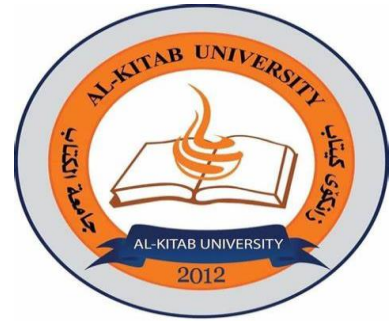


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Midazolam And It's Relationship For Amnesia

A graduation research submitted to the Council of the College of Medical Techniques / Al-Kitab University as part of the requirements for obtaining a bachelor's degree in Anesthesia techniques

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Abstract

Midazolam is a benzodiazepine which produces a dense anterograde amnesia, while permitting relatively well-preserved short-term memory, semantic retrieval, and other higher cognitive functions. This study aims to evaluate the effect of midazolam on memory, For patients who underwent surgery and were given midazolam in different proportions.

Methods. After patient approval, 20 adult patients undergoing surgery and general anaesthesia were randomly allocated to one of four groups: midazolam 2 mg, midazolam 5 mg, midazolam 10 mg or 0 midazolam (normal saline). Measurements were made.

The conclusion of this study was found no evidence that i.v. midazolam 2–10 mg produces immediate retrograde amnesia. Midazolam

Keywords: Amnesia, anterograde, midazolam, retrograde, surgical patients

CHAPTER 1

INTRODUCTION

1.1 Introduction

Midazolam is the commonest benzodiazepine used in anesthesia for premedication, induction, and maintenance of anesthesia. It is of the benzodiazepine class and acts through the gamma-amino butyric acid neurotransmitter.[1] Midazolam can be administered intravenously or intramuscularly. When given intravenously it acts within 5 min. When injected into a muscle it can take 15 min to act. Effects last between 1 and 4 hours. Side effects include respiratory depression and hypotension.[2] Midazolam is a sedative drug with amnesic properties, and previous studies have shown that anterograde, not retrograde amnesia, can be demonstrated with midazolam.[3,4] Amnesia is a condition in which memory is disturbed or lost. Anterograde amnesia is the impairment or loss of ability to form new memories through memorization.[5] . Midazolam is a sedative drug with amnesic properties [1–10]. Previous studies have found that anterograde, but not retrograde, amnesia can be demonstrated with midazolam [7–9]. However, the time period in which memory is studied is typically 1 h or more prior to drug administration. This time frame does not adequately address the period of most clinical relevance to anaesthetists, and indeed the period where retrograde amnesia could provide some benefit for the patient, i.e. the period immediately prior to midazolam administration with the patient in the operating suite. There is some evidence that sedative drugs can induce retrograde amnesia in animals, at least with high-dose (75 mg Kg^{-1}) propofol, [10,11] and so it is possible that midazolam could induce immediate retrograde amnesia.

However, there is no information regarding the reliability, immediacy of onset a properties of i.v. midazolam in humans, particularly in the more commonly used clinical dose range of 1–5 mg. Nor are there any studies investigating the presence or absence of immediate retrograde amnesia with midazolam in this setting, i.e. the brief (1–10 min) period immediately preceding i.v. administration at a time when memory processing and organization is thought to occur.

Such an effect could provide protection against possible awareness if, for example, purposeful movement or depth of anaesthesia monitoring indicated wakefulness during surgery Such a drug could also be used in the unfortunate scenario where a patient experiences a painful or

distressing event in the immediate preinduction period, such as inadvertent administration of a muscle relaxant prior to induction of anesthesia, or repeated or distressing i.v. cannulation. In clinical settings, midazolam is used to provide conscious sedation for surgical procedures. Administered in conjunction with narcotic analgesics and other anesthetics, it results in a conscious, but heavily sedated patient. Such procedures allow for relatively normal communication with patients who generally have little or no memory of the surgical procedure [12-14]. Benzodiazepines affect memory processes by impairing the ability to acquire new information [15,16]. Diazepam disrupts acquisition of new information and impairs the long-term memory, while implicit memory remains more or less intact [17, 18].

The primary aim of this study was to find relationship between midazolam and amnesia following i.v.midazolam administered before induction of general anaesthesia.

CHAPTER 2

MATERIAL AND METHOD

2.1 Study Design

The study was conducted as a (cross sectional study) at the Midazolam and its Relationship with amnesia in Kirkuk city in Iraq.

2.2 Study Setting and Duration of The Study

This study was reviewed and accepted by scientific committee at department of Medical Techniques –college of Anesthesia Techniques, Alkitab-University. The study had been implemented in Kirkuk City from MAR. 2023 to MAY. 2023.

2.3 Sampling Method

A convenience sample of 20 subjects was collected from private Hospitals. Each patient had been interviewed, every subject was given the complete choice to participate (or not) without any reward or penalty and was assured that confidentiality of data throughout the study will be secured and that the data will not be used for other than research purposes. The first part of the questionnaire consisted of the socio-demographic information which included questions relating to age, gender and weight. The second part was about midazolam, including the amount of dose, and its effect on memory.

2.4 Inclusion and Exclusion Criteria

Inclusion Criteria

20 patient undergoing surgery and general anaesthesia were included in this prospective double-blind randomized study.

Exclusion Criteria

Any patients that refused to participate. age >60 yr, weight <50 kg or >100 kg, protease inhibitor therapy, recent (<24 h) sedative or tranquilizer administration, visual or hearing impairment, known or suspected memory impairment or known or suspected psychiatric disturbance. No sedative premedication was used. The intraoperative conduct of anesthesia was left to the discretion of the anaesthetist, with the exception that administration of ketamine, clonidine or benzodiazepines was excluded.

2.5 Data Collection

2.5.1 Patients and Material

2.5.1.1. A questionnaire form that designed by researcher (Table 1).

2.6 Data Analysis

Visual recognition and recall was tested using 12 picture cards each with an easily recognizable simple picture. Memory using picture cards were used to evaluate explicit recall. No test of implicit (subconscious) memory was performed.

CHAPTER 3

RESULT AND DISCUSSION

3.1 Result

Twenty (20) adult patients between the ages of 20 and 65 years as shown in (Figure 1) who were classified as ASA I or II undergoing minor-to-moderate elective surgery were enrolled in this study. The socio-economic characteristics of the population studied are contained in Table 1, were 1 mean No, effect and 2 mean yes, effect in the Table 1. Also shows the frequency of findings of 20 patients. None of the patients recruited had reason to be excluded from the study. The data was collected from patients of which were 14 (70 %) male and 6 (30%) were female as shown in Figure 2.

The patients had sufficient glycemic and body weight control, and a BMI of 55 ± 15 kg. None of the patients was obese and the BMI was good as shown in Figure 3.

Table 1. Sociodemographic and clinical characteristics of the assessed patients

Midazolam side effect	another drug	dose(mg)	sex	weight(kg)	age	H.Rate	B.Pressure	Breath Statuse
1	1	2	Male	60	45	Normal	Normal	Good
1	2	5	Male	66	45	Normal	Normal	Good
2	2	10	Male	55	50	Normal	Normal	Good
1	2	0	Male	60	43	Normal	Normal	Middle
1	2	2	Male	63	55	Normal	Normal	Good
1	1	5	Female	59	25	Normal	Normal	Good
1	2	2	Male	56	23	Normal	Normal	Middle
1	2	0	Female	70	23	Normal	Normal	Poor
1	2	2	Male	82	30	Normal	Normal	Good
1	2	5	Female	59	29	Normal	Normal	Good

1	1	0	Female	50	56	Normal	Normal	Good
2	1	2	Female	49	58	Normal	Normal	Middle
1	1	5	Female	50	53	Normal	Normal	Good
1	2	2	Male	65	45	Normal	Normal	Good
1	2	0	Male	62	35	Normal	Normal	Good
1	1	10	Male	67	55	Normal	Normal	Good
2	2	2	Male	59	35	Normal	Normal	Poor
1	1	5	Male	68	60	Normal	Normal	Good
1	1	2	Male	73	55	Normal	Normal	Good
1	1	5	Male	65	55	Normal	Normal	Good

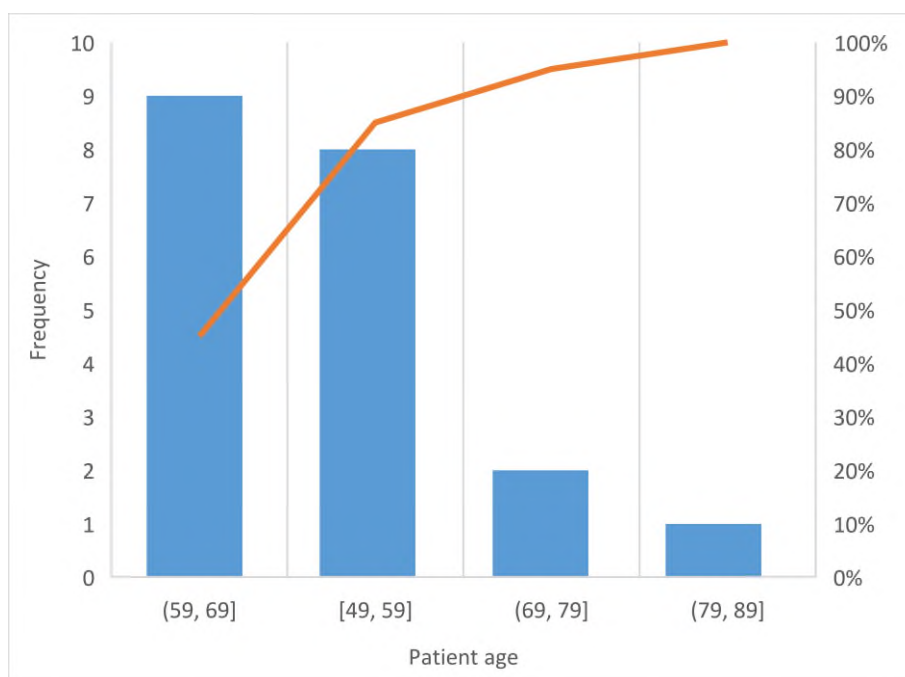


Figure 1. Age frequency of patients.

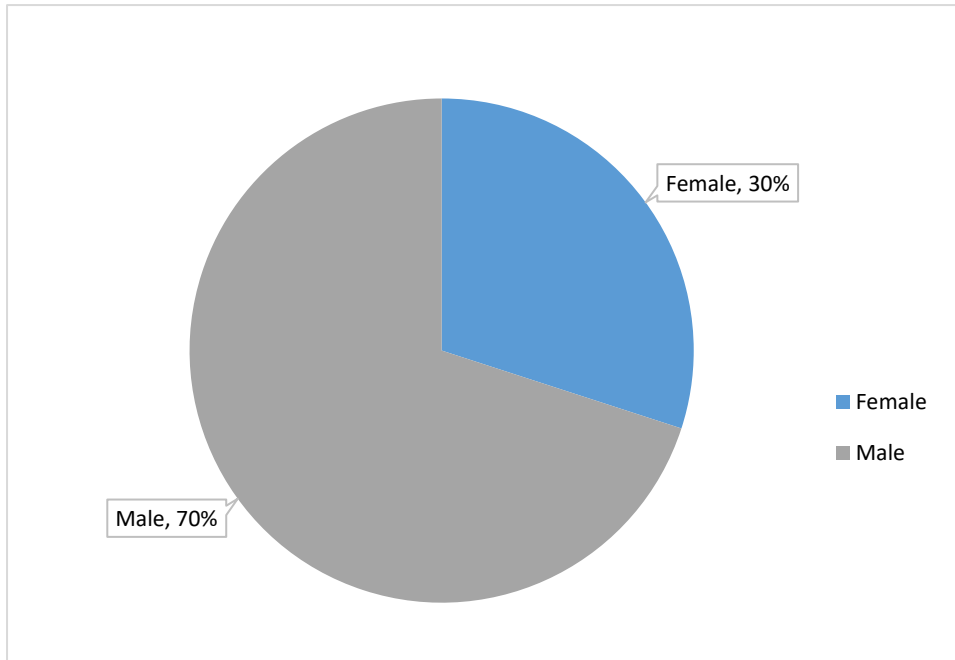


Figure 2 Frequency of male and female participated in the study

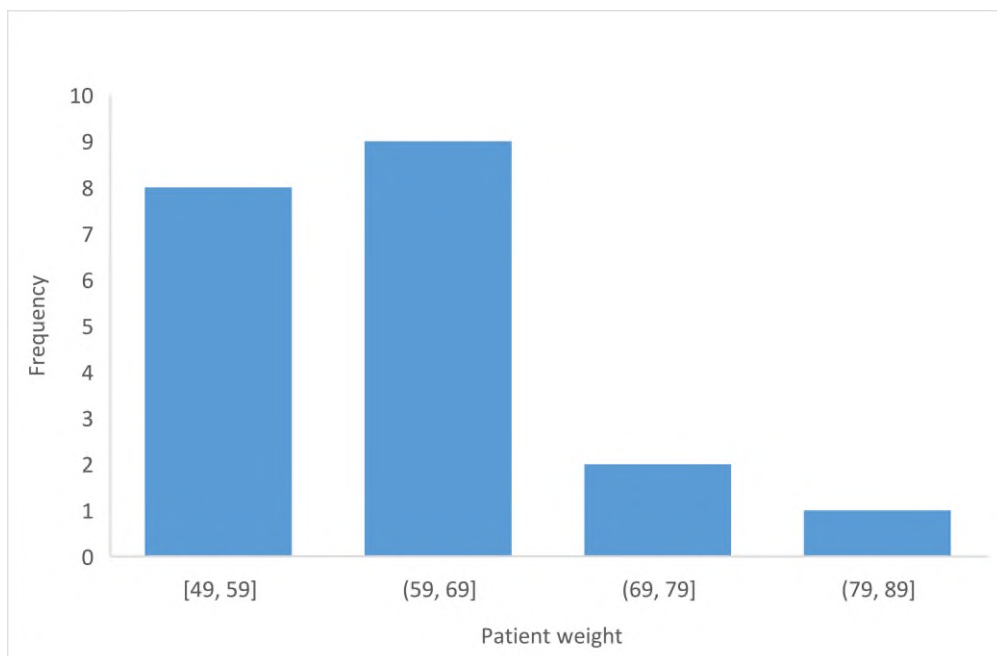


Figure 3. Weight frequency of patient in Kg

The majority of individuals (40 %) used 2 mg of Medazolam, with 30% taking 5 mg as indicated in Figure 7. 10% takin 10 mg. and another was control group. The proportions are determined by the anesthesiologist according to various criteria

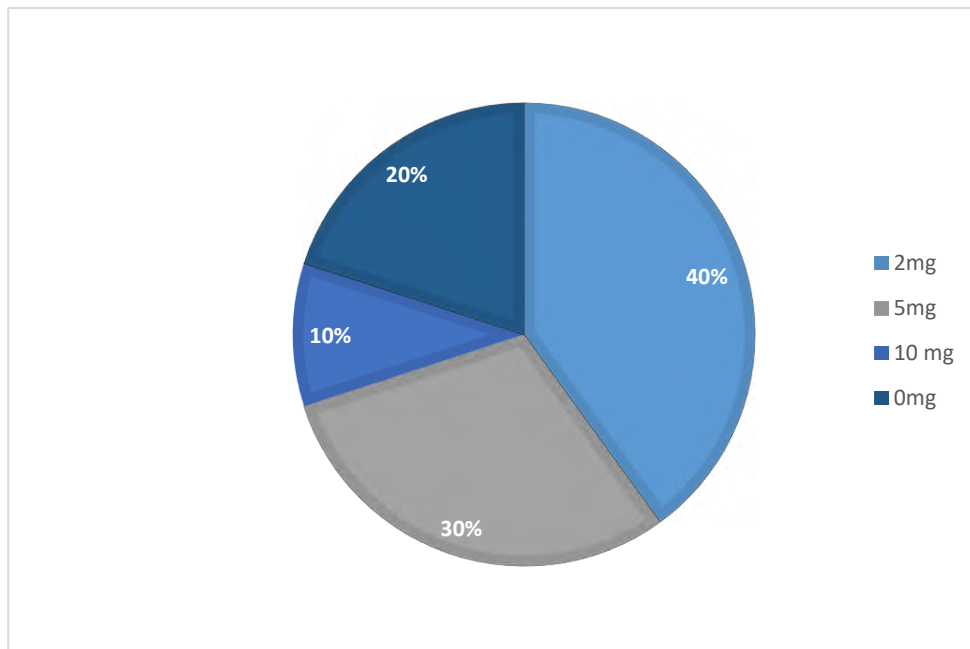


Figure 4. Distribution of using Midazolam mg for patient

3.2 Discussion

This study could not show retrograde amnesia with IV midazolam 2–7 mg when injected just before the induction of anesthesia. Reported data showed that there was no evidence of retrograde amnesia.

There was also no significant difference in the rates of recall up to the time of study drug administration. After the administration of study drug, each midazolam group recalled fewer pictures than the control group and a significant dose–response effect were demonstrated.

This study proved that the use of Midazole did not cause retrograde amnesia, as the results were good, as doses of 2-5 mg, just three patient was memory score not good.

CHAPTER 4

CONCLUSION

4.1 Conclusion

This study could not show retrograde amnesia with IV midazolam 2–10 mg when injected just before the induction of anesthesia. Reported data showed that there was no evidence of retrograde amnesia.

There was also no significant difference in the rates of recall up to the time of study drug administration. After the administration of study drug, each midazolam group recalled fewer pictures than the control group and a significant dose–response effect were demonstrated.

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