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Intrathecal Narcotic Use in Gynecologic Oncology: Safety and Impact on Postoperative Length of Stay

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Abstract

Objective: The objective of this study was to determine how intrathecal narcotic use impacts the postoperative course of patients undergoing major gynecologic oncologic procedures. The endpoints evaluated were toxicity and postoperative length of stay.

Methods: This was a retrospective chart review of 598 patients who underwent major abdominal surgery and received intrathecal narcotics for post-operative pain control during a 49 month period at St. Vincent Hospital. Charts were reviewed to determine the incidence of specific toxicities and postoperative length of stay.

Results: The median length of stay for all patients was four days postoperatively, and 92.8% of patients fell within one standard deviation of the mean (mean of five days). Nausea occurred in 427 patients (71.4%). The total number of patients treated for pruritis was 280 (46.8%). Respiratory depression occurred in 14 patients (2.3%). Six patients (1.0%) were considered to have post-dural puncture headaches, and four (0.67%) required epidural blood patches. Hypotension was observed in 11 patients (1.8%) in the 30-minute period following intrathecal narcotic administration, in 69 patients (11.5%) in the intraoperative period, and in 40 patients (6.7%) in the postoperative period. Twenty patients out of 535 (3.7%) experienced urinary retention, while 63 patients were inevaluable for urinary retention secondary to suprapubic catheter placement during radical hysterectomy (54) or discharge from hospital with a Foley catheter in place due to intraoperative cystotomy (9).

Conclusions: Intrathecal narcotics are a safe method of postoperative pain management with limited toxicity and do not appear to lengthen postoperative hospital stay.

Keywords: Intrathecal; Anesthesia; Postoperative; Gynecologic oncology

Introduction

Postoperative pain control is a critical part of perioperative care of the gynecologic patient. Better pain control leads to earlier ambulation, decreased narcotic usage, improved patient satisfaction and decreased postoperative length of stay. Pain control in the first twenty-four hours after surgery is especially important. Intrathecal narcotic injections have been used for nearly thirty years for postoperative pain control [1]. Acceptance of this method of analgesia has been limited, however, by fear of complications. The safety and efficacy of intrathecal narcotics has also not been widely studied in the gynecologic surgical population.

Our experience with neuraxial analgesia for postoperative pain management has been favorable, with regard to both efficacy and safety. We use intrathecal narcotic injection preoperatively as an adjunct to pain control postoperatively with PCA or oral medications. The purpose of this study was to review the toxicity and efficacy of preoperative intrathecal narcotic administration in patients undergoing major abdominal surgery on a gynecologic oncology service.

Patients and Methods

Study setting

A retrospective chart review was conducted to identify characteristics of the 598 patients who underwent preoperative intrathecal narcotic administration for major gynecologic oncologic surgery over a 49 month time period. This review was approved by the hospital Institutional Review Board. Only patients undergoing open abdominal surgeries were included. For later review, patients were grouped by surgical procedures. Information was obtained from the patients' office charts as well as the hospital's electronic medical record system.

Intrathecal narcotic procedure

An anesthesiologist from the Acute Pain Service evaluated all patients preoperatively and administered the intrathecal narcotic. Patients were considered ineligible for intrathecal narcotics if they met any of the following criteria: coagulopathy, recent anti-coagulant use, infection at the skin site of injection, severe obstructive sleep apnea or sepsis (relative contraindication). Patients received varying combinations of morphine, fentanyl, and a local anesthetic, with or without intramuscular ephedrine, all at the discretion of the anesthesiologist. All patients received between 0.4 and 0.8 mg of morphine, with the dosage being determined by patient's age and perceived frailty as well as history of opioid tolerance. This is considered to be in the therapeutic range of dosing, as will be discussed further

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below. Vitals were monitored for 30 minutes after administration before the patient was transported to the operating room.

Toxicities evaluated

Toxicities evaluated included nausea, pruritus, respiratory depression, post-dural puncture headache, hypotension (post-intrathecal, intraoperative, and postoperative), and urinary retention. Additionally, postoperative length of stay was evaluated for each surgery type.

Definitions

Nausea was defined as a requirement for antiemetics within the first 48 hours postoperatively.

Pruritus was defined as a need for an antihistamine within 24 hours postoperatively.

Respiratory depression was defined as a need for naloxone to reverse narcotic effect.

Hypotension was defined by time period and the need for pressors.

Urinary retention was defined by the need for bladder recatheterization.

Post-dural headache was defined as an orthostatic headache requiring narcotic administration or epidural blood patch.

Results

Demographics

Characteristics of the patients included in the study are noted (Table 1).

Length of stay

Length of stay was evaluated in our patients to determine if intrathecal anesthesia might positively or negatively impact this end point. In our patient population, the median and mean lengths of stay were 4 and 5 days, respectively. 92.8% of stays fell within one standard deviation of the mean. When viewed with respect to surgical group (Table 2), all of the groups with the exception of two (groups four and five), had a 4 day median length of stay (Figure 1). Group four, which included patients who had suspected ovarian malignancy and underwent the appropriate surgery, had a median length of stay of 5 days. Group five, which included patients who underwent pelvic exenteration, had a 7 day median length of stay. With regard to our study patients' length of stay compared to the national average, we looked at Diagnosis-Related Groups (DRG). DRG codes were assigned by reviewing CPT codes, patient diagnosis, comorbid conditions and post-operative complications. The length of stay for our study patients was then compared to the national average with the appropriate DRG code. When sorting by DRG our length of stay was comparable to or less than that of the national average in all groups (Table 3).

	Number of Patients	Percentage of total patients (N=598)
Age		
<20	18	3
30s	54	9
40s	121	20
50s	154	26
60s	124	21
70s	88	15
>80	39	6
Major Comorbidities		
Hyper Tension	239	40
Tobacco Use	117	20
Diabetes mellitus	88	15
Hypercholesterolemia	71	12
Thyroid Dysfunction	69	12
Obesity	57	10
Coronary Artery Disease	38	6
Breast cancer	35	6
Asthma	25	4
COPD	20	3
Atrial fibrillation	15	2
DVT or PE	18	3
CVA or TIA	12	2

Table 1: Patient demographics.

Group	CPT Code	Corresponding Surgery
1	58150	TAH, +/- BSO
	58940	Oophorectomy (partial/total, bilateral/unilateral
2	58200	TAH, partial vaginectomy, LN sampling, +/- BSO
3	58210	RAH, bilateral total pelvic lymphadenectomy and para-arotic lymph node sampling, +/- BSO
4	58943	Oophorectomy with para-arotic and pelvic LN Bx, peritoneal washings and Bx, diaphragmatic assessment, +/- BSO
	58952	Resection of ovarion, tubal or primary peritoneal malignancy with BSO and omentectomy with radical dissection for debulking
	58953	BSO with omentectomy, TAH and radical dissection for debulking with pelvic lymphadenectomy and limited para-aortic lymphadenectomy
5	58240	Pelvic exenteration
6	38780, 44005, 44120, 44140, 44145, 44320, 49000, 56950, 57112, 57280, 57531, 58140, 58950, 58951, 58960	Various open abdominal surgeries

Keywords: TAH: Total Abdominal Hysterectomy; BSO: Bilateral Salpingo-Oophorectomy; LN: Lymph Node, Bx: Biopsy

Table 2: Patient groups.

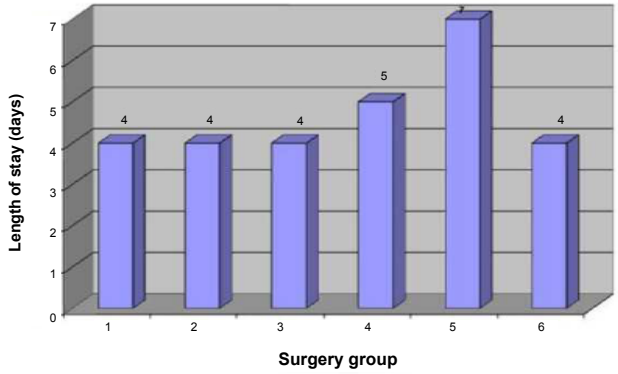

Figure 1: Median postoperative length of stay.

Toxicities

A variety of common toxicities were evaluated in our patient population (Table 4). Nausea occurred in 427 patients (71.4%),

DRG	Study patients average LOS (Days)	National average LOS (Days)
353 (Pelvic Exenteration & Radial Hesterectomy)	3.5	5.2
354 (Uterine Adnexal Procedures for Non overian/ Adnexal Malignancy with CC)	4.6	4.9
355 (Same as 354 without CC)	2.8	3.1
356 (Uterine Adnexal Procedures for Overian/ Adnexal Malignancy with CC)	5.4	7.0
358 (Uterine Adnexal Procedures for Non Overian/ Adnexal Non-Malignancy with CC)	3.8	3.6
359 (Same as 358 without CC)	2.6	2.5

Key words: DRG: Diagnosis-Related Group; CC: Complications & Comorbidities; LOS: Length of Stay

Table 3: Length of stay of study patients compared to national average.

Toxicities	# of patients/598	% of total patients
Nausea	427	71.4
Pruritus	280	46.8
Respiratory depression	14	2.3
Post-dural puncture headache	6	1.0
Requiring blood patch	4	
Hypotension		
Preoperative	11	1.8
Intraoperative	69	11.5
Postoperative	40	6.7
Urinary retention (of 535 patients)	20	3.7

Table 4: Toxicities potentially associated with intrathecal narcotics.

pruritus in 280 (46.8%), and respiratory depression in 14 (2.3%). Six patients (1.0%) were found to have post-dural puncture headaches, four of which were treated with blood patches. Hypotension was observed in 11 (1.8%) patients in the observation period initially after intrathecal placement. Additionally, 69 patients (11.5%) experienced intraoperative and 40 (6.7%) experienced postoperative hypotension. Of those with intra- or postoperative hypotension, 15 had blood loss over 750 mls.

Per our protocol, foley catheters were discontinued on the morning of postoperative day one. Twenty of 535 patients experienced urinary retention (3.7%); 63 patients had indwelling catheters because of cystotomy or radical hysterectomy, making it impossible to evaluate for retention. For the 20 patients with urinary retention, 17 were able to void later in the day after one in/out catheterization performed after they had not voided for 6 hours following foley removal. Three patients required the catheter to be reinserted overnight, and all three were able to void the following morning (postoperative day 2). On review of the operative notes for these patients, there were no remarkable issues noted.

Pain control

Although we did not have the opportunity to assess our patients' pain directly, as this was not a prospective study, we did review the amount of supplemental intravenous narcotics that were used. 45 patients (7.5%) required no supplemental narcotics at anytime postoperatively. In addition, 240 patients (40%) used 30 mg or less of supplemental morphine (or the equivalent of dilaudid or demerol) during their postoperative course. We feel that this is evidence of good pain relief from the intrathecal narcotic.

Discussion

The efficacy and safety of intrathecal narcotic administration for postoperative pain management has been reported in the literature for thoracic, neurologic, orthopedic, and obstetric surgeries [1-4], but it has not been as widely reported for gynecologic procedures, especially extensive abdominal surgeries such as those that are done for gynecologic malignancies. Several prospective trials have shown that intrathecal narcotics are an effective means of postoperative pain control, especially in the first 24 hours after surgery [1-3]. Adequate pain control can lead to earlier ambulation, fewer respiratory complications; shorter hospital stays, and improved patient satisfaction. Chadwick and Ready's study comparing intrathecal and epidural narcotics for cesarean analgesia showed that they both offered adequate pain relief, but that the pain relief with intrathecal narcotics was of longer duration [2]. Additionally, the study by Chen et al. showed that epidural analgesia did not improve pain management in gynecologic oncologic surgery patients and in fact was associated with a longer preoperative anesthesia time, increased use of pressors during surgery, increased time to first ambulation and a tendency toward requiring more supplemental pain medication when compared to traditional intravenous patient controlled anesthesia (PCA) [5].

Many surgeons have been reluctant to utilize intrathecal narcotics due to fear of complications such as respiratory depression and urinary retention. In our study, only 2.3% of patients required naloxone treatment for respiratory depression, and only 3.7% of patients experienced urinary retention. Other physicians have expressed concern that intrathecal narcotic injection is a one-time dose and cannot be discontinued in the case of an adverse event. Jacobson et al. found that the risk of respiratory depression was related to the dose of morphine and was significantly higher when the dosage exceeded 1 mg. They found that a dose of 0.3-1 mg of morphine provided good postoperative pain relief without a significant incidence of respiratory depression [3]. Jacobson's results are consistent with our findings, and the dosages of morphine used in our patients were all less than 1 mg.

The most common side effects we found were nausea and pruritus. In nearly all cases, these were easily managed with antiemetics and antihistamines, respectively. We feel that these are acceptable side effects, as they are generally associated with narcotics regardless of route of administration. It was also impossible to differentiate whether the nausea was due to the intrathecal itself or due to other confounding factors. Further, it should be noted that there is a limitation to using the dispensing of a medication to equate with the presence of a symptom. It is certainly possible that medications were given prophylactically or for an indication other than that assigned to it (i.e. use of diphenhydramine as a sleep aid rather than for treatment of pruritus. Therefore, our results reflect maximum estimates nausea and pruritus.

Additionally, of the 109 patients that had intra- or post-operative hypotension, 15 patients had greater than 750 ml of blood loss, which could be an alternate explanation for those cases of hypotension. All patients with hypotension were easily managed with intravenous vasopressors or blood product transfusion. Further, out of the 598 patients in our study, only 21 required postoperative admission to the Intensive Care Unit (3.5%), and only two of these were for postoperative hypotension not related to large volume blood loss. The remainder of our patients was effectively managed on a post-surgical inpatient floor.

Length of stay was also evaluated in our patients and compared to the national average for the DRG code. After comparison, our study patients had either comparable or shorter lengths of postoperative stay.

Our study, though with the inherent limitations of a retrospective study, shows that preoperative intrathecal narcotic use offers a safe and effective means of postoperative analgesia. Further, it may lead to decreased length of postoperative hospitalization and therefore lower health-care costs. Our hope is that this information will help allay fears that clinicians may have regarding side effects related to intrathecal narcotics and encourage their use for post-operative pain management.

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