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Clinical management of stage ii infectious keratoconjuctivitis in a goat kid

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Abstract
Infectious keratoconjuctivitis is a common bacterial disease that affects the eye of sheep and goats in most parts of the world. The disease is characterised by lacrimation, conjunctivitis, keratitis, blindness and in severe cases results in mortality. This case report describes the management of infectious keratoconjuctivitis in a 1 week old goat kid. The kid was presented to the University Veterinary Hospital, Universiti Putra Malaysia with an inflamed left eye accompanied with excessive lacrimation, conjunctivitis, conjuctival oedema and mild corneal opacity. Terramycin® ointment was applied on the affected eye for three days, while an intramuscular injection of Oxytetracycline (1mL/10kg body weight) was administered five days apart. Flunixin meglumine was also administered once daily at dosage of 1.1 mg/kg body weight for three days. The goat kid fully recovered two weeks after treatment. The owner was advised to improve sanitary conditions in the goat pen in order to prevent reoccurrence.

Keywords: Eye, Clinical management, Goat kid, Infectious keratoconjuctivitis, Stage II, Veterinary medicine

1. Introduction
Infectious keratoconjuctivitis (IKC), also called “pink eye” is a contagious ocular disease of sheep and goats occurring in many parts of the world [1, 2]. *Mycoplamsa conjuctivae* remains the only bacterium that has been consistently isolated from clinical cases and thus the causative agent of this disease [3-5]. In other species, such as cattle, other species of the bacteria such as *Moraxella bovis* have been incriminated in causing pink eye [6]. Infectious keratoconjuctivitis is characterized by high rate of contagion, rapid onset, intense lacrimation, conjuctival hyperemia, corneal opacity, blindness, behavioural changes and even death [7]. Other species of animals are susceptible to this disease but generally wild animals have higher severity when infected with mortality rates of up to 30% [1, 3, 8]. The occurrence of IKC has been reported from different parts of the world such as from Europe [9], North America [10], South Africa [11] and South Asia [12]. Infectious keratoconjuctivitis have been reported to cause significant economic losses to livestock farmers due to treatment costs incurred, lowered production and mortality usually as a result of falls or drowning [2]. Transmission of infection occurs by direct contact and also mechanically by flying insects. Sheep are known to be reservoirs of *M. conjuctivae* and therefore serves as the main source of infection to susceptible herds mates. Successful treatment of IKC is usually achieved by administering both topical and systemic antibiotics and non-steroidal anti- inflammatory agents. This case reports the clinical management of pink eye in a goat kid.

2. Case report
A one week old Boer cross female goat kid with body condition score of 3/5 weighing about 5kg and managed intensively was presented to the ambulatory unit of the University Veterinary Hospital, Faculty of Veterinary Medicine, UPM, with an inflamed left eye. Based on the history, the kid was transferred into a new pen immediately after it was delivered. One week later, the owner noticed the left eye of the kid was inflamed and had ocular discharges (Fig 1).

Detailed clinical examination revealed that the rectal temperature was 39.4°C, pulse rate at 200 bpm and respiratory rate was 80 rpm. All other clinical parameters were within the normal range. Ocular examination showed conjunctivitis, mild corneal opacity and blepharospasm with conjunctival and corneal hyperemia. After ruling out entropion and traumatic injury, a tentative diagnosis of IKC was made based on the history and clinical findings.

3.1 Management Plan

A widely practiced treatment plan for IKC which involved the administration of antibiotics was instituted. Terramycin ointment (Pfizer, New York) was topically applied on the conjunctiva TID for 3 days. Double injections of Oxytetracycline (1mL/10kg) were given 5 days apart. Flunixin Meglumine (1.1mg/kg), which served as an anti-inflammatory agent was also administered intramuscularly for 3 days to alleviate pain and reverse the inflammation. The goat kid responded well to the antibiotic therapy and tremendous recovery was made within 2 weeks of presentation.

3.2 Follow up

On routine follow-up, there was no lacrimation and the conjunctiva was normal. The swelling that was earlier observed on the left eye had completely regressed and there was no hyperemia. In bid to avoid a relapse, the owner was advised to improve on the sanitary conditions in and around the goat pen.

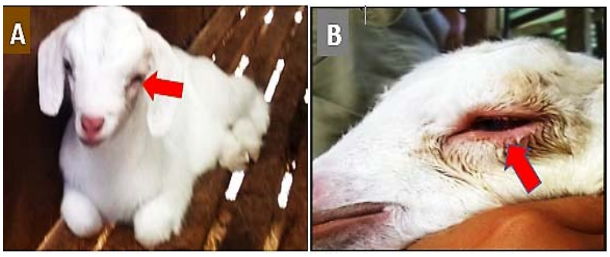

Fig 1: The goat kid showing a swollen left eye (A) and lacrimation with vascularization (B).

4. Discussion

The clinical stages of infectious keratoconjuctivitis are categorized into five different stages in small ruminants. A goat with stage 1 IKC will present with conjunctivitis and limbic infiltration. This may go on to Stage II, which is characterized by corneal oedema, erosion and ulceration of the corneal epithelium, excessive lacrimation and an increased sensitivity to light [13]. The goat kid presented in this case exhibited most of these aforementioned signs. Age, season and flying insects are prime predisposing factors which contribute to the transmission of IKC. It is very likely that a source of infection exist near to where this goat kid was kept and transmitted to the goat kid through mechanical means probably by flying insects. Face flies have been reported to be excellent mechanical transmitters of infectious disease such as IKC from an infected to a susceptible animal [6]. The immune system of the goat kid couldn't have been strong enough to withstand IKC and thus could have succumbed to IKC. This scenario could have been further exacerbated by nutritional deficiencies, such as vitamin A deficiency, or even an undiagnosed acute systemic infection [6].

The efficiency of antimicrobials in the treatment of IKC in goats is influenced primarily by their pharmacologic properties. Treatment of IKC using a combination of topical Terramycin ointment and systemic antibiotics such as long acting oxytetracycline still remains the most effective way of treating clinical IKC as was demonstrated in this case [7]. Long acting tetracyclines appear effective in the treatment of IKC because their concentrations are maintained above the minimum inhibitory concentrations over time. This also allows an equal distribution to the epithelium, conjunctiva and lacrimal glands and still reaching even greater concentrations in serum. A double intra muscular injection of oxytetracycline is required not only to prevent relapse but also to significantly reduce a carrier status for IKC infected animals [14].

The prompt identification of an animal with IKC though purposeful inspection and immediate treatment of IKC is indispensable. This allows for successful treatment of the disease and also allows for a cessation in the shedding and spread of the pathogen responsible for infection to other susceptible herds mate.

5. Conclusion

In this case, the use of topical conjunctival and intramuscular injection of tetracycline was able to manage IKC in a goat kid. The prompt diagnosis and institution of the right therapy generally guarantees early and full recovery from cases of IKC among livestock. Preventive measures to negate the spread of IKC and other similar infectious disease among animals should be enforced so as to avoid unnecessary economic losses associated to IKC and similar infectious diseases to the livestock owner.

6. Acknowledgement

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