Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/14647
DOI URL: http://dx.doi.org/10.21474/IJAR01/14647

RESEARCH ARTICLE

SEDATION IN COLONOSCOPY: WHATTHE EFFECT-SITE CONCENTRATION OF PROPOFOL IN TARGET-CONTROLLED INFUSION FOR WHICH THE ACTBECAMECOMFORTABLE AT THE INTRODUCTION OF COLONOSCOPE?

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Manuscript Info

Manuscript History
Received: 28 February 2022
Final Accepted: 31 March 2022
Published: April 2022

Key words:
Colonoscopy, Propofol, Sedation

Abstract

Method: Prospective observational study carried out over 5 months, with the objective of determining the effect-site concentration of propofol in target-controlled infusion anesthesia which allows the introduction of a colonoscope under the best conditions.84 patients aged 18 to 71 are included: 38% were male and 46% female, with 57% classified as ASA I and 43% as ASA II.

Results: Among the 84 patients: 47.6% had no history, 11.9% hypertensive, 14.3% diabetic, 21.4% dyslipidemic, 4.8% followed for stable heart failure. Reflex loss concentrations averaged 3.78 ug/mL with a minimum of 2.6 ug/mL and maximum of 4.8 ug/mL.While the target concentrations of the introduction of colonoscope which allows comfort for the gastroenterologist and the patient were on average 5.24 ug/mL with a minimum of 3.4 ug/mL and maximum of 6.8 ug/mL.

Introduction:-

Colonoscopy is a frequent procedure performed in digestive endoscopy. It is a short-term, ambulatory procedure, and the recommended protocols maintain the patient in spontaneous ventilation without airway equipment [1]. Gastroenterologists are used to checking the relaxation of the anal sphincter before introducing a colonoscope by digital rectal examination or that it is an unpleasant gesture for a patient who is not yet well sedated.

We are carrying out a prospective observational study which aims to determine the ideal time for the introduction of a colonoscope without doing this digital rectal examination.

Study :

Type and location of the study: Prospectiveobservationalstudycarried out in the septic block of the Mohamed V MilitaryInstruction Hospital;

Period :5 months: January 2021 - March 2021, the studyisinterrupted by the covid 19 thencompleted in January 2022 -February 2022

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Objectives:-

Determinethe effect-site concentration of propofol in target-controlled infusion (TCI) which allows introduction of a colonoscope in the best conditions for thegastroenterologist and the patient.

Materials And Methods:-

1. Patients:

-Inclusion criteria:

• Age: 18 -75
• ASA 1, ASA 2

-Exclusion criteria:

• 75 <Age< 18
• ASA> 2

2. protocol:

• Patient installation + standard monitoring
• Peripheralvenous line
• Oxygen: High concentration maskwithPulsedOxygen Saturation target>94%.
• Medicationwith midazolam 1mg + 50ug of fentanyl then propofol
• Thenwe note the target concentration at induction, the loss of ciliary reflex and the relaxation of the anal sphincter observed by the gastroenterologist.

3. Statisticalanalysis: It wasproduced by IBM SPSS software for Windows version 25

Results:-

- In thisstudy, 84 patients wereincluded;
-8 patients wereexcluded (3: ASA >3 ;5: age> 75)
- The following tables show the resultsobtained:

- **Age:**

	N	Minimum	Maximum	Mean
Age	84	18,00	71,00	47,1667

- **Sex:**

		Frequency	Percentage
Valide	Male	38	45,2
	Female	46	54,8

- **Classification ASA:**

		Frequency	Percentage
Valide	1	48	57,1
	2	36	42,9

- **Antecedent:**

		Frequency	Percentage
Valide	,00	40	47,6
	Hypertension	10	11,9
	Heart failure	4	4,8
	Diabetes	12	14,3
	Dyslipidemia	18	21,4

- **Effect-site concentration of propofol ug/mL**

	N	Minimum	Maximum	Mean
Induction Target Concentration	84	3,00	5,80	4,9107
Concentration of loss of ciliary reflex	84	2,60	4,80	3,7845
Introductory concentration of colonoscopy (at clinical perception of anal sphincter relaxation)	84	3,40	6,70	5,2488

Discussion:-

- Colonoscopy is a very frequent examination in digestive endoscopy.

- Sedation allows colonoscopy procedures to be performed, with the advantage of shortening the duration of the procedure and improving the quality of the procedure and the satisfaction of the gastroenterologists [2,3].
-The target-controlled infusion of propofol provides sedative security by allowing good stability of the level of sedation [4].

-The first stage of colonoscopy is to cross the anal sphincter which consistsof both the internal sphincter: a smooth muscle under involuntary control and the external sphincter: striated muscle under Voltaire control. During sedation, the External Sphincter, being under voluntary control, will relax and therefore produce some decrease in sphincter pressure [5].

-To determine this moment of relaxation, we were looking for the target concentration value of propofol in TCI which allows us to give the green light to our gastroenterologist colleagues to start the colonoscopy without doing rectal touch or if it is done, it must not be felt by the patient.

- Struys et al showed in a study published in 2003 the effect-site concentration of propofol for which a loss of verbal contact, a loss of the ciliary reflex and a loss of response to painful stimulation are observed in 50% and 95% ofpatients (ED50 and ED95) [6].

	ED50 (ug/mL)	ED95 (ug/mL)
Loss of verbal contact	2,9	3,8
Loss of ciliary reflex	2,8	3,4
Loss of response to painful stimulation	4,1	6,6

[Struys et al., 2003]

-In our study the concentration of ciliary reflex loss was on average 3.78 ug/mL with a minimum of 2.6 ug/mL and maximum of 4.8 ug/mL.

-While the main objective of our study: the effect-site concentration of propofol of the introduction of colonoscope which allows comfort for the gastroenterologist and the patient were on average 5.24 ug/mL with a minimum of 3.4 ug/mL andmaximum of 6.8 µg/mL. We have not found studies that are interested in this value to compare our results.

Conclusion:-

In colonoscopy, an anesthesia technique based on target-controlled infusion of propofol makesthisgesture more comfortable for the gastroenterologist and for the patient whilewaiting for at least an effect-site concentration of 5 ug /ml, However, furtherstudies are needed to confirmtheseresults.

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