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Original Research

Assessment of effect of midazolam with fentanyl-midazolam combination during flexible bronchoscopy

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ABSTRACT:

Background: Flexible bronchoscopy is a medical procedure used to examine the airways of the lungs using a thin, flexible tube with a light and camera attached to it. The present study was conducted to assess midazolam with fentanyl-midazolam combination during flexible bronchoscopy. **Materials & Methods:**60 patients undergoing flexible bronchoscopy of both genderswere divided into three groups. Group I received midazolam, group II fentanyl-midazolam and group III placebo. Vitals signs including heart rate, respiratory rate, blood pressure, and oxygen saturation (SpO2) were recorded. Ramsay Sedation Scale was also assessed during the procedure. The composite score of patient-reported tolerance, satisfaction were recorded. **Results:** There were 12 males and 8 females in group I, 11 males and 9 females in group II and 10 males and 10 females in group III. The mean height was 165.2 cm, 164.2 cm and 161.5 cm in group I, II and III respectively. The mean weight was 52.4 kgs, 53.6 kgs and 55.1 kgs. The mean BMI was 20.4 kg/m^2, 19.5 kg/$m^2$and 20.2 kg/m^2 in group I, II and III respectively. The mean HADS- A score was 7.2, 9.1 and 8.6 in group I, II and III respectively. The difference was significant (P< 0.05). The mean Ramsay sedation score was 2.1, 2.4 and 2.0. Patient satisfaction composite score was 54.2, 55.6 and 43.8, physician-reported feasibility composite score was 25.4, 26.2 and 24.1 and rescue doses was 1, 0 and 4 in group I, II and III respectively. **Conclusion:** When compared to midazolam alone, conscious sedation with a fentanyl-midazolam combination can lead to higher patient and operator satisfaction.

Keywords:midazolam, fentanyl, satisfaction.

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INTRODUCTION

Flexible bronchoscopy is a medical procedure used to examine the airways of the lungs using a thin, flexible tube with a light and camera attached to it. It allows doctors to visualize the trachea (windpipe) and bronchi (airways leading to the lungs) for diagnostic and therapeutic purposes.[1,2]During a flexible bronchoscopy procedure, the patient is usually given a local anesthetic to numb the throat, and sometimes a sedative to help them relax.[3] The bronchoscope is then inserted through the nose or mouth and carefully passed down the throat and into the airways.[4] The doctor can maneuver the bronchoscope to explore different parts of the airways, examining the structures for abnormalities such as tumors, inflammation, infection, or blockages.[5]

The standardization of patient comfort during invasive procedures has led to a growing focus on sedation during flexible bronchoscopy, a treatment that pulmonologists do on a regular basis. Furthermore, the complexity of interventional procedures utilizing flexible bronchoscopes has increased, calling for longer treatment times and improved cough control.[6] A range of sedatives, including benzodiazepines, opioids, propofol, and more recently, dexmedetomidine, have been used to sedate patients during flexible bronchoscopy as a result of these advancements, which have led to recommendations for doing so.[7,8]The present study was conducted to assess midazolam with fentanyl-midazolam combination during flexible bronchoscopy.

MATERIALS & METHODS

The present study consisted of 60 patients undergoing flexible bronchoscopy of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into three groups. Group I received midazolam, group II fentanyl-midazolam and group III placebo. Vitals signs including heart rate, respiratory rate, blood pressure, and oxygen saturation (SpO2) were recorded. Ramsay Sedation Scale was also assessed during the procedure. The composite score of patient-reported tolerance, satisfaction and hemodynamic changes during bronchoscopy, and side effects were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Baseline characteristics

Parameters	Group I	Group II	Group III	P value
M:F	12/8	11/9	10/10	1
Height	165.2	164.2	162.5	0.94
Weight	52.4	53.6	55.1	0.83
BMI	20.4	19.5	20.2	0.17
HADS- A score	7.2	9.1	8.6	0.25

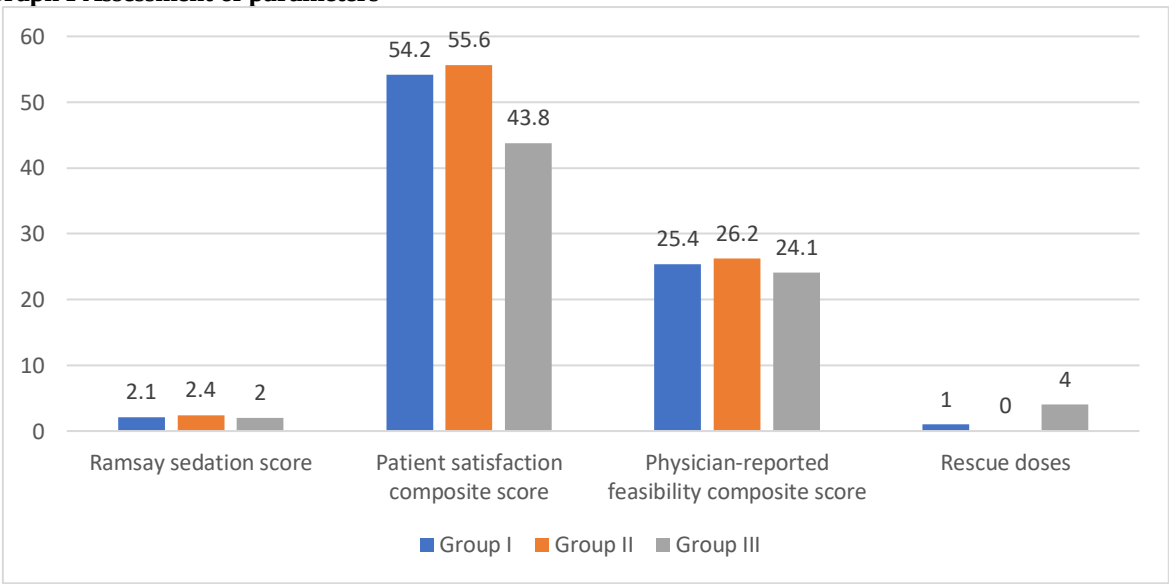
Table I shows that there were 12 males and 8 females in group I, 11 males and 9 females in group II and 10 males and 10 females in group III. The mean height was 165.2 cm, 164.2 cm and 161.5 cm in group I, II and III respectively. The mean weight was 52.4 kgs, 53.6 kgs and 55.1 kgs. The mean BMI was 20.4 kg/m^2, 19.5 $kg/m^2$and 20.2 kg/m^2 in group I, II and III respectively. The mean HADS- A score was 7.2, 9.1 and 8.6 in group I, II and III respectively. The difference was significant (P< 0.05).

Table II Assessment of parameters

Parameters	Group I	Group II	Group III	P value
Ramsay sedation score	2.1	2.4	2.0	1
Patient satisfaction composite score	54.2	55.6	43.8	0.04
Physician-reported feasibility composite score	25.4	26.2	24.1	0.83
Rescue doses	1	0	4	0.05

Table II, graph I shows that mean Ramsay sedation score was 2.1, 2.4 and 2.0. Patient satisfaction composite score was 54.2, 55.6 and 43.8, physician-reported feasibility composite score was 25.4, 26.2 and 24.1 and rescue doses was 1, 0 and 4in group I, II and III respectively.

Graph I Assessment of parameters



DISCUSSION

Flexible bronchoscopy can be well-tolerated, without sedation, by some patients; but a large percentage of bronchoscopists, particularly in developed countries, use sedation – the practices, however, are not uniform with regard to class, dose, and the number of drugs used.[9,10]The present study was conducted to assess midazolam with fentanyl-midazolam combination during flexible bronchoscopy.

We found that there were 12 males and 8 females in group I, 11 males and 9 females in group II and 10 males and 10 females in group III. The mean height was 165.2 cm, 164.2 cm and 161.5 cm in group I, II and III respectively. The mean weight was 52.4 kgs, 53.6 kgs and 55.1 kgs. The mean BMI was 20.4

kg/m^2, 19.5 kg/m^{2}and 20.2 kg/m^2 in group I, II and III respectively. The mean HADS- A score was 7.2, 9.1 and 8.6 in group I, II and III respectively. Prabhudev et al[11]compared the effects of midazolam with fentanyl-midazolam combination during flexible bronchoscopy. The patients were randomized into three groups: placebo, midazolam, and fentanyl-midazolam. Patient-reported tolerance and satisfaction composite scores (median, interquartile range) for placebo, midazolam, and fentanyl-midazolam groups were 54 (52, 57), 59 (57, 61.5), 62 (58.5, 66), respectively; P < 0.001. Physician-reported feasibility composite scores (median, interquartile range) for the respective groups were 24.5 (20.5, 28), 25 (21, 27), 26 (25, 29); P = 0.004. There was no significant difference between the groups so far as mean heart rate (P = 0.305), mean systolic blood pressure (P = 0.532), mean diastolic blood pressure (P = 0.516), mean respiratory rate (P = 0.131), and mean SpO2 (P = 0.968) were concerned.

We found that mean Ramsay sedation score was 2.1, 2.4 and 2.0. Patient satisfaction composite score was 54.2, 55.6 and 43.8, physician-reported feasibility composite score was 25.4, 26.2 and 24.1 and rescue doses was 1, 0 and 4 in group I, II and III respectively.Stolz et al[12] in their study consecutive patients (n=200) were randomly allocated to receive either the combination midazolam and hydrocodone or intravenous propofol. The primary end-points were the mean lowest arterial oxygen saturation during bronchoscopy and the readiness-for-discharge score 1 h after the procedure.The mean lowest arterial oxygen saturation during bronchoscopy did not differ across treatment groups (p=0.422), and the number of patients recording an arterial oxygen saturation of ≤90% on at least one occasion was similar in both groups (p=0.273). The median (interquartile range) readiness-for-discharge score 1 h after the procedure was significantly higher in the propofol group than in the combined sedation group (8 (6–9) versus 7 (5–9); p=0.035). Patients assigned propofol exhibited less tachycardia during bronchoscopy and for ≥1 h after the examination. Minor procedural complications were noted in 71 (35.5%) patients and exhibited a similar incidence in both treatment arms (p=0.460).

The limitation of the study is the small sample size.

CONCLUSION

Authors found that when compared to midazolam alone, conscious sedation with a fentanyl-midazolam combination can lead to higher patient and operator satisfaction.

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