

## A COMPARATIVE STUDY OF ALTHESIN AND THIOPENTONE IN MODIFIED E.C.T.

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### SUMMARY

The present report compares Thiopentone sodium and Althesin as intravenous anaesthetic agents in modified electro-convulsive therapy. The induction time with althesin and thiopentone was more or less similar. There was significantly shorter recovery period with althesin as compared to thiopentone. Early and uneventful recovery with althesin was distinct advantage over thiopentone sodium.

Thiopentone sodium is still the most commonly used anaesthetic agent for modified electro-convulsive therapy (ECT) (Sargant and Slater, 1963 and Kalinowsky, 1975) but hangover associated with its use is a definite disadvantage specially in psychiatric outpatient departments where patients have to go back to their homes soon after treatment. Many new intravenous anaesthetic agents are being evaluated in modified ECT in order to find a drug which is more safe, effective and has a rapid recovery period.

Althesin is a potent, rapidly acting, non-barbiturate intravenous anaesthetic agent introduced to clinical practice by Clarke et al. (1972). This is a mixture of two steroids alphaxalone 9 mg/ml and alphadolone 3 mg/ml. Chemically alphaxalone is 3 alpha-hydroxy-5 alpha-pregnane-11,20-dione and alphadolone is 21-acetoxy-3 alpha-hydroxy-5 alpha-pregnane-11,20-dione. The present study was undertaken to compare thiopentone sodium and althesin as intravenous anaesthetic agents for modified electro-convulsive therapy.

### MATERIAL AND METHODS

The investigation was carried out on 50 randomly selected patients attending mental health clinic of L. L. R. Hospital, Kanpur.

Patients of both sexes between the age group of 16 to 60 years who had to undergo ECT were taken up for study. Every patient was studied in first two sittings of ECT. The relative drug responses of the two inducing agents were evaluated in their standard doses. In first sitting thiopentone sodium was used as induction agent in doses of 5 mg/kg body weight. In second sitting althesin was given in doses of .07 ml/kg body weight. The patients were given nothing orally after 10 PM in the preceding night.

No premedication was given. Atropine in the dose of 1 mg IV was given with induction agent (Thiopentone Sodium). The induction time (in seconds) i.e. the time interval from start of injection to loss of eye reflexes was noted. Suxamethonium in the dose 0.7 mg/kg body weight was given and oxygenation by I. P. P. R. was done during apnoea. ECT was given after proper relaxation. Intensity of convulsions were noted according to following grades :—

Grade I—Twitching of facial muscles and toes.

Grade II—Soft generalised convulsions.

Grade III—Unmodified convulsions.

Total apnoeic period (in seconds) i.e. the time period from start of injection of suxamethonium to first post ECT breath was noted.

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Patients were again gently ventilated with 10% oxygen using Boyles apparatus until adequate spontaneous respiration was restored. Recovery time (in minutes) i.e. the time interval between the loss of eye reflexes to return of response to verbal commands was noted.

The procedure was repeated in second sitting of ECT in the same patient using Althesin as induction agent at an interval of 2 days.

## RESULTS

The sample comprised of 22 males and 28 females and were mostly in the age group of 16-25 years (32%) and 36 to 45 years (22%). There were 30 cases of schizophrenia, 15 of major depression and 5 of manic depressive psychoses.

## DISCUSSION

Though thiopentone is the most popular inducing agent for modified ECT, its use is not without risk specially in patients with cardiac and respiratory problems. The supre-

TABLE 1. Mean induction time total apnoeic time and recovery time with the two drugs

	Induction time (in seconds)	Total apnoeic time (in seconds)	Recovery time (in seconds)
Thiopentone Sodium	32.3 ± 2.5	160.2 ± 9.4	8.6 ± 1.9
Althesin	32.6 ± 1.5	170.2 ± 4.8	4.7 ± 1.8

$$t = 0.73, \text{N.S. } t = 6.70, p < .01 \quad t = 10.56, p < .001$$

TABLE 2. Intensity of convulsions after ECT in the two groups of drugs

Intensity of convulsions	Thiopentone Sodium		Althesin	
	No.	%	No.	%
Grade I	42	84.0	41	82.0
Grade II	8	16.0	9	18.0
Grade III	—	—	—	—

TABLE 3. Side effects with the two drugs

Side effects	Thiopentone sodium	Althesin
	No. of cases	No. of cases
<b>I. During induction</b>		
Involuntary muscle movements	3(6.0)	4(8.0)
Flushing	3(4.0)	4(8.0)
Laryngospasm	—	—
Pain during injection	—	—
Hic-cough	—	—
<b>II. Early</b>		
Prolonged apnoea	—	—
Cyanosis	—	—
Arrhythmias	4(8.0)	2(4.0)
Nausea vomiting	3(6.0)	1(2.0)
Secretion	2(4.0)	2(4.0)
Marked confusion	—	4(8.0)
<b>III. Late</b>		
Drowsiness	13(26.0)	—
Headache	5(10.0)	4(8.0)
Thrombophlebitic	—	—

Figure in parenthesis indicate percentage

macy of the intravenous barbiturates for the rapid induction of anaesthesia has been challenged in recent years by a group of new drugs. Althesin is one of them and it was thought worthwhile to try this drug as inducing agent for modified ECT.

The induction time with thiopentone found in our study was 32.3 ± 2.5 seconds. Different workers, Dundee (1957), Wyant and Barr (1960) and Fox et al. (1968) have found different induction times with thiopentone varying from 15 to 150 seconds. The marked variability in different studies could be due to dose of the drug the speed of injection and the sensitivity of the patient. The present study has revealed more or less similar induction time (32.6 ± 1.5) with Althesin as well. The studies of Campbell et al. (1972)

and Clarke et al. (1972) have shown nearly similar findings. They have found induction time of Althesin to be in range of 10 to 65 seconds depending on dose, rate of injection and type of premedication. The intensity of convulsions was more or less same with the two types of drugs. Nearly 80% patients in both the groups exhibited grade I convulsions.

The simple test of the response to verbal commands was taken as criteria for recovery. The recovery time with thiopentone was much longer  $8.6 \pm 1.9$  as compared to  $4.7 \pm 1.8$  minutes with Althesin. This difference in recovery time between the two drugs was found to be statistically significant. Similar results with regard to recovery time of Althesin have also been reported by Cooper (1972). The drowsiness associated with thiopentone is a definite disadvantage particularly in busy psychiatric clinics where the large number of patients are given ECT's and are sent back to their homes after treatment.

The early recovery time seen with Althesin is a desirable feature specially in psychiatric outpatient departments where the patients have to go home immediately after ECT. Shortening of the recovery time can save lot of valuable time of anaesthetist without compromising with safety of the patients.

There was no difference in the total apnoeic period between thiopentone ( $160.2 \pm 9.4$  seconds) and Althesin ( $170.2 \pm 4.8$ ). The apnoeic period does not affect the suitability of either of the agent.

No pain during injection was complained by patients with both thiopentone and Althesin. Involuntary muscle movements during induction were seen in 6% cases with thiopentone and 8% patients with Althesin. These results are also reported by Clarke et al. (1972) and Samuel and Dundee (1973). The incidence of arrhythmias was 8% with thiopentone and 4% with Althesin. The frequency of nausea and vomiting with thiopentone was higher (6%) as compared to Althesin (2%).

The occurrence of excessive secretion was more or less equal with both agents. 26% patients with thiopentone showed post ECT drowsiness while no patient with Althesin had drowsiness.

## CONCLUSION

Thiopentone shows smooth rapid induction. Patients have definite barbiturate hangover and tendency to sleep after electro-convulsive therapy. Early and uneventful recovery with Althesin is a distinct advantage over thiopentone sodium. Althesin definitely has a place as intravenous anaesthetic agent for ECT and more clinical trials are called for its further evaluation.

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