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دراسات عن الاستخدام الاكلينيكي لمخلوط من الفيتالار والريمسون في الأغنام

تيسير سامي ، محمود طنطاوي ، حمدي ابراهيم ، عبد الرحيم عبد المطلب

تم حقن مخلوط من الفيتالار والريمون في الأغنام وقد أعطى هذا المخلوط تأثيرا تحديريا جيدا باستعمال جرعات قليلة
وكان متوسط فترة التخدير ٧٥ دقيقة .

وكان التأثير الاكلينيكي كالاتي :-

زيادة في معدل التنفس ونقص في معدل ضربات القلب ودرجة حرارة الجسم .

وبدراسة التغيرات الدموية والكيميائية بالدم قبل وأثناء وبعد التخدير لوحظ نقص في عدد كريات الدم الحمراء ونقص في
الهيموجلوبين والهيماتوكريت وعدد الكريات البيضاء .

كما لوحظ نقص في خلايا الليمفو والخلايا الحامضية (أيوسينو) مع ارتفاع طفيف في الخلايا المتعادلة أما بالنسبة للتحاليل
الكيميائية فقد لوحظ زيادة في الانزيمات وزيادة في البولينا كما لوحظ زيادة بسيطة في البروتين الكلي وكذا الكالسيوم والفسفور
الغير عضوي .

وقد عادت هذه التغيرات الى حالتها الاولى قبل التخدير بعد حوالي ٤٨ ساعة .

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STUDIES ON THE CLINICAL APPLICATION OF COMBINED VETALAR-ROMPUN⁺ IN SHEEP⁺⁺
(With 3 Tables)

By

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SUMMARY

Intravenous injection of a combined mixture of Vetalar-Rompun was performed in sheep. The desired anaesthetic effect was obtained by using small doses of the drugs.

The average anaesthetic period persisted for 75 minutes. Clinical study revealed an increase in respiratory rate, as well as decrease in pulse rate and body temperature. Study of the haemogram before, during and after anaesthetization revealed decreased level of total red cell count, haemoglobin content, packed cell volume and total white cell count. Lymphopenia, eosinopenia with subsequent rise in neutrophils were observed. The activity of the enzymes GOT, GPT and alkaline phosphatase was increased. The blood urea nitrogen showed marked elevation. The total serum protein, calcium and inorganic phosphorous showed slight change.

The studied blood parameters returned to their pre-anaesthetic values 48 hours after anaesthetization.

INTRODUCTION

Vetalar (ketamine hydrochloride) alone is a short acting general anaesthetic used for sheep (TAYLOR, et al. 1972; THURNON, et al. 1973; KUMAR, et al. 1974; and TANTAWY, 1978). There was good relaxation of the muscles and absence of reflexes.

Rompun (Bayer) is a potent non-narcotic sedative and analgesic as well as muscle relaxant (SAGNER, et al. 1968; MOSIER, 1972; STRAUB, 1971; MOHAMMED, et al. 1976; and TANTAWY, 1978).

The aim of the present work was to study the effect of combined mixture of Vetalar and Rompun on the duration of anaesthesia and relaxation of muscles. The influence of this anaesthetic mixture on the clinical condition, blood picture and blood chemistry was observed and recorded.

MATERIALS AND METHODS

Fifteen sheep of both sexes ranging in age from 6 months to 5 years were used. All animals were clinically healthy and kept under observation for two weeks to eliminate the presence of infection or other diseases. All animals were fastened 24 hours before the administration of the drugs. The animals were divided into three groups. In order to determine the proper anaesthetic dose, combined mixture of Vetalar and Rompun was injected i.v. in increasing doses till reaching the maximum depth of anaesthesia.

The dose was calculated per Kg. body weight. To evaluate the efficacy of these anaesthetic, some surgical interventions were performed such as, intestinal anastomosis, mastectomy and amputation of the claw.

Clinical, haematological and biochemical studies were performed according to (COLES, 1967). Serum biochemical were estimated according to the well known methods. The reagent used were in the form of test kits (Merk, Darmstadt, West Germany).

RESULTS

Mixture of Vetalar and Rompun to obtain general anaesthesia in sheep proved to be satisfactory. The result showed that a dose of 0.3 mg./kg. b.wt. of Rompun mixed with 3 mg./kg. b.wt. of vetalar, slowly injected intravenously produced a state of general anaesthesia. Their anaesthetic effect started during injection till reaching the maximum depth. The maximum depth of anaesthesia lasted for an average period of 75 minutes, followed by sternal recumbency for an average period of 3 hours and recovery period persisted for an average period of 4.5 hours, Moaning was noticed at the beginning of recovery period.

+ Park Davis & Company, München.
++ Registered trademark of Bayer A G, Leverkusen.

All reflexes were absent totally during the anaesthetic stage.

Clinical manifestations (Table 1) showed decreased pulse rate and body temperature reaching the minimal values after two hours post-injection. Respiratory rate showed its maximum value after 15 minutes post-injection.

The results of blood picture and serum biochemicals were shown in tables 2 & 3. It was noticed that, RBCs, Hb, PCV, WBCs, lymphocytes, eosinophils, decreased at two hours post-injection; while neutrophils increased, but there was no change in basophils. The biochemical analysis revealed that, GOT increased at 15 minutes, while GPT increased at 30 minutes post-injection. It was also noticed that A.P., glucose, urea and inorganic phosphorus increased to the maximum at 2 hours post-injection, while total protein showed slight increase. Serum calcium reached the maximum increase at 4 hours post-injection.

DISCUSSION

The clinical manifestations mentioned resemble those reported by (MOHAMMED *et al.* 1976) in sheep tranquilized by Rompun, and against the data of (THURNON *et al.* 1973) using ketamine hydrochloride as anaesthetic for sheep. Considerable attention has been focused by many investigators to the hypothermic action, which was less pronounced in this work (EL-MAROUSI and SOLIMAN, 1965; SOLIMAN *et al.* 1966, and KHAMIS, 1968). They attributed the momentary hypothermic effect to excessive loss of heat as a result of depression of the peripheral sympathetic system which gives rise to peripheral vasodilation. The decrease in respiratory and pulse rates were in agreement with (KERR *et al.* 1972) in horse, and (MOHAMMED *et al.* 1976) in sheep.

The slight momentary increase in respiratory rate 15 and 30 minutes post-injection of anaesthesia was explained on the basis that general anaesthesia may exhibit active exhalation through contraction of the recti and oblique abdominal muscles. Slowing of respiration with the used drugs is to be regarded as an expression of the sedative and hypnotic effect of Rompun on the respiratory center. Meanwhile, Vetalar as an anaesthetic agent depress or abolish the response of central chemoreceptors to carbon dioxide, normally is the cause of decreased respiration (HORNBEIN, 1968). (SAGNER *et al.* 1968) mentioned that the decrease in cardiac rate might be due to central depression of the sympathetic trunk.

The haematological findings following the administration of Vetalar and Rompun were a decrease in the number of erythrocytes, haemoglobin and packed cell volume. The lowest values of these blood constituents were recorded two hours post-injection. Such decrease may denote a temporary dilution of the circulating blood as a sequel to increased migration of intestinal fluid to the vascular system. These effects were in accordance with (STOBER 1958) and (SOLIMAN *et al.* 1965). On the other hand, (TURNER and HODGETTS, 1960) and (DE MOORE and VAN DEN HENDE, 1968), suggested that erythropenia may result from splenic storage of erythrocytes during the anaesthetic period. In just more work has to be done in this respect to answer this question.

The leucogramme of the investigated sheep showed before injection somewhat higher values in the absolute count of the differentiated cells. This condition is due to many factors apart from the work to be discussed. However, for comparison when we take the initial values before injection and afterwards we notice reduction in the total leucocytes, lymphocytes and eosinophils. The neutrophils showed subsequent rise during the sedative effect of anaesthesia. These findings seemed to be similar to that observed in cattle by (SOLIMAN *et al.* 1965) and in buffaloes by (EL-AMROUSI and SOLIMAN, 1965) using different types of tranquilizers.

Screening the data of serum GOT and GPT, showed elevation in their values at 15 minutes, 30 minutes and 2 hours post-anaesthetization. The elevation in the activity of these enzymes seemed to be transitory where their values returned back to their pre-anaesthetic values 48 hours post-injection. Our findings about transaminases coincide with the previous results of (KUMAR *et al.* 1974). The observed change in serum GOT may be attributed to struggling that may cause slight destruction of muscle fibers during recovery period.

Also change in GPT could be attributed to the effect of the drug on the hepatic cells during excretion (CLARK *et al.* 1965). The increased values of blood urea nitrogen may indicate temporary renal dysfunction, due to the relaxation of muscles associated with dilatation of the blood vessels that act on the renal blood flow. There were no marked changes of chemical importance in the other studied parameters.

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TABLE (1)

The mean values of pulse, temperature and respiration before and after injection of mixture of Vetalar and Rompun. in sheep

Time	Pulse/min.	Temp. °C	Resp./min.
Before	105.15	39.5	31.3
After			
15 min.	106.65	39.6	70.6
30 min.	101.5	39.3	51.9
2 hrs.	91.65	38.9	29.9
4 hrs.	96.5	39.1	26.0
24 hrs.	120.0	39.7	34.8
48 hrs.	119.15	39.2	31.0

TABLE (2)

The mean value of blood picture

Time	RBCs X10 ⁶	Hb gm %	PCV %	WBCs X10 ³	Neutr.	Lymph.	Dosin.	Mono.	Baso.
					per cent and absolute No. per cubic millimeter				
Before	12.8	13.6	35.6	11.2	43.6	51.6	2.0	2.0	1
					4883.2	5779.2	224.0	224.0	112
After									
15 min.	12.1	12.7	33.8	10.3	46.2	49.6	1.8	2.0	1
					4758.6	5108.8	185.4	206.0	103
30 min.	11.7	12.7	33.4	10.1	48.4	46.6	2.2	2.0	1
					4888.4	4706.6	222.2	202.0	101
2 hrs.	11.2	12.0	32.6	9.8	53.8	43.2	1.8	1.8	1
					5272.4	4233.6	176.4	176.4	98
4 hrs.	11.9	12.8	34.4	10.3	45.2	50.0	2.0	1.6	1
					4655.6	5150.0	206.0	164.8	103
24 hrs.	12.3	13.9	34.8	11.0	44.1	51.8	2.0	1.4	1
					4851.0	5698.0	220.0	154.0	110
48 hrs.	12.5	13.8	34.8	11.1	43.2	52.1	2.0	1.3	1
					4795.2	5783.1	222.0	144.3	111

TABLE (3)

The mean values of some serum biochemical changes

Time	GOT mU/ml	GPT mU/ml	A.P. mU/ml	T.Protein gm %	Glucose mg %	Urea mg %	Calcium mg %	Inorganic P. mg %
Before	39.2	19.8	15.7	6.3	48.5	18.7	10.0	4.7
After								
15 min.	49.2	26.7	17.5	6.2	49.6	19.5	10.1	4.7
30 min.	49.1	31.5	17.7	6.2	50.3	21.5	10.2	5.2
2 hrs.	48.6	28.3	17.7	6.1	51.0	22.2	10.6	5.5
4 hrs.	40.8	23.6	17.5	6.4	50.9	19.7	11.3	4.8
24 hrs.	42.7	23.4	16.5	6.1	49.3	18.0	10.1	4.6
48 hrs.	40.1	20.1	16.4	6.2	48.0	18.1	10.0	4.6