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ENCHANCED RECOVERY AFTER COLECTOMY : OPIOID FREE ANESTHESIA VERSUS OPIOID BASED ANESTHESIA

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ABSTRACT

OBJECTIVE: To compare morphine consumption and postoperative recovery of opioid free anesthesia (OFA) with opioid based anesthesia (OBA).

PATIENTS AND METHODS: This is a retrospective, single-center study comparing 2 anesthetic techniques (with and without opioids) during a scheduled colectomy over a period of 2 years from January 2017 to December 2018.

RESULTS: We selected 112 patients, 50 patients or 44.64% who underwent general anesthesia without opioids (OFA). The average age of our patients was 70 years with a sex ratio of 1. The colectomy indication was dominated by colonic tumors (83.04%). Regarding postoperative morphine use, transit resumption and length of stay in hospital, we found no significant difference for both groups. However, there were twice as many nausea patients in the OBA group as in the OFA group ($p = 0.04$).

CONCLUSION : OFA appears to be an anesthetic technique for reducing PONV in patients undergoing colectomy surgery.

INTRODUCTION

Most of the "anesthetic" postoperative complications are related to the use of opioids (nausea, vomiting, ileus, confusion ...) [1]. Since the 2000s, the Enhanced Recovery After heavy digestive Surgery (ERAS) develops. It includes a set of measures to reduce surgical and anesthetic stress to speed recovery and reduce postoperative complications [1-2]. We carried out a study on a homogeneous population of colectomies whose objective was to compare the opioid consumption and the postoperative recovery of the OFA compared to the opioid based anesthesia (OBA).

PATIENTS AND METHODS

This is a retrospective and monocentric study comparing 2 anesthetic techniques (with and without opioids) during a colectomy scheduled between January 2017 and December 2018. All major patients undergoing colectomy were included. Patients transferred to intensive care units, patients receiving epidural anesthesia and emergency colectomies were excluded.

Patients receiving an OFA received 1 microgram / kg of clonidine, 1.5 mg / kg of ideal weight of lidocaine and 0.15 mg / kg of ideal weight of ketamine. A hypnotic and a curare were administered systematically. Patients with standard anesthesia (OBA) had induction using sufentanyl or remifentanyl. The hypnotic used was propofol and the maintenance was done with halogenated or propofol TCI. A muscle relaxant has also been used systematically.

The data were collected on a data sheet from the Dxcare® software (computerized patient record software) and the patients' paper files. The variables studied were: demographic data (age, sex, type of intervention, ASA score), antecedents (cardiovascular, respiratory, neurological and endocrinological), surgical intervention (laparotomy or laparoscopy), type of colectomy (right, left, transverse, or total), type of anesthesia (OFA or OBA), maximal VAS on day 1 and day 2, cumulative morphine in 24 and 48 hours, PONV on days 1 and 2, resumption of transit and length of hospital stay.

The data were analyzed with the Epi-info 7 versus 1.1.14 software of the Center for Disease and Prevention. The Chi-2 or Fischer test was used for the comparison of the qualitative variables and the student test for the comparison of averages. Any p-value below 0.05 was considered statistically significant.

RESULTS

Among the 246 patients undergoing colectomy during the study period, we selected 112 patients, 50 patients or 44.64% underwent general anesthesia without opioids (OFA). The mean age of our patients was 70 years old with a sex ratio of 1. HTA (47.32%) and heart disease (21.43%) were the most observed medical history. The majority of patients belonged to the ASAII (46.43%) and ASA III (44.64%) scores. The indication for colectomy was dominated by colonic tumors (83.04%). The type of colectomy was dominated by right (57.14%) and left (40.54%) colectomy. The majority of colectomies were performed under laparoscopy (54.46%). We did not find any significant difference for the 2 groups in terms of maximum pain intensity during 24 and 48 hours postoperatively ($p > 0.05$). Regarding the average amount of morphine consumed within 24 and 48 hours postoperatively, the difference was not significant for both groups ($p > 0.05$) despite a maximum of 52 mg in the OBA group. Forty-three patients, 38.39% had postoperative nausea / vomiting within 24 and 48 hours postoperatively. OBA was significantly associated with more frequent occurrence of PONV ($p = 0.04$). In about 65% of the cases, the resumption of transit was between D0 and D2. The resumption of the transit was carried out at the same time for the 2 groups. The majority of patients

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were hospitalized between 6 and 10 days (71.43%). Mean length of stay was similar for both groups (p = 0.36).

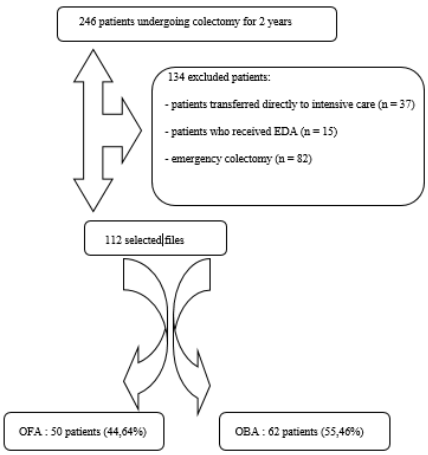

Figure 1: Study Population

Table I: Characteristics of patients

CHARACTERISTICS	OFA n (%)	OBA n (%)	TOTAL n (%)	P-value
Antecedents: Hypertension	23(20,53)	30 (26,78%)	53(47,29)	0,80
MI/ACS/heart failure	8(7,14)	16(14,28)	24(21,43)	0,21
AF	3(2,67)	9(8,03)	12(10,71)	0,14
Asthma	1(0,89)	0(0)	1(0,89)	0,26
COPD	4(3,57)	7(6,25)	11(9,82)	0,56
OSA	3(2,67)	3(2,67)	6(5,36)	0,78
Diabetes	6(5,35)	6(5,35)	12(10,70)	0,69
ASA score:				
I	4(3,57)	2(1,78)	6(5,36%)	0,26
II	25(22,32)	27(24,10)	52 (46,43%)	0,46
III	18(16,07)	32(28,57)	50(44,64)	0,09

MI: Myocardial Infarction, ACS: Acute Coronary Syndrome, AF: Atrial Fibrillation, COPD: Chronic Obstructive Pulmonary Disease, OSA: Obstructive Sleep Apnea

Table II: Distribution of patients by indication and type of colectomy and surgical approaches

	OFA n (%)	OBA n (%)	TOTAL n (%)	P-value
Indications				
colonic Tumor:				
- yes	41(36,60%)	52(46,42)	93(83,04%)	0,79
- no	9(8,03)	10(8,92)	19(16,96%)	
Type				
Right	25(22,32)	39(34,82)	64(57,14%)	0,17
Left	23(20,53)	22(19,64)	45(40,54%)	0,22
Total	1(0,89)	1(0,89)	2(1,79%)	0,87
Surgical approaches				
Laparoscopy	31(27,67)	30(26,78)	61(54,46%)	0,15
Laparotomy	19(19,96)	31(27,67)	51(45,54%)	

Table III: Distribution of Patients by VAS, Morphine Consumption, PONV, and Transit Recovery

	OFA	OBA	P-value
VAS			
VAS max D1	3,32+/-2,40 [0-10]	3,90+/-2,88 [0-10]	0,17
VAS max D2	2,29+/-1,78 [0-8]	3,40+/-2,06 [0-8]	0,76
Average quantity morphine (mg)			
Quantity D1	5,58+/-6,68 [0-20]	6,70+/-11,95 [0-71]	0,21
Quantity D2	2,94+/-6,18 [0-22]	6,09+/-11,36 [0-52]	0,68
PONV	14(12,5)	29(25,89)	0,04
Transit recovery			
Average duration (d)	2,22+/-1,74 [0-10]	2,51+/-1,54 [1-9]	0,92
D0-D2	35(31,25)	38(33,92)	0,33
D3-D5	13(11,60)	20(17,85)	0,47
>D5	2(1,78)	2(1,78)	0,82

Table IV: Distribution of patients by length of stay in hospital

Duration of stay (days)	OFA n(%)	OBA n(%)	TOTAL n(%)	P-value
Average duration (d)	9,14+/-5,80 [3-40]	9,56+/-5,24 [5-30]		0, 36
≤5	10(8 ,92)	10(8,92)	20(11,86%)	0,59
6-10	35(31,25)	45(40,17)	80(71,43%)	0,76
>10	4(3,57)	6(5,35)	10(8,92)	0,75

DISCUSSION

In our study, the OFA was chosen by the anesthesiologist for 44.64% (50/112) of the programmed colectomies. The OFA is a new approach to general anesthesia. The Belgian anesthetists were the first to practice it. In France, a quarter of anesthesiologists practiced it in 2016 [3]. Currently, although not a recommendation, the OFA's logical and educated indications are obesity, sleep apnea syndrome, opioid addiction, hyperalgesia, and chronic pain. [4].

This study showed that general opioid anesthesia (OBA) was significantly associated with the occurrence of PONV (12% vs. 26%, p = 0.04). This result confirms the data from the literature. According to the studies, the OFA constitutes a better prevention of PONV than the use of triple anti-nausea therapy. Ziemann-Gimmel and al [5] demonstrated a reduction (17%) in the risk of PONV by comparing intravenous anesthesia combining propofol-dexme detomidine-ketamine with inhaled anesthesia with opioid. A meta-analysis has shown that clonidine or dexmedetomidine provide morphine sparing and analgesia with reduction of PONV. And the morphine savings of dexmedetomidine was 3 times greater than that of clonidine. This was not associated with sedative effects delaying postoperative rehabilitation. However, the use of dexmedetomidine was associated with a risk of postoperative bradycardia [6]. Another recent meta-analysis by Frauenknecht J and al [7] has also shown a reduction in the rate of PONV in patients undergoing anesthesia without opioids.

The analgesic markers that are the EVA and the morphine consumption on day 1 and day 2 were not different in our two groups. These results are not consistent with the literature on the subject currently available. Indeed, Bello, Feld, Hofer and Bakana have found an improvement in Numeric Rating Scale and morphine consumption for OFA protocols in the context of thoracic, bariatric, cardiac or gallbladder surgery. [8-11]. This is explicable insofar as this study is retrospective, the postoperative morphine titration protocol has not been formalized and some patients have received morphine before waking in the OFA group. Moreover, the optimization of

our intraoperative management with the generalization of the use of intravenous lidocaine can make the determination of a significant difference in the field of postoperative pain more difficult.

In our series, the resumption of transit and the length of stay in hospital were made in the same time for both groups. According to the meta-analysis by Marret and al, studying the effects of intravenous lidocaine in visceral surgery, patients treated with lidocaine perioperatively showed an earlier resumption of transit with a reduced delay of 8 hours. [12]. Hospital length of stay is multifactorial and certainly requires more effort to be lowered than a change in per-operative protocol.

Our study has a certain limit. The retrospective nature of this study exposes many missing data. It is also a monocentric study that can not be extrapolated to other care structures.

CONCLUSION

OFA seems to help reduce nausea and vomiting postop eratively scheduled colorectal surgery. We could not put forward a beneficial effect on morphine consumption or postoperative pain, resumption of transit and the length of stay in hospital in our patient series.

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