

Regional Assiut Veterinary Laboratory.

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BACTERIOLOGICAL STUDIES OF INFECTIOUS
KERATOCONJUNCTIVITIS IN DAIRY
CALVES.

(With 2 Tables)

By

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**الفحص البكتريولوجى لأسباب التهاب القرينه
المعدى فى عجول مزارع الألبان**

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تم فحص ٣٠ مسحة من عيون مصابه لعجول صغيره بكتريولوجياً وأجرى لها اختبار حساسيه وأثبت الفحص وجود عدد من الميكروبات البكتريه مثل الميكروب القولونى والميكروب العنقودى والكليبسيلا اوروجينيس ، البروتيس ، والميكروب السبحى ، السيدوموناس ، سراتيامورسينس والانثراكويد .

وقد اتضح من اختبار الحساسيه قوة تأثير الكولورامفينكول فى حين كان الاستربتوميسين والارثروميثين أقل قوه منه .

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SUMMARY

A total 30 eye swabs from diseased calves were examined both bacteriologically and for sensitivity test of isolated bacteria for antibiotics. Result showed that a variety of organisms were isolated including *E. coli*, *Staph aureus*, *Klebsiella aerogenes*, *Proteus spp.*, *Strept. fecalis*, *Pseudomonas*, *Serratia marcescens* and *Anthraxoid*. The result of sensitivity test recorded that chloramphenicol is the most effective one, while *Streptomycin*, *Erythromycin* were less effective.

Keywords: Bacteriological, studies, infectious keratoconjunctivitis dairy calves.

INTRODUCTION

The practice of veterinary ophthalmology is one of the recent fields of veterinarians. It occupies a prominent role in the daily routine of every clinic either for small or large animals.

In the recent years, the ocular keratoconjunctivitis conditions are of ascending rate. This may be due to mechanization and rapid industrialization. The new scientific trends in the field of veterinary ophthalmology added an exciting dimension to it.

Infectious bovine Keratoconjunctivitis (IBK) occurs in most countries of the world. the disease is highly contagious, epizootic and most common in grazing cattle. In the warmer months kerato conjunctivitis is being chiefly associated with humid wether conditions SCOTT (1977).

However, with some methods of cattle husbandary, a high incidence can be seen in spring or late autumn (BAPTISA and RIBEIRO, 1974). Winter epizootic are also known to occur (PUGH and HUGHES, 1972).

All reports agree that the highest incidence is found in young stock, but adults can be severely affected when the herd has not previously experienced the condition (SCOTT, 1977). Epizootics of IBK are prevalent in summer. The suggestion that there may be some factors associated with warmer conditions which predisposes to infection has been discussed by WILCOX (1968). In U.S.A., PFISTER (1967) and REESE (1967) isolated a variety of pathogenic bacteria from infected eyes of IBK; *M. bovis* was not found. SPRADBROW (1967) found that species of *Neisseria* were the bacteria most commonly isolated in 25 herds

of cattle experiencing outbreaks of keratoconjunctivitis, where no single aetiological agent could be clearly demonstrated. Recently, *L. monocytogenes* serotype 1/2 has been isolated from two outbreaks of keratoconjunctivitis in silage-fed cattle in Great Britain. However, the affection here differs from that due to *M. bovis* in non-purulent nature of the conjunctivitis and minimal corneal changes. Most of the cases seen were conjunctivitis, only a few animals developed keratitis. In neither herd, cases of encephalitis did occur (MORGAN, 1977).

Isolation of *Mycoplasma bovoculi* was reported from cattle affected with conjunctivitis. Slight corneal opacity was noted in some eyes and bacteriological examination yielded several bacteria (NICOLET and BUTTIKER, 1974).

MISK (1993), noticed that many ocular diseases have been described in different domestic animals. The most common ocular affection recorded in cattle, buffalo and sheep were subconjunctival abscess, prolapse of nictitans glands, conjunctivitis, keratitis, hyphaema and cataract.

Several microorganismes were isolated from cases of I.K.C., other than *M. bovis*, *Neisseria*, *Listeria* and *mycoplasma*, as *Streptococci*, *Micrococci*, *Coryne pyogenes*, *E. coli*, *Staphylococci* and *Pasteurella bovi septica* (CRAIG and RATTOR, 1940; ROSE, 1942).

MATERIAL AND METHODS

During the period from November 1993 till Jaunuary 1994, 30 Swabs were collected from eyes of diseased calves of different ages (2 weeks - 12 weeks) and different sexes. These swabs were collected from Governomental farms of Naggi Hammady and Qena.

Handling of specimens:

Symptoms of conjunctivites appeared as serous discharge from eye which later become purulent, followed blepharitis. In 2-4 days a slight cloudines of the center of the cornea developed which became more diffuse and was accompanied by an increase in thickness of cornea.

Collection of swabs from diseased eye was done as follows: The eyelids were carefully wipped with dry tissue paper and a sterile cotton swab was immersed in sterile saline and then passed carefully on cornea and conjunctival sac.

Each collected swab was placed in sterile tubes under complete aseptic condition and transported to the laboratory with minimum delay.

Methods:

Swabs were inoculated onto blood agar, MacConkey's agar plates, and into nutrient broth tubes. All media were incubated at 37°C for 24 hours. From incubated broth, blood agar as well as MacConkey's plates were inoculated and subjected to the same manner. The isolated colonies were picked up and subjected to further identification based on colonial and cellular morphology and biochemical reaction according to *CRUICKCHANK et al.* (1975).

The isolated microorganisms were tested for sensitivity test against most common antibacterial drugs as:

Streptomycin 10 µg, *chloramphenicol* 20 µg, *Penicillin G* 10 µg, *Septine* 25 µg, *Erythromycin* 15 µg, *Negram* 30 µg, *Lincocin* 3 µ. and *Oxyteracyclin* 15 µg (*Difco.*). Using disc diffusion methods of *AZIZ et al.* (1977).

RESULTS

Are summarized in table 1 and 2.

DISCUSSION

In this study, the microbiological investigation (Table 1) of 30 swabs from diseased eyes of calves were mentioned in chronological order *E.coli*, 46.7%, *Staph. aureus*, 40%; *Klebsiella aerogenes*, 40%; *Proteu spp.* 30; *Serratia sp.* 6.7%, *Anthracoïd* 6.7% and *Mixed infection* 60%.

These results were nearly similar to those of *CRAIG and RATTER* (1940) and *ROSE* (1942). Who isolated several microorganisms as mainly haemolytic *Streptococci*, *Corynebacterium pyogenes*, *Escherichia Coli.*, *Staphylococci* and *Pasteriella bovis septica*.

In the present study, *M. bovis* was not isolated, such result is similar to *REESE* (1967), who was also unable to isolate *M. bovis* from the eyes of cows affected with IBK in U.S.A.

Neisseria sp. could not be isolated in the present samples, a finding which is in contrast to those of *SPRADBROW* (1967); which found that species of *Neisseria* were the most common microorganisms isolated in 25 herds of cattle experiencing outbreaks of keratoconjunctivitis.

BAPTISA and RIBERIO (1974); *BEDFORD* (1976) and *SCOTT* (1977) reported that the highest incidence of IBK occurs in young stock, but adult cattle can be severely affected when the herd has not previously experienced the condition. This result

is similar to the present result where the affected animals ranged from 2-12 weeks of age.

Winter epizootic of IBK are known to occur, by (HUBBERT & HERMANN, 1970 and PUGH & HUGHES, 1972). That suggestion in winter incidence was increasing in Great Britain (MARR, 1977). This result agreed with that of present study.

Chloramphenicol was the highly effective antibiotic for all microorganisms spp. in vitro. Erythromycin and Negram were moderately effective for all isolated microorganisms. Flagyl, Pencillin G., Lincocin and oxyteracyclin had no effect on the isoalted microorganisms.

A wide range of antimicrobial drugs, are effective agents stopping the progress of development of symptoms. It is worthy to indicate that such agents could not affect the rappid regression of lesion (WILCOX, 1968). Other procedures recommended are the isolation of the affected animals in the shade to prevent the spread of the disease and to avoid direct exposure to sunlight. The elimination of flies by the use of repellant has also been recommended.

In this study previously mentioned methods for controlling the disease are the best methods.

Several reports are now concerned with the application and prolonged retention in the eye of medical preparations such as: furazlidone (PFISTER, 1967; REESE, 1967; VERMIMB, 1969), Tetracycline or chlorumphenicol ointment (PLAKHOTIN et al., 1966) or Chloramphenicol spray (SCHNURBUSCH et al., 1969)

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Table 1: Isolated microorganism and its frequency

No No. of positive cases	No. of Negative cases	Single infection	Mixed infection	E. coli faec- uency	Staph- aureus	Kleb- siella	Proteus Spp.	Strept. fecalis	Pseudo- monas	Serratia murce- sens	Anthra- coid
30	27	3	9	18	14	12	12	9	4	2	2
%	90%	10%	30%	60%	46.7%	40%	40%	30%	13.3%	6.7%	6.7%

Table 2: The sensitivity of isolated organisms from diseased eyes to some antibiotics

Organisms	E. coli	Staph. aureus	Klebsiella aerogenes	Proteus Spp.	Strept. fecalis	Pseudo monas	Serratia murcesens	Anthracooid
No. of strains tested	14	12	12	9	4	2	2	2
Streptomycin	3++	2++	2++	3++	1+	1+	-	1++
Chlorampheni col. 30 ug	8+++	7+++	8+++	3+++	2+++	1+++	1+++	-
Flagyl. 5 mg	-	-	-	-	-	-	-	-
Pencillin G. 10u	-	-	-	-	-	-	-	-
Septrine 25 ug.	-	-	-	-	-	-	-	-
Erythromycin 15ug	1++	2++	1++	1++	1++	-	1++	1++
Negram. 30 ug	-	-	-	-	-	-	-	-
Lincocin 3 u.	-	-	-	-	-	-	-	-
Oxytetracycline 15 ug.	-	-	-	-	-	-	-	-

- ve = Resistant (no inhibitory zone).

++ve = Moderately sensitive (inhibitory zone from 10-20 mm).

+++ve = Highly sensitive (inhibitory zone more than 20 mm).