1990) Isolated *Moraxella* and *E. coli* and *Staphylococcus* spp. Were isolated from swollen head syndrome by Ayden *et al.* (1993) Tanaka *et al.* (1995) and Nakamura *et al.* (1997). S.H. like syndrome associated with *Haemoph. paragallinarum* has been reported in broilers in the absence of pneumovirus, but in the presence or absence of other bacterial pathogens. (Droual *et al.*, 1990) and Sandoval *et al.*, 1994).

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Table (2) The Identification of isolated Staphylococci

Bacterial Isolate	Broiler		Cross Breed		Layers		Total	
	No	%	No	%	No	%	No	%
<i>Staph. aureus</i>	13	8.87	3	2	2	1.35	18	12.2
<i>Staph. epidermides.</i>	3	2	6	4	-	-	9	6
<i>Staph. saprophyticus</i>	7	4.7	4	2.7	1	0.68	12	8.11
<i>Staph. sacrolyticus</i>	2	1.35	2	1.35	0	-	4	2.7
<i>Staph. gallinarum</i>	3	2	-	-	-	-	3	2
<i>Staph. hoemolyticus</i>	2	1.35	-	-	-	-	2	1.35
<i>Staph. leuis</i>	4	2.7	-	-	1	0.68	5	3.38
<i>Staph. Capitis</i>	3	2	1	0.68	-	-	4	2.7
<i>Micrococcus</i>	5	3.38	4	2.7	-	-	9	6

Table (3) Identification of the isolated Streptococci

Bacterial Isolates	Broiler		Cross breed		Layer		Total	
	No	%	No	%	No	%	No	%
<i>Strept. Pyogens</i>	2	1.35	-	-	-	-	2	1.35
<i>Strept. Faecalis</i>	3	2	2	1.35	1	0.68	6	4
<i>Strept. Avium</i>	1	0.68	2	1.35	1	0.68	4	2.7
<i>Strept. Ratus</i>	1	0.68	2	1.35	-	-	3	2
<i>Strept. galinarum</i>	4	2.7	2	1.35	-	-	6	4
<i>Strept. pneumoniae</i>	4	2.7	2	1.35	-	-	6	4
<i>Strept. disagalactia</i>	-	-	-	-	1	0.68	1	0.68

Table (4) Identification of the isolated gram-negative bacteria

Bacterial Isolates	Broiler		Cross		Laye		Total	
	No	%	No	%	No	%	No	%
<i>E. Coli</i>	23	15.5	6	4	1	0.68	30	20.3
<i>Haemoph. avium</i>	5	3.38	1	0.68	-	-	6	4
<i>Haemoph. paragalinarum</i>	1	0.68	1	0.68	-	-	2	1.35
<i>Pseudomonas</i>	3	2	2	1.35	1	0.68	6	4
<i>Providincae</i>	5	3.38	-	-	-	-	5	3.38
<i>Edwardicilae</i>	2	1.35	1	0.68	-	-	3	2
<i>Citrobacter</i>	2	1.35	-	-	-	-	2	1.35

Table (5) Frequency of the mixed bacterial infection

Isolate	<i>E. coli</i>	<i>Staph aureus</i>	<i>Strept.</i>	<i>Haemoph.</i>	<i>Pseud.</i>
<i>E. coli</i>	-	4	3	2	2
<i>Staph aureus</i>	4	-	4	1	-
<i>Strept cocci</i>	3	4	-	-	1
<i>Haemophilus</i>	2	1	-	-	-
<i>Pseudomonas</i>	2	-	1	-	0