Case Series
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Does Intrathecal Clonidine Improve the Analgesic Profile of Prilocaine Spinal Anaesthesia for Ambulatory Total Hip Arthroplasties?

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Abstract

Background: Short acting spinal anaesthesia provides many of the desired properties for ambulatory surgery. Facilitating early mobilisation and optimising pain management are key elements of enhanced recovery after surgery for primary hip and knee arthroplasties. Our previous case series consisting of 43 patients demonstrated shortened time for leg movement compared with bupivacaine. However, the technique also caused 23% cases of intraoperative discomfort and general anaesthesia was required in 2% of cases. We investigated the effects of intrathecal clonidine as an adjuvant in improving the efficacy of prilocaine spinal anaesthesia.

Methods: We collected data on 18 patients planned for day case hip arthroplasties who received intrathecal prilocaine and 15mcg of intrathecal clonidine. Data from 43 patients who received only intrathecal prilocaine from our previously published case series was used as the control group. Data collected includes mean prilocaine dose, length of time to first report of pain, length of time to first lower limb movement, intraoperative events including intraoperative discomfort, conversion to general anaesthesia and hypotension requiring treatment.

Results: There were no differences in the median time for first report of pain or leg movement in both groups although these were not statistically significant. The incidence of intraoperative discomfort is reduced in the intrathecal prilocaine+clonidine group (P+C) at 11.1% compared to 23.3% in the intrathecal prilocaine (P) group. There was no incidence of conversion to general anaesthesia in the P+C group. 55.6% of patients in P+C group experience hypotensive episodes requiring treatment as compared to 14% of patients in P group.

Conclusion: The addition of intrathecal clonidine improved the analgesic profile of prilocaine spinal anaesthesia but it also caused more episodes of hypotension in our patients compared to prilocaine only spinal anaesthesia.

Keywords: Spinal anaesthesia • Intrathecal clonidine • Arthroplasties • Prilocaine

Introduction

Optimising pain management and facilitating early mobilisation post operation are important key elements of enhanced recovery after surgery (ERAS) pathway and there is evidence to support improved outcomes after joint arthroplasty [1-3]. Hyperbaric prilocaine 2% was licensed for spinal anaesthesia in the UK in 2010 [4]. It is an ideal intrathecal agent for ambulatory surgery used in our tertiary orthopaedic hospital. We found that it shortened time to leg movement compared with bupivacaine but intraoperative discomfort occurred in 23.3% of cases and general anaesthesia was required in 2.3% of cases. Successes with intrathecal clonidine as a spinal anaesthesia adjuvant had been reported in various surgical specialities including urological procedure and orthopaedic surgery [5-7]. Thus, we attempted to determine the efficacy of intrathecal clonidine as an adjuvant for prilocaine spinal anaesthesia.

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Case Series

This study involved all patients (n=18) who underwent planned hip arthroplasties suitable for spinal anaesthesia. All 18 patients received intrathecal prilocaine with intrathecal 15 µg of clonidine whereas 43 patients received intrathecal prilocaine without clonidine consisting a control group. Data on dosage of intrathecal prilocaine, time from intrathecal injection to first report of pain and initial patient leg movement were recorded. Complicating factors and intraoperative discomfort requiring opiate supplementation or conversion to general anaesthesia were also documented. Results were compared to data collected from a previous cohort of patients who only received intrathecal prilocaine.

Results

Data from a total of 18 patients were analysed. The average length of time in minutes to first reported pain and leg movement are shown in the Table 1 with standard deviations in brackets.

Discussion

Our previously published case series demonstrated a significant proportion of patients who reported intraoperative discomfort during their hip arthroplasties [3]. In addition to spinal prilocaine anaesthesia, all patients also received 1 gram IV paracetamol, 75 mg IV diclofenac, 13.2 mg IV dexamethasone, 300 mg ropivacaine local infiltration and propofol TCI (Schnider) at a rate of 0.5 to 1 mcg/ml. Agarwal D, et al. [7] published their results on the addition of 15 µg or 30 µg of intrathecal clonidine potentiated the sensory block levels and duration

Table 1. Data of patients were analysed.

Parameters	Intrathecal prilocaine (n=43) P group	Intrathecal prilocaine + clonidine (n=18) P+C group
Mean prilocaine dose (mg)	64.8 (5.6)	57.2 (2.4)
Length of time to first report of pain (mins)	135.3 (44.3)	127.6 (37.7)
Length of to first movement (mins)	157.7 (66.4)	133.8 (26.7)
Intraoperative discomfort (cases)	10 (23.3%)	2 (11.1%)
Conversion to GA (cases)	1 (2.3%)	0 (0%)
Hypotensive episodes requiring treatment (cases)	6 (14%)	10 (55.6%)

of analgesia without affecting the trend of systolic blood pressure as compared to bupivacaine alone. We examined the effects of the addition of intrathecal clonidine for our group of patients having hip arthroplasties. We showed that 11.1% of patients reported intraoperative discomfort in the intrathecal prilocaine+clonidine group compared to 23.3% of patients in the prilocaine group. One patient from the prilocaine group required conversion to GA and none in the prilocaine+clonidine group. The mean prilocaine dose used in the prilocaine only group is higher 64.8 mg compared to prilocaine+clonidine group 57.2 mg. The length of time to first report of pain and patient leg movement was both longer in the prilocaine only group compared to prilocaine+clonidine group although this difference is not significant.

We noticed a high incidence of intraoperative and postoperative hypotensive episodes in the prilocaine+clonidine group which 55.6% of patients required treatment with vasoactive drugs compared to 14% in the prilocaine group. Data collection was stopped after 18 patients as these episodes of hypotension were occurring frequently and affected the abilities of our patients to participate in early mobilisation with physiotherapists. Although the addition of intrathecal clonidine seemed to reduce the incidence of perioperative discomfort, we demonstrated that the addition of low dose of intrathecal clonidine caused significant hypotension in our patients which is different to the findings of the study from Agarwal D, et al. [7]. Their study only recorded blood pressure profile up to 30 minutes and it was unclear how much total fluids was used although they co-loaded their patients with 8 mls/kg of Ringer's lactate solution at the time of intrathecal injection.

Conclusion

We used a restrictive fluid regime as part of enhanced recovery management in order to prevent urinary retention and need for bladder catheterisation and could partly explain the frequent occurrence of significant hypotensive episodes in our group of patients. The present data suggested that the addition of clonidine was not beneficial for the enhanced recovery management of our patients.

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