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SEDATION WITH DIAZEPAM FOR TOTAL COLONOSCOPY - PATIENT'S EXPECTATIONS AND BEHAVIOR

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Resumo

Objetivos: Estudaram-se os benefícios do diazepam 10 mg i.v. na colonoscopia total.

Métodos: Administrou-se 10 mg de diazepam i.v. a 202 doentes, imediatamente antes da inserção. Todos foram submetidos a inquéritos antes e depois do exame.

Resultados: A taxa de sucesso de intubação cecal foi de 99,4%. Esta demorou $7:47 \pm 7:48$ min nos homens (intervalo: 1:18-59 min), $10:18 \pm 6:50$ min nas mulheres (1:52-38:06 min) e $9:04 \pm 7:25$ min no global. A diferença entre sexos foi estatisticamente significativa ($X^2 = -2.428$; $p = 0,016$). Após o exame, 73,3% dos doentes classificaram-no como fácil, 84,8% como mais fácil do que esperavam, e 0,5% não o recomendariam; não houve diferenças entre sexos, grupos etários, ou consumo de sedativos. Durante o exame, a proporção de mulheres que expressou sons de dor e/ou chorou foi significativamente maior do que a de homens. Não houve outras diferenças comportamentais significativas. A intubação foi dificultada em doentes submetidos a cirurgia abdominal ou com cólon irritável com obstipação, não sendo as diferenças significativas.

Conclusões: A colonoscopia total com diazepam é bem tolerada, mas mais difícil nas mulheres do que nos homens. Identificar utentes que não tolerariam o exame será importante para evitar desconforto. Sugerimos que a sedação inconsciente deve ser reservada para certas mulheres histerectomizadas, e doentes com cólon irritável com obstipação.

Summary

Purpose: This study aimed to assess the benefits of diazepam 10 mg IV for total colonoscopy.

Methods: Two hundred and two patients received 10 mg diazepam IV just before insertion. All were submitted to interviews before and after the examination.

Results: The success rate of cecal intubation was 99.5% and the average time taken was 7.47 ± 7.48 min in men (range 1.18-59 min), 10.18 ± 6.50 min in women (1.52-38.06 min) and 9.04 ± 7.25 min globally, this difference being statistically significant ($X^2 = -2.428$; $p = 0.016$). The examination was easy for 73.3% of patients, easier than expected for 84.8% and only 0.5% would not recommend it; there were no differences between genders, age groups, or sedative history. During the procedure, the proportion of women expressing sounds of pain and/or crying was significantly greater than the proportion of men. There were no other significant behavioural differences between genders. Intubation was more difficult in patients who had undergone abdominal surgery, and those with irritable bowel syndrome with longstanding constipation, although the differences were not significant.

Conclusions: Total colonoscopy is well tolerated with diazepam. It is more difficult for women than for men. Identifying patients who are less likely to tolerate the examination might be important to minimize discomfort. We suggest that unconscious sedation should be reserved for hysterectomised women and for constipated irritable-bowel patients.

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INTRODUCTION

Colonoscopy is a frightening examination for most people, in any community, because it induces anxiety and may cause discomfort and pain. Patient anxiety may be state anxiety or trait anxiety. Trait anxiety in colonoscopy may be related to 3 factors: 1 - Information about the examination from friends or family; 2 - Fear of pain, discomfort and embarrassment; 3 - Fear of potential findings, such as cancer or an incurable disease. The

use of intravenous sedation for control of anxiety in colonoscopy differs widely between countries and between endoscopists. Morfisse *et al.* tried to find factors associated with acceptance. These were: good tolerance, old age, anesthesia or conscious sedation, male gender and ambulatory care (1). Some centers perform this procedure without sedation (2,3), but others consider this unacceptable (3). Sedation has been achieved with midazolam (4-6) and with midazolam plus meperidine; although the addition of meperidine to midazo-

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lam does not seem to be more beneficial to the patient, endoscopists favor it (4). Propofol seems to be better than midazolam plus fentanyl (5). Propofol alone or associated to alfentanil has been used on patient-controlled sedation (7,8).

Some patients undergoing colorectal cancer screening prefer CT colonography to both colonoscopy and double-contrast barium enema examination. The cathartic bowel preparation was the major cause of discomfort and inconvenience (9,10).

In the United States, most colonoscopies are performed under sedation and only about 20% of patients would like to be submitted to the exam without any sedative. Male gender, higher levels of education and low anxiety are the factors most likely to be associated with a patient's desire to undergo colonoscopy without sedation (11).

Factors like ambience in the endoscopy room (background music, silence, or conversation related or unrelated to the patient's complaints) have little effect on diminishing anxiety and improving tolerance of endoscopy (12).

The purpose of this study was to evaluate the tolerance and discomfort of outpatients submitted to total colonoscopy who were premedicated with 10 mg of intravenous diazepam just before insertion.

METHODS

Two hundred and two patients arriving consecutively in an outpatient clinic in Coimbra were enrolled in this study. The median age was 56.9 ± 14.6 years (range 14 to 82 years). There were 100 men (49.5%) and 102 women (50.5%). Of these, 29.2% had been subjected to at least one previous total colonoscopy. All examinations were requested by the patients' attending physicians. The reasons indicated for the requests included: colorectal cancer screening, abdominal pain, tenesmus, altered bowel habits, anemia, blood in the stool, and weight loss, among others.

Before enrolment in the study, a concise clinical history was taken from each subject, with particular emphasis being placed on cardiovascular, respiratory and digestive pathology. Exclusion criteria were histories of cardiovascular or respiratory disease; no patients fit these criteria.

On arrival at the clinic, a structured interview was conducted by two clinical psychologists with the aim of determining the impressions the patients and their acquaintances had about previous endoscopy-related experiences. The questionnaire included the following items: personal data (age, sex, marital status, education

level and job), history of previous colonoscopies, indications for total colonoscopy and compliance with bowel preparation. During the procedure, the psychologists registered the time taken to cecal intubation, the total procedure time, and whether biopsies were taken. They also recorded the patients' reactions, behavior and apparent tolerance to the examination; specifically, they noted if the patient felt ashamed, became pale-faced, contracted the hand muscles, made grimaces, expressed pain sounds, swung the body and/or the legs, showed rigidity of the body, cursed, cried, tried to refuse the examination, spoke during the procedure, asked questions, looked at the video monitor, refused to look at the video monitor, blushed, or exhibited other unspecified behavior.

All patients accepted to undergo the examination with 10 mg of diazepam administered intravenously. After digital examination of the rectum, all patients received the bolus of diazepam over one minute, and intubation was started immediately to reach the transverse colon while the patient was still unaware.

Examinations were performed by a single gastroenterologist with 20 years' experience in colonoscopy. An *Olympus CF Type Q145I* endoscope with a diameter of 12.8 mm was used for intubation. Endoscopy was started on the left lateral position, which was maintained until the transverse colon was reached; then the patient was turned to the supine position. Afterwards, other positions were used as needed. Patients were advised to breathe deeply and slowly to avoid symptoms of respiratory alkalosis. Fifteen minutes after the procedure, patients were again interviewed by the psychologists to rate their impressions of the examination in 2 grades of tolerance and discomfort.

The relationship between variables was analyzed using odds-ratio, Chi-Square, Kolmogorov-Smirnov's and Mann Whitney's statistics. All data was processed using the SPSS 12 computer program.

RESULTS

The success rate of cecal intubation was 99.5%; the cecum was impossible to intubate in one male patient. The time for cecal intubation was 7.47 ± 7.48 min in men (range 1.18 to 59 min), 10.18 ± 6.50 min in women (range 1.52 to 38.06 min) and, 9.04 ± 7.25 minutes in both sexes. The difference between genders was statistically significant ($X^2 = -2,428$; $p = 0.016$) (Table 1). There were no statistically significant differences in the time taken to cecal intubation between asymptomatic patients and those with irritable bowel syndrome, chronic constipation, or a history of abdominal surgery.

Table 1 - Cecal intubation.

	Time to intubate Cecum				t Student
	Avrg	SD	Max	Min	
Men (n = 99)	7 min 47s	7:48	59 min 00s	1 min 18s	t = -2.428; p = 0.016
Women (n = 102)	10 min 18s	6:50	38 min 06s	1 min 52s	
Total	9 min 04s	7:25	59 min 00s	1 min 18s	

Table 2 - Patient expectations.

Information from Others	
Easy	12.6 %
Neither easy nor hard	27.7 %
Hard	59.7 %

Of the 202 patients, 59 (29.2%) had undergone total colonoscopy before; 52.7% of these described their previous experience as easy and 47.3% as difficult. Information obtained from friends or family about the examination is not encouraging, since 59.7% of friends and acquaintances found the examination difficult, and only 40.3% described it as easy or of moderate difficulty; their examinations had been performed in other clinics and, as such, we were unable to determine whether sedation had been used during the procedure (Table 2). Despite this, 82.1% of all subjects proved to have the self-control needed to tolerate the procedure; no gender related differences were found.

During the procedure, the proportion of women expressing pain sounds and/or crying was significantly larger than the proportion of men exhibiting such behavior. There were no statistically significant differences between genders in the remaining behavioral elements observed (Table 3). On many occasions, the patients had no recollection of having expressed the behaviours observed by the psychologist, due to the anterograde amnesia produced by the diazepam injection.

After the procedure, 73.3% of the patients stated the examination was easy, while 26.7% found it difficult; 84.8% declared it was easier than previously expected, and only 0.5% would not recommend it to other people (Table 4). There were no gender differences between subjects younger and older than 50 years, nor between those who used to take sedatives or antidepressants and those who did not.

Table 4 - Impressions following the exam.

Perception of the Procedure	
Easy	73.3 %
Hard	26.7 %
Easier than expected	84.8 %
Would not recommend it	0.5 %

Table 3 - Behavior during colonoscopy.

	Sex			Chi-squared		
	Male (n = 100)	Female (n = 102)	Total (n = 202)	Value	df	p
Felt ashamed	1 1%	1 1%	2 1%	0	1	0.989
Became pale-faced	7 7%	9 8.8%	16 7.9%	0.23	1	0.631
Contracted hand muscles	15 15%	17 16.7%	32 15.8%	0.185	1	0.746
Made grimaces	48 48%	60 58.8%	108 53.5%	2.378	1	0.123
Expressed pain sounds	57 57%	81 79.4%	138 68.3%	11.718	1	0.001
Swung the body	7 7%	14 13.7%	21 10.4%	2.452	1	0.117
Swung the legs	1 1%	2 2%	3 1.5%	0.319	1	0.572
Showed rigidity of the body	13 13%	15 14.7%	28 13.9%	0.123	1	0.151
Cursed	2 2%	0 0%	2 1%	2.06	1	0.151
Cried	0 0%	6 5.9%	6 3%	6.062	1	0.014
Tried to refuse the exam	3 3%	1 1%	4 2%	1.061	1	0.303
Spoke during the exam	43 43%	52 51%	95 47%	1.291	1	0.256
Asked questions	10 10%	14 13.7%	24 11.9%	0.669	1	0.413
Looked at the video monitor	80 80%	73 71.6%	153 75.7%	1.954	1	0.162
Refused to look at the video monitor	3 3%	5 4.9%	8 4%	0.48	1	0.488
Blushed	37 37%	30 29.4%	67 33.2%	1.312	1	0.252
Coughed	3 3%	3 2.9%	6 3%	0.001	1	0.98
Retched	1 1%	4 3.9%	5 2.5%	1.785	1	0.181
Others	6 6%	10 9.8%	16 7.9%			

In both genders 31.9% of patients regularly took sedative drugs or antidepressants, with no statistically significant differences. Patients taking these drugs experienced higher levels of trait anxiety, $p < 0.05$. Women perceived themselves as having higher levels of anxiety than men ($Z = -4.259$; $p < 0.001$) and they were more

concerned about the outcome of the examination ($Z = -2.839$; $p < 0.05$).

Only 17.2% of patients admitted to having experienced anxiety during the procedure, while 82.8% of patients claimed not having been anxious; there were no statistically significant differences between genders.

It should be noted that on no occasion did any patient's respiratory rate decrease to under 10 cpm.

DISCUSSION

Colonoscopy is regarded as the gold standard for the diagnosis of colorectal disease, and it is considered a primary screening approach for colorectal cancer. This procedure is somewhat frightening for most patients, and the fear of pain and discomfort and may be the major cause of non-adherence to the examination (13). Flexible sigmoidoscopy has no better reputation than total colonoscopy (14). Costas CD *et al.* (15) reported that sublingual lorazepam has been shown to improve both sedation and tolerance better than intramuscular diazepam. Intramuscular diazepam is released into the blood very slowly, so it relieves anxiety at a rate inadequate for colonoscopy, which is, in most patients, a quick procedure. In our study, diazepam was administered intravenously in *bolus* (over one minute) and most patients became blunted for about 5 minutes, which is enough time to pass the splenic flexure, the most difficult portion of the colon to overcome. No adverse effects were observed from the administration of IV diazepam in any age group. Detailed pre-endoscopy explanations alone do not reduce patients' anxiety (16); neither music nor ambiance in the endoscopy room seem to have much influence on patients' experiences of gastrointestinal endoscopy (17).

Sedation with midazolam (alone or in combination with meperidine) or propofol has been used, with variable success, in hospitals and large private facilities; however, it is not legalized for private practice in most countries, because of its adverse effects, including blood-oxygen desaturation (4,18-22). Intravenous diazepam, on the other hand, can be administered without restrictions for outpatient sedation. Unconscious sedation or large doses of premedication for conscious sedation are not risk-free, particularly in older patients (3,20,22,23). Ross and Newton found that, in older patients (mean age = 51.5 years), the increase in blood pressure and heart rate during gastroscopy were greatest in sedated subjects (24). Some authors found no differences between sedation with midazolam and diazepam (25,26), and midazolam has been found to lead to higher end-tidal carbon dioxide tensions (27).

Furthermore, unconscious sedation is time-consuming, increases the examination cost, inhibits patients from driving, frequently precludes patients from performing their regular duties for the rest of the day, and increases the risk of complications (28).

The reputation of this examination is bad, since about sixty percent of patients had heard about other people's negative experiences. It was conceivable that this information could influence them. Nevertheless, after the procedure 73.3% of all the patients stated the examination was easy, and 84.8% declared it was easier than previously expected, while only 0.5% would not recommend it to other people. These facts may mean that the examiners' skills, the use of coping strategies and conscious sedation with diazepam may all play an important role in reducing state anxiety in patients undergoing colonoscopy.

The endoscopist's perception of the ease of insertion revealed that it was more difficult in women, taking longer to reach cecum. Ristikankare *et al.* also experienced greater difficulty in women (29). In patients with longstanding constipation or irritable bowel syndrome, and in those submitted to abdominal surgery, especially hysterectomy and ovariectomy, the examination was also more difficult. However, statistically, the only significant difference on the time taken to intubation was between men and women. In this series 31.9% of patients of both genders used to regularly take sedative or antidepressant drugs; such patients are more alert during the examination due to tolerance, and may need extra sedation.

Finally, one can count the anterograde amnesia produced by diazepam as an additional advantage: even when the exam is physically uncomfortable, the patient has a limited recollection of the discomfort and perceives it as easily tolerable.

CONCLUSIONS

This study shows that total colonoscopy, in outpatient clinics, is possible in more than 99% of cases, and it is an easy examination for three quarters of the patients. Confidence in the endoscopist, conscious sedation with diazepam 10 mg IV, and coping strategies may increase acceptance of the procedure. Recognizing those patients who would not easily tolerate the examination might be important to avoid discomfort. We suggest that unconscious sedation should essentially be administered to women who have been submitted to abdominal surgery, mainly hysterectomy and ovariectomy, or who suffer from longstanding constipation, particularly in the irritable bowel syndrome.

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