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**SOME CLINICAL AND BIOCHEMICAL OBSERVATIONS
OF CHLORAL HYDRATE NARCOSIS IN DONKEYS**
(With 2 Tables & 3 Figures)

By

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بعض المشاهدات الإكلينيكية والبيوكيميائية الناتجة عن حقن
إبدرات الكلورال في الحمير

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أجريت هذه الدراسة على عدد ٨ حمير (بما اشهرأ) تابعة لمستشفى كلية الطب البيطري وقد استخدم محلول إبدرات الكلورال بتركيز ١٠٪ للحقن في الوريد الوداجي الأيمن بمعدل ٦ جرام/٥٠ كيلو جرام من وزن الحيوان وتم تسجيل الأعراض الإكلينيكية . وقد أمكن باستخدام هذه الجرعة تهدئة الحيوان والتحكم فيه دون فقد الإحساس . إن هذه الجرعة ليس لها تأثير جوهري على بعض خلايا الكبد . كان من أبرز تأثيرات إبدرات الكلورال إنخفاض درجة حرارة جسم الحيوان إلى أقل من ٣٦ درجة مئوية خلال ٢-٣ ساعات بعد الحقن ولذلك يجب أن يراعى عند الحقن الفرق بين درجة حرارة الجسم ودرجة حرارة الجو حفاظاً على حياة الحيوان .

SUMMARY

The present study was conducted on 8 donkeys (4-11 months). Chloral hydrate 10% solution was administered intravenously in a dose of 6 g/50 Kg B.Wt. The clinical effects of the drug were recorded. The use of drug in a dose rate of 6 g/50 Kg B.Wt, have no detrimental effect on liver transferases (SAA \bar{r} and ALAT) from drug administration.

The most prominent clinical effect for chloral hydrate was on the body temperature which was decreased to lower than 36 degree centigrade within 2 to 3 hours after drug injection. The study showed the need of animal protection from the difference between the body temperature and the environmental climate.

INTRODUCTION

The use of chloral hydrate alone or with other drugs as a preanaesthetic or narcotic for horse was discussed by many authors (GREEN, 1979; DIETZ & WIESNER, 1984 and SCHNEIDER & STIEF, 1987).

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In the cases where the cattle can not even be approached, chloral hydrate can be used to sedate the animal by administration in the drinking water (SOMA, 1971). Giving chloral hydrate in a small doses with low concentration (3-4%) is essentially hypnotic and suppress pain sensation, while in large doses it causes anaesthesia in all animals (JONES *et al.*, 1977 and GREEN, 1979).

In light narcosis the horse maintained the standing position but its reactions to simple external stimuli are reduced. There is some locomotor incoordination and the gait is unsteady. Skin sensation is not reduced (HALL, 1971).

During chloral hydrate ingestion or injection, the pulse rate of horse is accelerated to from 60-80 beats/minute while in cattle both respiration and pulse rate are accelerated (HALL, 1971). The same results were recorded by (SHARMA *et al.*, 1983 and SCHNEIDER & STIEF, 1987).

The aim of the present work is to study the clinical signs and some biochemical changes in donkeys subjected to chloral hydrate narcosis.

MATERIAL and METHODS

The present work was carried out on 8 apparently healthy male donkeys (4-11 months) and 25-90 Kg body weight. The animals received by I.V. injection 6 g/50 Kg body weight chloral hydrate. The clinical signs were recorded including heart rate, respiratory rate and rectal temperature before and after injection of chloral hydrate. The animals were kept under observation till they could stand up with or without assistance and all remarks were recorded.

Blood samples were collected from the jugular vein of the animals before injection, 3 hours, 24 hours, and 7 days post injection. Blood serum were obtained and liver Aspartic Amino Transferase (ASAT) and Alanine Amino Transferase (ALAT) were evaluated according to the method of REITMAN and FRANKEL (1957).

Statistical data of ASAT were analysed according to the method of SNEDECOR and COCHRAN (1974).

RESULTS

The changes in the body temperature, heart rate and respiratory rate are shown in tables (1, 2) and Figs. (1, 2 & 3). The body temperature decreased up to 35.9 degree centigrade at 90 to 105 minutes after drug administration then began to return to the normal temperature within 3 hours.

The heart rate decreased within 45 to 60 minutes after drug administration but returned to the normal values within 3 hours. On the contrary the respiratory rate increased within 45 minutes after drug administration, then began to fluctuate around the normal values.

The body temperature decreased to reach its minimal value 60 minutes after the injection.

The values of transferases (ASAT and ALAT) are shown in table (2).

Table (1): The mean values of body temperature, heart rate and respiratory rate after injection of chloral hydrate in donkeys

Time in minutes	0	15	30	45	60	75	90	105	120	150	180
T	37.2	36.8	36.7	36.4	36.3	36.1	36.1	35.9	35.9	36.7	37.2
H.R	58	54	50	49	49	50	52	56	54	56	58
R.R.	15	19	21	20	16	14	15	14	14	15	16

T = Body temperature

R.R = Respiratory rate

H.R = Heart rate.

Table (2): The mean values of serum transferases (ASAT and ALAT) after administration of chloral hydrate in donkeys.

Dose	Time	ASAL	ALAT
		U/ 100 ml	U/ 100 ml
(6 g/ 50 kg)	0	85.0 \pm 8	12.0 \pm 2
	3 hours	79 \pm 11	12.0 \pm 2.1
	7 days	88 \pm 6	14.0 \pm 2.4

DISCUSSION

The obtained results claimed that chloral hydrate could be used in donkeys with high efficacy in dose 6 g/50 Kg B.Wt. The results have some differences in comparison to the drug effects on the large animals.

Decrease in body temperature following administration of chloral hydrate in donkeys may be attributed to the depressant effect of the drug on the thermoregulatory system. LEE (1953) reported that the body temperature dropped 1 to 2.4 degree centigrade during the course of chloral hydrate injection in birds.

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JONES *et al.* (1977) and GREEN (1979) recorded that chloral hydrate produced primary bradycardia in dogs. On contrary our results showed that heart rate was accelerated following the administration of chloral hydrate in donkeys. This agreed with data obtained by HALL (1971) in horse and cattle. Therefore the routine use of atropine sulphate as a cardiac stimulant during chloral hydrate injection (JONES *et al.*, 1977) seemed to be of no value in cases of the use of the drug in donkeys.

During our investigation the respiratory rate was accelerated, then fluctuated around the original values and lastly decreased following administration of chloral hydrate in donkeys. It was also recorded by HALL (1971) that the drug increases the respiratory rate in cattle. On the contrary JONES *et al.* (1979) stated that chloral hydrate markedly depresses the respiratory centers of the medulla in donkeys.

Comparing the values of the blood serum transferases (ASAT and ALAT) after chloral hydrate administration, to the normal values (REITMAN and FRANKEL, 1957), no significant changes were detected, where the fluctuations were within the normal range.

Finally it could be concluded that the difference between the body temperature and the environmental climate should be considered during chloral hydrate administration.

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Fig. (1) Effect of chloral hydrate on body temp.

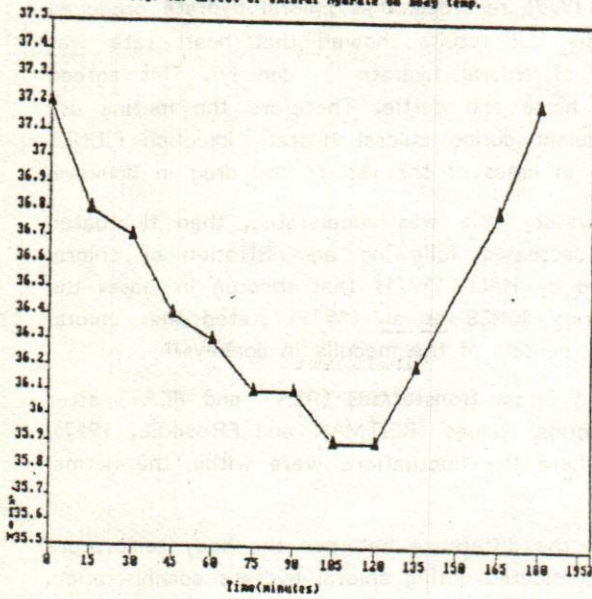


Fig.(3) Effect of chloral hydrate on respiratory rate

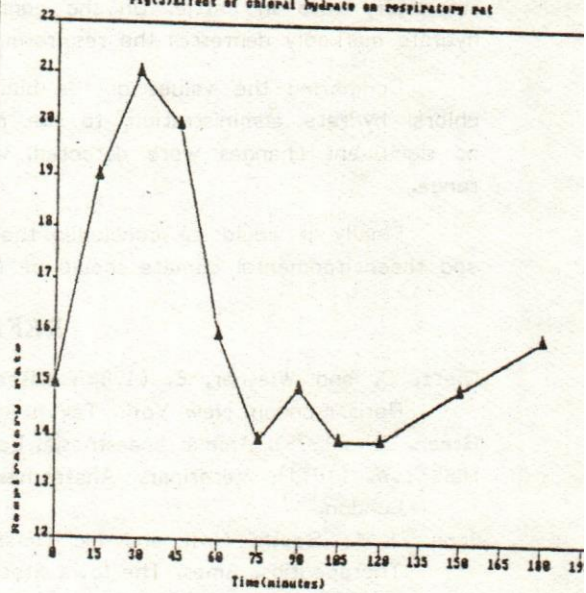


Fig.(2) Effect of chloralhydrate on heart rate

