

INFECTIOUS BOVINE KERATOCONJUNCTIVITS IN CALVES

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**EPIDEMIOLOGICAL VIEW OF INFECTIOUS BOVINE
KERATOCONJUNCTIVITS IN CALVES: CLINICAL
SYMPTOMS, MICROBIOLOGICAL EXAMINATION AND
TREATMENT**
(With One Table)

By

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المنظور الوبائي للتهابات المعديه للقرنية والملتحمة فى العجول:
أهم الأعراض. الفحص الميكروبيولوجى والعلاج
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أجريت هذه الدراسة على ٤٢ عجل بقرى يعانون من التهابات شديدة فى القرنية والملتحمة و ٢٠ عجل سليم تماما من الناحية الإكلينيكية الظاهرية وتم تسجيل أهم الأعراض الإكلينيكية. يعتبر ميكروب الموركسيلا بوفيز من أهم الأسباب البكتيرية المسببة للمرض وتم عزله بنسب ٧١.٤٢% و ١٠% من كل من العجول المريضة والسليمة على التوالى. كما تم عزل كل من المكورات العنقودية والسبحية بصور نقية أو مختلطة مع ميكروب الموركسيلا بوفيز. إستجابت ٢٢ حالة (٩٢.٩%) للعلاج بإستخدام مطهرات العين والمضادات الحيوية الموضوعية والعامة بينما لم تستجيب ٢ حالات (٧.١%) للعلاج وذلك لتكوين عتامة على القرنية.

SUMMARY

This study was carried out on 42 diseased calves suffered from severe Keratoconjunctivitis and 20 apparently clinically healthy calves as control group . The main clinical signs of the infected eyes were epiphora, conjunctivitis, Keratitis, intense lacrimation, superficial and deep extensive corneal vascularization and corneal scar. *Moraxella bovis* formed the main bacterial causative agent, it was isolated and identified from 71.42% and 10% in both infected and clinically healthy eye swabs respectively in pure form. Staphylococcal, Streptococcal species and *E. coli* were isolated either in pure or in mixed form with *M. bovis*. Local treatment with antiseptic solutions, antibiotic drops and ointments in parrallel with systemic antibiotics was succsed to relieve the disease in 92.9% of infected eyes, while it was of no value and fails in 7.1% when the corneal scar was formed.

Keywords: *Epidemiological view of infectious bovine keratoconjunctivitis in calves, clinical symptoms, microbiological examination and treatment*

INTRODUCTION

Infectious bovine keratoconjunctivitis (IBK) or pink eye constitute one of the most common contagious disease of cattle, which is of major economic importance in beef and milk-producing areas throughout the world (SLATTER, 1981, KOPECKY *et al.*, 1986).

It is generally accepted that *Moraxella bovis* is being the main etiologic agent of IBK (MATTINSON and COX, 1982), however it was recorded that there were other microbial agents that have been associated with this condition such as infectious bovine rhinotrachietis (IBR) virus, *Mycoplasma* spp., *Neisseria* spp., and *Listeria monocytogenes* (GELATT, 1981; MATTINSON and COX, 1982, WEBBER, *et al.* 1982, and BARBER and JONES 1988).

The epidemiology of the disease has been well defined. Direct contact with ocular and nasal discharge is responsible for the spread of the infection. House fly (*Musca domestica*) face fly (*Musca autumnalis*) and stable fly (*Stomoxys calcitrans*) have been incriminated as mechanical vectors but they are not thought to be biological vactors (BERKEBILE *et al.*, 1981; and DUSBABEK *et al.*, 1982).

It is obvious that the disease is fatal to the eye and the ophthalmological signs including keratitis and conjunctivitis, intense lacrimation, photophobia, blepharospasm and central corneal opacity (ARORA, 1981).

The medical treatment of IBK was described by GELATT, (1981); SLATTER, (1981); and PUGH, *et al.* (1982). The use of antiseptic eye solution such as boric acid, silver nitrate and zinc sulphate has great value. Subconjunctival injection of procaine and benzathiane penicillin with chloramphenicol eye drops and ointement is useful in treatment of IBK.

The aim of the present work is to study the main clinical signs, isolation and identification of the causative agent (s), and treatment of the disease.

MATERIAL and METHODS

A total of 62 (42 diseased and 20 clinically healthy) calves their age ranged from one to three months belonging to Al-Hamam farm at Assiut governorate were used in this study. Clinical signs of the infected calves were recorded. Eye swabs from the diseased and healthy calves were collected and transported using sterile technique for bacteriological examination. They were inoculated aseptically into nutrient broth incubated at 37°C for 24h. and then subcultured into the following media: 5% sheep blood ager, chocolate agar, Macconky and nutrient ager.

The isolates were identified according to colonial morphology, Pigment production, microscopically by Gram stain and biochemically according to BAILY and SCOTT (1974).

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Antibiotic sensitivity test for bacterial isolates were done by diffusion method using antibiotic discs (Biomeriux) of amxicilline (25 ug) ampicilline (10 ug) chloramphenicol (30 ug), colistine (10 ug), erthromycin (15 ug), garamycin (30 ug) gentamycin (30 ug) kanamycin (30 ug), netilmicin (30 ug), tetracycline (30 ug) and tobramycin (30 ug). (CRUICKSHANK *et al.* 1975).

The medical treatment include the using of the followings:- Boric acid 2% for flushing of the infected eyes, gentamycin 0.3% eye ointement used twice daily for 10 days, Optocetine eye drops (chloramphenicol) used 2-3 times for 7-10 days, mephenicol eye ointement, and pan-terramycin I/M 20ml for 3 days.

RESULTS

Clinical signs:

The most clinical symptoms were epiphora, catarrhal conjunctivitis, keratitis, intenselacrimation (in 28 cases), purulent conjunctivitis, and the eye exhibite superficial and deep extensive corneal vascularization (in 11 cases). corneal scar was also observed in 3 cases.

Bacteriological examination:-

Microbiological isolates of eye and conjunctive of both infected and healthy calves were demonstrated in Table 1.

The isolates of *M. bovis* were highly sensitive for gentamycin (+++), chloramphenicol (+++), tetracycline (+++) and amoxicillin (+++).

The medical treatment of IBK was started early to avoid the progressive corneal changes. The duration of the treatment ranged from 5 to 20 days except in 3 cases without response because epithelization of the cornea was complete.

DISCUSSION

All breeds of cattle throughout the world have exhibited an infectious ocular disease, and *M. bovis* is found wherever, cattle are raised. All breeds appear to be infected and sex is not a factor. IBK causes severe economic losses in cattle industry. These losses are due to loss of weight in infected calves, decline of milk yield in dairy cattle, Loss of productivity during time devoted to treatment, as well as high treatment costs (KOPECKY *et al.* 1981).

In the present study *M. bovis* was the main microbiological cause of the infectious bovin keratoconjunctivitis (%71.42) Table 1. This result agrees with that previously reported by HUGES and PUGES, (1970); PUGH *et al.* (1971), ARORA, *et al.* (1981), MATTINSON and COX, (1982); and BARBER and JUNES, (1988). A dermonecrotic endotoxin is produced by the organsim and is causing typical lesions of the conjunctivitis, keratitis, and intense lacrmation in the infected eyes (WILCOX, 1970).

Staphylococcal and streptococcal species are also isolated either in pure or mixed form with *M. bovis* as shown in Table (1). This finding is in accordance to HUGES and PUGH

(1970), and ARORA, (1981). They speculated that the associated bacteria has an ancillary role or an enhancing factor for IBK.

M. bovis can be found typically in the conjunctiva of a few carrier cattle without manifesting signs or history of infection (PUGH, 1971; ARORA, 1981; and KOPECKY, *et al* 1986). This explain our results of isolation of *M. bovis* from clinically healthy calves Table (1).

Local treatment with antiseptic solution, antibiotic ointments and eye drops in parallel with systemic antibiotics administration was

successful to relieve the disease in this study however in 3 cases when the corneal scar was formed the treatment was of no value.

From this study it was concluded that the elimination of IBK is very important to reduce the losses of cattle industry especially in newly born calves. This occurs via, application of strict hygienic measures, eradication of flies, isolation and rapid treatment of infected calves chemotherapeutic control program must be conducted to eliminate latent infections of *M. bovis* in contact animals.

Table 1: Types and incidences of microbiological isolates from eye and conjunction of both infected and healthy calves.

Animal	No.	M.bovis		M.bovis + Staph		Staph. + Strept.		E. coli		Negative	
		No.	%	No.	%	No.	%	No.	%	No.	%
Infected calves	42	30	71.42	7	16.66	5	11.92	-	-	-	-
Healthy calves	20	2	10	-	-	8	40	1	5	9	45

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