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**EPIDURAL ANAESTHESIA IN GOATS USING
LIGNOCAINE HCL WITH AND WITHOUT HYALURONIDASE**
(With One Table)

By

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التخدير فوق الأجمافية في الماعز باستخدام اللجنوكايين أيدروكلوريد مد أو بدون
الهيالورونيداز

فتحى مكادى ، إبراهيم أحمد ، سامية سليم

تم حقن عدد ١٥ عنزة بمخدر اللجنوكايين أيدروكلوريد (٢٪) فوق الأجمافية في
المسافة بين الفقرات القطنية والعجز مدة بدون وأخرى مع الهيالورونيداز (١٥٠ وحدة لكل
١٠٠ سم^٢ مع اللجنوكايين) . ولقد وجد أن مفعول المخدر يظهر أسرع عند استخدام المخدر
مع الهيالورونيداز وفي نفس الوقت تكون مدة التخدير أقل بينما تزداد مساحة الأجزاء
المخدرة قليلاً .

SUMMRAR

Lignocaine HCL (2%) with and without hyaluronidase (150 TRU/100 ml of lignocaine HCL) was administered in the lumbosacral space in 12 goats. Addition of hyaluronidase was found to decrease the time of onset and duration of anaesthesia and the extent of desensitized area was increased.

INTRODUCTION

Epidural anaesthesia is commonly employed to desensitize the hind quarters in animals. SINGH (1951), LINZELL (1964) and NELSON *et al.* (1979) reported the use of epidural anaesthesia in goats. Though considered safe for most of the surgical operations of the hind quarters, BROOK (1958) observed persistent paralysis of the hind limbs following epidural anaesthesia in sheep. OAKLEY (1958) and HOPCROFT (1967) observed hind leg lameness and death in sheep following epidural anaesthesia. RITCHIE and COHEN (1970) reported sleepness in experimenal animals as a result of systemic absorption of lignocaine when used in large doses. Addition of hyaluronidase to local anaesthetic solution has been reported to promote its diffusion and absorption when locally infiltrated but not in epidural and spinal anaesthesia (LUMB and JONES, 1973).

The present study was undertaken to find out the time of onset, duration of anaesthesia, extent of desensitized area as well as the side effects if any, following epidural injection of lignocaine HCL either alone or in combination with hyaluronidase.

F.M. MAKADY *et al.***MATERIALS and METHODS**

Twelve apparently healthy native goats of 2-3 years old weighing 20 to 25 Kg., were divided in two groups of six animals each. The animals were kept off food and water for 12 hr. prior to experiment.

The epidural injection was given in lumbosacral space aseptically using epidural needle after controlling animals in the standing position.

In animals of group (I), 2% lignocaine HCL was administered at a dose of 0.2 ml/Kg. body weight and of group (II), lignocaine HCL with hyaluronidase at a dose rate of 150 turbidity reducing units (TRU) per 100 ml of lignocaine HCL solution (MOORE, 1950) was administered at the same dosage.

The time of onset of anaesthesia, its duration and extent, relaxation of muscles of tail, anal sphincter, hind limbs and abdomen were observed. Analgesia was tested by pin pricks. the period of recumbency and return of reflexes of the muscles were also recorded.

RESULTS

The details of observations are given in table (1). The onset of analgesia was seen by first observing the relaxation of the muscles of the hind quarters, followed by limbs and abdomen. The onset of flaccidity of tail, relaxation of the anal sphincter, relaxation of the abdominal muscles, the duration of recumbency and relaxation of the muscles of hind limbs were reduced by 45%, 45%, 50%, 47% and 54% respectively when hyaluronidase was added to lignocaine HCL solution.

The duration of analgesia was calculated from the time of onset to the time of return of reflexes. The addition of hyaluronidase to lignocaine HCL reduced the duration of relaxation of abdomen, hind limbs, anal sphincter, tail and the period of recumbency by 23%, 16%, 21%, 20% and 24% respectively.

The addition of hyaluronidase brought about a slight increase in the extent of analgesia, when lignocaine alone was used, the hind quarters and the region up to the 11th thoracic vertebra were anaesthetised, but the addition of hyaluronidase extended it up to the level of the 9th thoracic vertebra.

DISCUSSION

The addition of hyaluronidase to local anaesthetic solution does not improve its efficiency in epidural and spinal anaesthesia (LUMB and JONES, 1973). However, in the present study, the addition of hyaluronidase reduced the time of onset and duration and increased the extent of desensitized area. Hyaluronidase has been added to local analgesics at a rate of 150 TRU/100 ml lignocaine to enhance its diffusion. Increased diffusion results in faster onset of action, but also shortens the duration due to the increased permeability of the tissues (MOORE, 1950).

EPIDURAL ANAESTHESIA

In the present study, untoward reactions to epidural anaesthesia such as paralysis of hind limbs (BROOK, 1958), hind leg lameness (OAKELY, 1958), death (OAKELY, 1958 and HOPCROFT, 1967) and sleepiness (RITCHIE and COHEN, 1970) had not been reported. Only study a transient hind leg lameness, sleepiness and reduction in feed intake were noticed in three animals, with no serious complications.

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Table (1): The onset, duration and extent of regional anaesthesia after epidural administration of lignocaine HCL with and without hyaluronidase in goats (Mean±Standard error).

	Group I	Group II
	Time in minutes	
1- Onset of anaesthesia:		
Flaccidity of tail	1.50±0.23	0.83±0.00
Relaxation of anal sphincters	1.50±0.23	0.83±0.00
Relaxation of abd. muscles	4.00±0.33	2.00±0.40
Assuming recumbency	5.26±0.50	2.80±0.30
Relaxation of the hind limbs	5.83±0.54	2.67±0.60
2- Duration of anaesthesia:		
Relaxation of abd. muscles	44.50±4.00	34.50±2.00
Relaxation of hind limbs	47.17±6.10	39.50±7.37
Relaxation of the analsphincter	71.67±6.00	57.50±8.03
Flaccidity of the tail	72.27±6.00	58.27±7.00
Period of recumbency	79.40±8.30	60.03±9.00
3- Extent of desensitized are:		
	Up to 11 th	Up to 9 th
	thoracic	thoracic
	vertebra.	vertebra.