SHORT COMMUNICATION

CLONIDINE AND HYPOTHERMIA

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Summary: Hypothermic effect of clonidine was studied in normal and hyperpyrexic rabbit. Clonidine (15 *µg/kg*) caused fall by 2-3°C. body temperature in both. This effect was blocked by priscoline (5 *mg/kg*). The central alpha adrenergic action of clonidine seems to cause fall in body temperature.

Key words: clonidine priscoline body temperature

INTRODUCTION

Noradrenaline plays a part in temperature regulation by hypothalamus. It activates warm receptors which when stimulated inhibit release of acetylcholine in posterior part of hypothalamus, heat production is decreased resulting in hypothermia (1). Clonidine, a centrally acting antihypertensive agent, has an alpha adrenergic action (2). It was, therefore, thought worthwhile to investigate the effects of clonidine on body temperature of normal and hyperpyrexic animals.

MATERIAL AND METHODS

24 rabbits of either sex were selected for the study. Diurnal temperature variations in these animals were observed for 8 days at room temperature. They were divided into 4 groups of 6 each. Rectal temperature was taken every half an hour for 2 hours by using a tri-R-electronic thermometer taking care to introduce the probe to the same depth always. Drugs used were dissolved in pyrogen free distilled water.

1. All 4 groups received clonidine in doses of 7.5, 15, 30 and 45 *µg/kg* intramuscularly. Next day the groups were pretreated with priscoline 2.5, 5 and 7.5 *mg/kg* I. M. half an hour before clonidine treatment.

2. Hyperthermia was produced repeatedly in 24 rabbits by I.V. administration of 1 *ml* of T.A.B. vaccine in two groups as per the method described by Eraspamer 1953. One hour after T.A.B. vaccination clonidine was injected either 7.5. or 15 *µg/kg* of body weight. In another group paracetamol (5 *mgm/kg)* was administered for comparison. The same animals were pretreated with priscoline 2.5, 5, and 7.5 *mg/kg* I.M. half an hour before clonidine treatment and the procedure repeated.

3. For purposes of comparison the same animals were treated with reserpine 0.1 and 0.2 *mg/kg,* chlorpromazine 10 *mg* and 20 *mg/kg,* antistine 10 *mg* and 20 *mg/kg* and effect on body temperature observed.

RESULTS

Clonidine in a dose of 15 *µg/kg* of body weight caused hypothermia which was maintained, the maximum fall was seen within half an hour (Fig. 1). The body temperature returned to normal in 90-120 minutes. It was not dose related. It was blocked

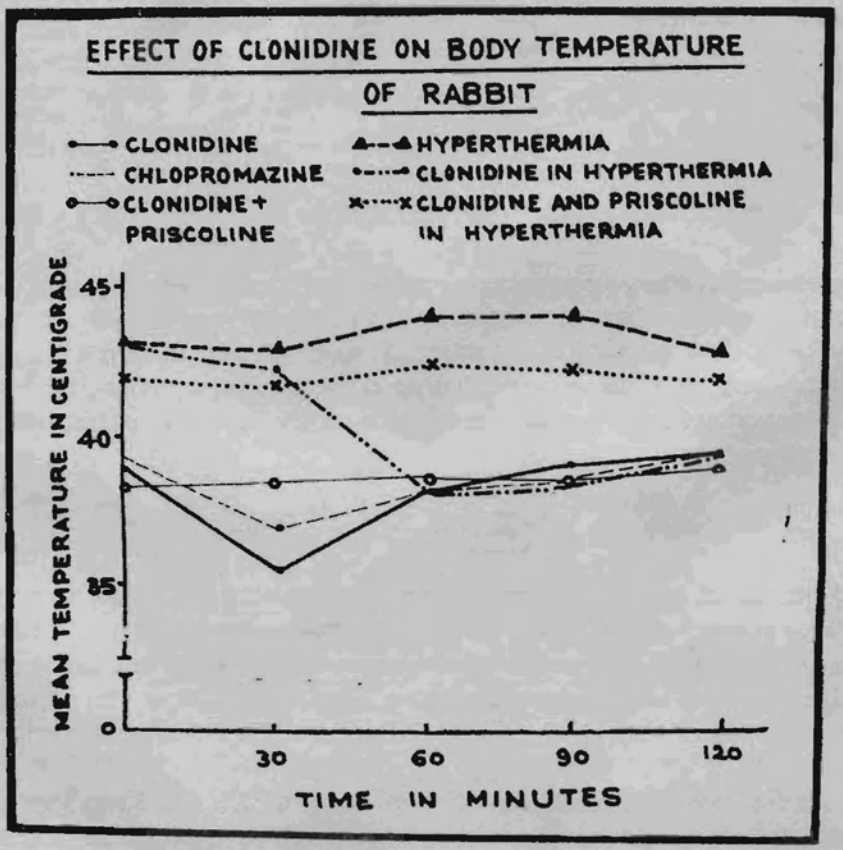

Fig. 1

by priscoline in doses 5 *mg/kg* but 2.5 *mg/kg* dose of priscoline only delayed the recovery period without blocking the hypothermia.

In hyperpyrexic rabbits clonidine (15 *μg/kg)* lowered the temperature to normal body temperature an hour after injection. This effect was found to be well maintained and not dose related. It was blocked by priscoline 5 *mg/kg*. No hypothermia was observed in these rabbits. Chlorpromazine and reserpine produced more persistent hypothermic effect as compared to clonidine but antistine produced slight hypothermic effect. Paracetamol produced antipyretic effect within 15 min lasting for one hour.

DISCUSSION

Clonidine lowers the body temperature in normal and hyperpyraxic rabbits. This lowering of the body temperature is limited to only 2 or 3°C. As priscoline has been observed to block the fall it seems to be mediated by alpha adrenergic receptors. Saxena (3) has observed mild hypothermic effect on intracerebro-ventricular administration of 100 and 500 *μg* of clonidine but no effect on I.V. administration in rabbits. He, however, has not mentioned the dose employed by this route. In the present investigation we did observe hypothermia after intramuscular administration.

ACKNOWLEDGEMENTS

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