

Short Communication

Intraarticular analgesia: comparing 50mg and 100mg of tramadol to morphine for analgesia after arthroscopic knee surgery

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ABSTRACT

Introduction: Intra-articular analgesia is an effective technique for analgesia after arthroscopy of the knee. The aim of this study was to study the intraarticular analgesic effect of tramadol by comparing two doses (50mg and 100mg) with morphine. **Materials and methods:** Prospective randomized study. Informed consent, local medical ethics committee was given. 30 patients (ASA I, II) divided into three groups: Group (M): 5mg morphine intra-articular (20ml); Group (T50): 50mg Tramadol intra-articular (20ml); Group (T100): 100mg Tramadol intra-articular (20ml). The procedure was performed under general anesthesia in all patients. Morphine or tramadol were injected by the surgeon 10 min before the drop of the tourniquet and 15min before the declampation. Visual Analogue Scale (VAS), side effects and additional analgesic requirements were noted at 4, 8 and 24 h postoperatively. **Results:** The VAS scores were lower in patients in the group (T100) compared to patients in the (M) and (T50) groups. Patients in the group (T100) had fewer analgesics during the first 24 hours postoperatively compared to patients in the (M) and (T50) groups. **Conclusion:** In intra-articular analgesia, 50mg of tramadol were found to be as effective as 5mg of morphine by the same route. In our study we were able to obtain an improvement in the quality of the analgesia by increasing the dose to 100mg.

Keywords: Intraarticular, analgesia, tramadol, morphine

INTRODUCTION

Intraarticular analgesia is the injection of pharmacological substances in the capsule of a joint to prevent pain in the postoperative period. This simple technique is mainly used for arthroscopic knee surgeries performed for diagnostic or therapeutic purposes. Arthroscopy of the knee is a moderate to painful surgery. Its reason may be diagnostic or therapeutic. The technique of postoperative analgesia has been the subject of several studies. The choice of the technique depends on several elements but above all it must offer adequate analgesia with the least adverse effect

especially as this surgery is practiced more and more in ambulatory. The technique of intraarticular analgesia is indicated. Local anesthetics were the first to be used in this indication (Milligan et al., 1988). Morphinomimetics were initially used as adjuvants to local anesthetics. The 1mg dose was tested by Stein et al. (1991) which showed its efficacy for post-arthroscopic analgesia. These results have encouraged other teams to use morphine in intraarticular, especially with the low incidence of morphine-related adverse events (Zou et al., 2016).

Table 1. Demographics data

	Group (M)	Group (T50)	Group (T100)	P-value
Age	32.5±8	33.7±9	36±6	0.600
BMI	23.53	22.68	23.63	0.580

BM : Body Mass Index

Table 2. Intraoperative data

	Group (M)	Group (T50)	Group (T100)	P-value
Duration of the act (min)	80.8	90.7	83.7	0.410
Consumption fentanyl (in µg)	445	435	452	0.780

Table 3. VAS scores for 24 hours postoperative

VAS	Group (M)	Group (T50)	Group (T100)	P-value
H4	4.11	3.87	3.11	0.010
H8	3.97	3.77	3.27	0.010
H24	3.70	3.80	3.42	0.010

Table 4. The delay of the first application for analgesics and the total consumption of analgesics during 24 postoperative hours

	Groupe (M)	Groupe (T50)	Groupe (T100)	P-value
1st application for analgesic (min)	168	180	492	0.001
Total consumption of analgesics (gr)	2.6	2.4	1.3	0.010

Demonstration of opiate receptors at the articular level (Wu et al., 2017) increased the use of intra-articular morphine. Other molecules have been used intraarticularly, namely tramadol for postoperative analgesia after arthroscopy.

MATERIALS AND METHODS

In this study we compared 2 doses of tramadol to morphine in intraarticular for postoperative analgesia after arthroscopy of the knee. This is a prospective, randomized study. Patient consent was enlightened. The local medical ethics committee have agreed to do this study. We collected 30 patients (ASA I, II) divided into three groups: Group (M): 5mg morphine intra-articular diluted in 20ml of physiological saline; Group (T50): 50mg Tramadol intra-articular diluted in 20ml of physiological saline; Group (T100): 100mg Tramadol intra-articular diluted in 20ml of physiological saline. The procedure was performed under general anesthesia in all patients. Age, BMI, surgical time and total consumption of perfused fentanyl were collected. Morphine or tramadol were injected by the surgeon 10min before the release of the tourniquet and 15min before the declampage of the aspiration. Visual Analogue Scale (VAS), side effects and additional analgesic requirements were noted at 4, 8 and 24 hours postoperatively.

RESULTS

Demographics and intraoperative data were comparable across the three groups (Table 1 and Table 2).

The VAS scores were lower in patients in the group (T100) compared to patients in the (M) and (T50) groups with a significant difference (Table 3).

Patients in the group (T100) were significantly more likely to have analgesics than patients in the (M) and (T50) groups with a significant difference (Table 4). Patients in the group (T100) had fewer analgesics during the first 24 hours postoperatively compared to patients in the (M) and (T50) groups with a significant difference (Table 4).

DISCUSSION

The use of local anaesthetics in intraarticular gave satisfactory results for postoperative analgesia after arthroscopy. Bupivacaine, due to its long duration of action, was the most used. An intra-articular injection of 20-40ml of 0.25% bupivacaine at the end of the procedure provides satisfactory postoperative analgesia for 4 to 6 hours (Chirwa, MacLeod, and Day 1989; Joshi et al., 1993). Smith et al. (1991) observed a more rapid resumption of walking and a faster exit from the hospital after intra-

articular administration of 150mg of 0.5% bupivacaine (Smith et al. 1991).

The short duration of analgesia of local anaesthetics prompted the use of alternative analgesics as an alternative or in combination. Stein et al. (1991) were the precursors of intra-articular administration of low doses of morphine (0.5 and 1mg). They demonstrated that intra-articular morphine decreased VAS scores during the first 6 hours postoperatively (Stein et al., 1991).

Kalso et al. (2002) analyzed the effect of opioids intra-articularly (Kalso et al., 2002): doses of morphine from 1 to 10mg and were evaluated against placebo. The authors showed that 5mg of morphine allowed prolonged analgesia and that a 30% reduction in pain scores was necessary to make this analgesia significant.

A study by Jazayeri et al. (2012) showed that the 5mg dose of morphine in intraarticular gave an analgesia comparable to the 50mg dose of tramadol intraarticular. Indeed, postoperative pain scores were comparable in both groups except for the first postoperative hour when patients in the tramadol group had lower pain scores. The delay in the first application for analgesics was also comparable between the two groups. This study shows that the 50mg dose of tramadol in intraarticular gives the same analgesic effect in postoperative as 5mg of morphine in intraarticular. These results are consistent with the results of our study which finds that the effect of 5mg of morphine in intraarticular is comparable in terms of analgesia than 50mg of tramadol in intraarticular.

The 100mg dose of tramadol was tested by the study of Alagöl et al. (2004) which compared several doses of tramadol intraarticular and intravenous. The dose of 100mg of tramadol gave adequate analgesia, comparable to the same intravenous dose. Adverse reactions in patients receiving intramuscular 100mg tramadol were comparable

to patients who received 50mg intramuscular tramadol. These results are consistent with the results.

CONCLUSION

The dose of 50mg of tramadol gave the same results as morphine. The dose of 100mg showed its superiority for postoperative analgesia after arthroscopy especially without increasing incidence of morphine-related adverse effects.

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