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Awareness about Thiopental among Allied Health Science Students

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Introduction: Sodium thiopental, also known as Sodium Pentothal, it is a rapid-onset short-acting barbiturate general anesthetic. Pentothal is indicated as the sole anesthetic agent for brief (15 minute) procedures, for induction of anesthesia prior to administration of other anestheticagents, to supplement regional anesthesia, to provide hypnosis during balanced anesthesia with other agents for analgesia or muscle relaxation, for the control of convulsive states during or following inhalation anesthesia, local anesthesia, or other causes, in neurosurgical patients with increased intracranial pressure, if adequate ventilation is provided, and for narco analysis and narcosynthesis in psychiatric disorders. Aim: To assess the knowledge level and create awareness about thiopental among Allied Health Science students. Materials and Methods: A cross-section research was conducted with a self-administered questionnaire containing ten questions distributed amongst 100 Allied Health Science students. The questionnaire assessed the awareness about Thiopental in medical applications ,their structure, Mechanism of action ,uses of Thiopentone, Normal adult dosage, Adverse effect, overdosage management. The responses were recorded and analysed. Results: 67.7% of the respondents were aware about the Structure of Thiopental 71.4% were aware about the uses of Thiopental 62.9% were aware about the adverse effects of Thiopental, 75.2% were aware about the mechanism of action of Thiopental ,74.4% were aware about the normal adult dosage of the Thiopental 30.8% were aware of the overdose management of Thiopental. Conclusion: There is moderate awareness amongst AHS students about use of Thiopental in medical applications. However, enhanced awareness initiatives and educational programmes together with increased importance for curriculum improvements that further promote knowledge

and awareness of Thiopental should be initiated for further understanding and benefits.

Keywords: Awareness, Thiopental, Barbiturates, alternative to propofol, short acting and rapid onset, students, medicinal.

1. Introduction

Sodium thiopental, also known as Sodium Pentothal thiopental, thiopentone, thiopentone is a rapid-onset short-acting barbiturate general anesthetic. It is the thiobarbiturateanalog of pentobarbital, and an analog of thiobarbital.(1) Sodium thiopental was a core medicine in the World Health Organization's List of Essential Medicines, the safest and most effective medicines needed in a health system, but was supplanted by propofol. (2) Despite this, thiopental is still listed as an acceptable alternative to propofol, depending on local availability and cost of these agents. It was previously the first of three drugs administered during most lethal injections.(3).

Although thiopental abuse carries a dependency risk, its recreational use is rare. Pentothal is indicated as the sole anesthetic agent for brief (15 minute) procedures, for induction of anesthesia prior to administration of other anesthetic agents, to supplement regional anesthesia, to provide hypnosis during balanced anesthesia with other agents for analgesia or muscle relaxation, for the control of convulsive states during or following inhalation anesthesia, local anesthesia, or other causes, in neurosurgical patients with increased intracranial pressure, if adequate ventilation is provided, and for narcoanalysis and narcosynthesis in psychiatric disorders(4)

2. Materials and Methods:

This cross-sectional research was conducted with a self-administered questionnaire containing ten questions distributed amongst 100 Allied Health science students. The students were randomly selected across various disciplines of Allied Health Sciences.The study setting was designated in the university campus. The survey instrument was a questionnaire pre tested and evaluated for validity and reliability concerns.

The questionnaire included ten questions eliciting the demographic data through open ended responses and multiple choice questions for the other responses.The study was approved by the Institutional Ethical Committee and informed consent was obtained from the participants. The questionnaire was posted in an online platform and the identity of the respondents were kept confidential.

The questionnaire assessed the awareness about Thiopental in Medical applications, Their Structure ,Mechanism Of Action, Uses ,Adverse Effect ,Dose Toxicity. The responses were recorded and analysed.There were no incomplete responses and no dropouts from the study.The final data obtained was organized,tabulated and subjected to statistical analysis.

The Salient Questions in the Study are

1.NAME

2.AGE

3.SEX

4.YEAR OF STUDYING

5.STRUCTURE OF THIOPENTAL

6.MECHANISM OF ACTION OF THIOPENTAL

7.USES OF THIOPENTAL

8.ADVERSE EFFECT OF THIOPENTAL

9. NORMAL ADULT DOSAGE

10.OVERDOSE MANAGEMENT

3. Results:

67.7% of the respondents were aware about the Structure of Thiopental (Fig.1), 71.4% were aware about the uses of Thiopental (Fig.2), 72.9% were aware about the adverse effects of Thiopental (Fig.3), 75.2% were aware about the mechanism of action of Thiopental (Fig.4), 74.4% were aware about the normal adult dosage of the Thiopental (Fig.5), 30.8% were aware of the overdose management of Thiopental (Fig.6).

Fig 1: Awareness about Structure of Thiopental

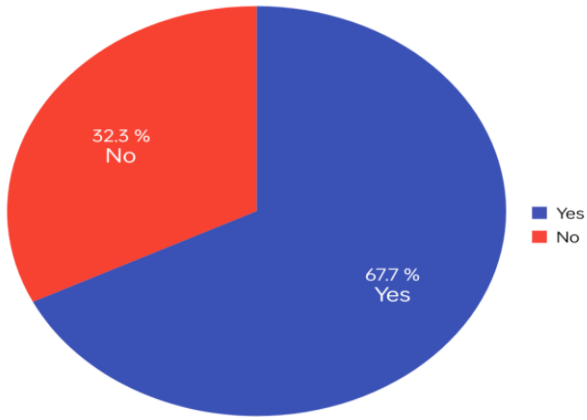


Fig 2: Awareness about uses of Thiopental

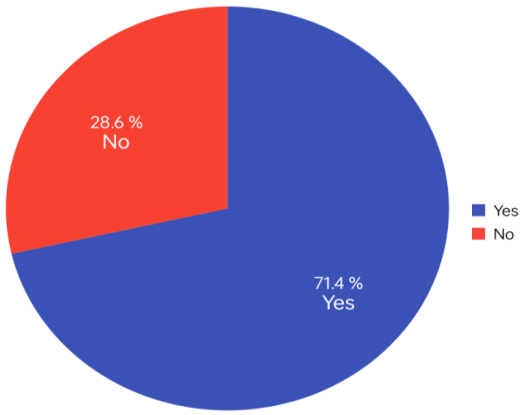


Fig 3: Awareness about adverse effect of Thiopental

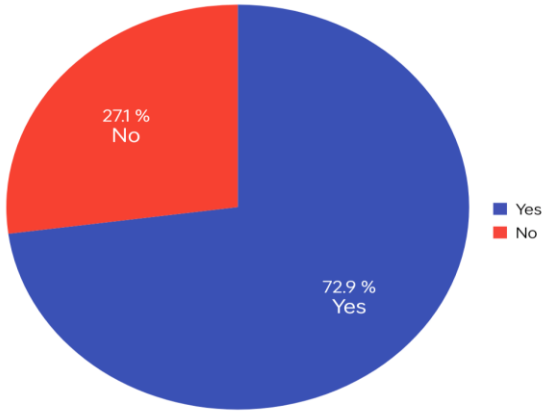


Fig 4: Awareness about mechanism of action of Thiopental

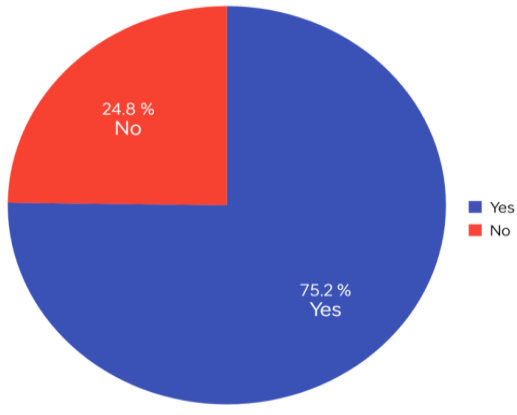


Fig 5: Awareness about normal adult dosage of Thiopental

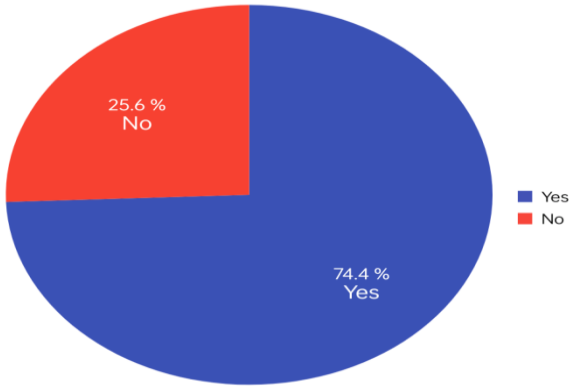
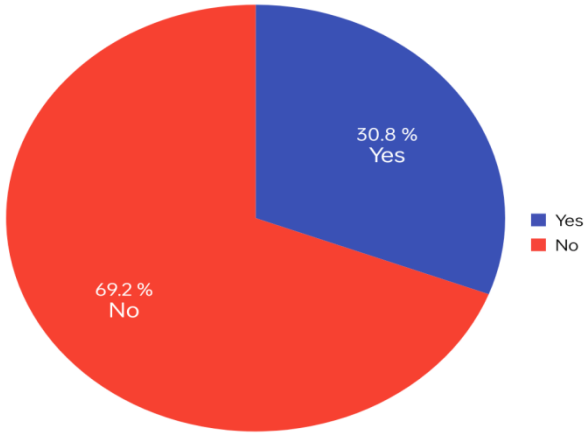


Fig 6: Awareness about overdose management of Thiopental



4. Discussion:

Sodium thiopental, also known as Sodium Pentothal (a trademark of Abbott Laboratories), thiopental, thiopentone, or Trapanal (also a trademark), is a rapid-onset short-acting barbiturate general anesthetic. It is the thiobarbiturateanalog of pentobarbital, and an analog of thiobarbital. Sodium thiopental was a core medicine in the World Health Organization's List of Essential Medicines,[3] the safest and most effective medicines needed in a health system, but was supplanted by propofol(4).

Thiopental is a barbiturate, the structure of which is that of 2-thiobarbituric acid substituted at C-5 by ethyl and sec-pentyl groups. It has a role as an anticonvulsant, a sedative, an environmental contaminant, a xenobiotic, a drug allergen and an intravenous anaesthetic. It derives from a 2-thiobarbituric acid. It is a conjugate acid of a thiopental(5).

Thiopental binds at a distinct binding site associated with a Cl- ionophore at the GABAA receptor, increasing the duration of time for which the Cl- ionophore is open. The postsynaptic inhibitory effect of GABA in the thalamus is, therefore, prolonged(6).

Barbiturate that is administered intravenously for the induction of general anesthesia or for the production of complete anesthesia of short duration. It is also used for hypnosis and for the control of convulsive states. It has been used in neurosurgical patients to reduce increased intracranial pressure. It does not produce any excitation but has poor analgesic and muscle relaxant properties. Small doses have been shown to be anti-analgesic and lower the pain threshold(7).

Overdosage may occur from rapid or repeated injections. Too rapid injection may be followed by an alarming fall in blood pressure even to shock levels. Apnea, occasional laryngospasm, coughing and other respiratory difficulties with excessive or too rapid injections may occur(8).

Lethal blood levels may be as low as 1 mg/100 mL for short-acting barbiturates; less if other depressant drugs or alcohol are also present.There is less awareness about the overdose management among ahs students so awareness programme need to be conducted among the ahs students.(9-10)

5. Conclusion:

There is moderate awareness amongst AHS students about use of Thiopental in medical applications. However,enhanced awareness initiatives and educational programmes together with increased importance for curriculum improvements that further promote knowledge and awareness of Thiopental should be initiated for further understanding and benefits.

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