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Use of Midazolam as an Induction Agent: Comparison with Thiopentone

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Abstract

Background- Benzodiazepines have proved useful as alternatives to the barbiturates in the induction of anaesthesia.

Methods- This randomized control trials was conducted in the Department of department of anaesthesia, M.G. Hospital Bhilwara. A sample size of 60 cases; 30 cases in each group.

Results- There were 30 patients in each group and no significant differences as regards sex, age, weight and duration of anaesthesia were demonstrated between the groups. Induction time in midazolam group was more as compare to thiopentone group.

Conclusion- Induction effect of midazolam was slower as compare to thiopentone group.

Keywords- Anesthesia, midazolam,thiopentone.

Introduction

Although benzodiazepines have proved useful as alternatives to the barbiturates in the induction of anaesthesia, the use of diazepam has been limited because of its long duration of action, lack of water-solubility and the frequency of thrombophlebitis. Midazolam (Dormicum) is a new water soluble benzodiazepine which has been used to induce anaesthesia . The drug possesses properties similar to those of other benzodiazepines (sedative, anxiolytic, anticonvulsant, muscle-relaxant), and is of low toxicity. Furthermore, it has a short half-life (*T*, = 1.3-2.2 h for the beta-phase) and the frequency thrombophlebitis is low[1-2].

The present study assessed the value of midazolam as an agent for the induction of anaesthesia and compared its actions with those of an established drug, thiopentone.

Methods

Sixty adult patients (ASA status I-II) In our hospitals were studied. Each patient was informed of the nature of the study in writing and verbally and consent was obtained from all patients. The study was carried out in accordance with the Helsinki II Declaration. It was a prospective, randomized study and all of the patients were anaesthetized by the authors.

The patients received flunitrazepam 2mg by mouth as a sedative on the evening before surgery. No premedication was given on the day of surgery. On arrival in the operating theatre cannulae were placed in the left and right cephalic veins. The patients were preoxygenated for 3 min and during this period heart rate, arterial pressure and respiratory frequency were measured. Following the administration of fentanyl 0.05 mg/25 kg body weight via the right cephalic vein, midazolam 0.2 mg /kg or thiopentone 3 mg /kg was injected into the left cephalic vein over 30 s. If the eyelash reflex was still present 2 min after this first injection, one-third of the original dose was

administered over 30 s at 2 min intervals until the eyelash reflex was abolished. A myoneural blocking drug was administered, the trachea intubated and anaesthesia continued with 0.5% halothane.

At induction, the times to spontaneous closure of the eye, loss of the eyelash reflex, and the onset of apnoea were recorded.

Results

Table no.1 general parameters

Parameters	Midazolam group	Thiopentone group
Age	35.6±12.5	37.1±11.6
Wt	72±9.5	69.2±8.7
Sex (male/female)	22/8	21/9
Duration of anaesthesia(mint)	65±21.2	63±20.5
Induction dose (Mg)	14±2.0	215±34.1

There were 30 patients in each group and no significant differences as regards sex, age, weight and duration of anaesthesia were demonstrated between the groups.

Table no.2. induction data

Parameters	Midazolam group	Thiopentone group	p-value
Spontaneous eye closing (sec.)	56±11.5	42±11.2	0.001
Disapparence of eye reflex	76±15.2	59±10.2	0.001
Time to apnea	70±13.6	51±13.4	0.001

Induction effect of midazolam was slower as compare to thiopentone group. It was significantly different.

Discussion

In this study the mean induction time was significantly shorter with thiopentone than with midazolam and is in agreement with similar studies by Reves and colleagues (1979) and Fragen, Gahl and Caldwell (1978). With an induction dose of midazolam 0.2mg/kg. we obtained a mean induction time of 78 s.

Reves and co-workers (1979) used the same induction dose and obtained a mean induction time of 73 s, whereas Fragen, Gahl and Galdwell (1978) using 0.15 mg/ kg obtained a value of 175 s.

When we consider the response of the patient to the dose of either drug, assessed on the basis of the standard deviation in the duration of induction, the variation between patients was smaller in the midazolam group than in the thiopentone group.

This contrasts with the results obtained by Revesand colleagues (1979) who found a considerably greater variation in patients receiving midazolam. The reason for this might be that, besides midazolam or thiopentone, the patients in our study received fentanyl i. v. at induction and it is likely that this could potentiate the effects of midazolam.

Conclusion

Induction effect of midazolam was slower as compare to thiopentone group.

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