ePoster session 1 – Station 3

EP013 EFFECT OF LOCAL ANESTHETIC VOLUME (20 VS 40 ML) ON ANALGESIC EFFICACY OF COSTOCLAVICULAR BLOCK IN ARTHROSCOPIC SHOULDER SURGERY: A RANDOMIZED CONTROLLED TRIAL

[1]Yumin Jo, [1]Chahyun Oh, [2]Woo-Yong Lee, [1]Yoon-Hee Kim, [1]Youngkwon Ko, [1]Woosuk Chung, [1]Boohwi Hong, [1]Eunhye Park*. *[1]Department of Anesthesiology and Pain Medicine, Chungnam National University Hospital, Daejeon, Korea; [2]Department of Orthopedic Surgery, Chungnam National University Hospital, Daejeon, Korea*

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Background and Aims Various diaphragm-sparing alternatives to interscalene block have been studied. Costoclavicular block (CCB) as the alternative, demonstrated low hemidiaphragm paralysis(HDP) occurrence but inconsistent analgesic effect in our previous study. We hypothesized that a larger volume for CCB could provide sufficient analgesia by achieving supraclavicular spreading. Therefore, we compared analgesic efficacy and HDP occurrence of two different volumes of local anesthetic(LA) for CCB in arthroscopic shoulder surgery.

Methods Sixty patients who scheduled for elective arthroscopic rotator cuff repair were randomly allocated into either of groups; CCB20(0.75% ropivacaine 20mL) or CCB40(0.375% ropivacaine 40mL). After induction and CCB, supraclavicular spreading at supraclavicular fossa and HDP were evaluated with ultrasound observation. The primary outcome was the rate of participants who reported zero pain score at rest 1 hour postoperatively. Postoperative analgesia outcomes and outcomes HDP related were evaluated.

Results The rate of complete analgesia with NRS 0 at PACU were 23.3%(7/30) in CCB20 and 33.3%(10/30) in CCB40 (p=0.567). The pain score at 1 hour postoperatively was no significantly different between the groups(3 [1 to 5] in CCB20 vs 2 [0 to 4] in CCB40; p=0.395). There were no statistically significant differences between the groups(p<0.098) in complete HDP occurrence. Multivariate logistic regression analysis showed that the ultrasound observation of supraclavicular spreading was significantly associated with no and mild pain (pain score <4) at immediate postoperative period regardless allocated group.

Abstract EP013 Table 1 Primary outcome, HDP incidence and evaluation of supraclavicular spreading

Table 1. Primary outcome, HDP incidence and evaluation of supraclavicular spreading

	CCB20	CCB40	P-value
Category of pain score at 1 hour postoperatively			0.567(zero and extra grade), 0.666(4 grade)
-Zero	7 (23.3%)	10 (33.3%)	
-Mild	13 (43.3%)	12 (40.0%)	
-Moderate	7 (23.3%)	7 (23.3%)	
-Severe	3 (10.0%)	1 (3.3%)	
Pain score at 1 hour postoperatively	3.0 [1.0; 5.0]	2.0 [0.0; 4.0]	0.395
HDP incidence			0.098
- No	25 (83.3%)	20 (66.7%)	
- Partial	5 (16.7%)	6 (20.0%)	
- Complete	0 (0.0%)	4 (13.3%)	
Adequate supraclavicular spreading	17 (56.7%)	18 (60.0%)	1

Abbreviation: HDP; hemidiaphragmatic paralysis, CCB; costoclavicular block
Definition of adequate supraclavicular spreading: spreading of local anesthetic between superior and middle trunk or suprascapular nerve itself after branching by ultrasound at supraclavicular fossa after CCB

Abstract EP013 Table 2 Logistic regression analysis of factors associated with immediate postoperative pain grade

Table 2. Logistic regression analyses of factors associated with immediate postoperative pain grade

		No& Mild pain (N=42)	Moderate & Severe pain (N=18)	OR (univariable)	OR (multivariable)
Height (cm)	Mean ± SD	161.2 ± 8.6	159.9 ± 9.4	0.98 (0.92-1.05, p=.597)	
Weight (kg)	Mean ± SD	64.0 ± 9.6	65.0 ± 7.5	1.01 (0.95-1.08, p=.688)	
OP side	L	18 (42.9%)	7 (38.9%)		
	R	24 (57.1%)	11 (61.1%)	1.18 (0.39-3.77, p=.775)	
BMI (kg/m^2)	Mean ± SD	24.6 ± 2.8	25.5 ± 2.3	1.14 (0.92-1.44, p=.237)	
Sex	F	19 (45.2%)	11 (61.1%)		
	M	23 (54.8%)	7 (38.9%)	0.53 (0.16-1.60, p=.263)	
Group	CCB20	20 (47.6%)	10 (55.6%)		
	CCB40	22 (52.4%)	8 (44.4%)	0.73 (0.23-2.20, p=.574)	
Adequate supraclavicular spreading	No	13 (31%)	12 (66.7%)		
	Yes	29 (69%)	6 (33.3%)	0.22 (0.07-0.70, p=.013)	0.22 (0.07-0.70, p=.013)

Abbreviation: OP; operation, L; left, R; right, BMI; body mass index, F; female, M; male, CCB; costoclavicular block

Conclusions The larger volume of LA doesn't guarantee supraclavicular spreading of CCB. Observing supraclavicular spreading using the ultrasound after CCB can be used as a tool to predict acute pain after shoulder surgery.

EP014 THE PHARMACOKINETIC ,PHARMACODYNAMIC AND INTRATHECAL HISTOCOMPATABILITY STUDIES ON BUPIVACAINE PLGA MICROSPHERES IN RABBITS

Qiang Fu*. *Department of anesthesiology, General hospital of PLA, China, Beijing, China*

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Background and Aims To study the pharmacokinetic , pharmacodynamic effects and histocompatibility of bupivacaine PLGA microspheres intrathecally in rabbits.

Methods The 12 rabbits were divided randomly into two groups(n=6). One group was injected with bupivacaine solution 5mg/kg intrathecally, the other group was intrathecally injected with bupivacaine PLGA microspheres 5mg/kg. A high performance liquid chromatographic method was developed to determine bupivacaine plasma concentration. A rabbit model for evaluation of spinal anesthesia was presented on the pharmacodynamic study.

Results The Cmax of bupivacaine by intrathecally adminstration with Bupi-PLGA-MS were lower than that with plain bupivacaine injection(P<0.01), Tmax and MRT of Bupi-PLGA-MS were prolonged evidently compared with plain bupivacaine injection(P<0.01).A new spinal administration in rabbits has been established to research the sustained release of Bupi-PLGA-MS in vivo, and a method to evaluate the spinal anaesthetic effect first was set up. The anaesthetic time of bupivacaine microspheres groups were longer than that of plain bupivacaine injection group (P<0.01). The anaesthetic time of different anaesthetic stage by spinal administration with Bupi-PLGA-MS was prolonged compared with that of bupivacaine injection (P<0.01). There was no irritation of Bupi-PLGA-MS to the pinal tissues. The degradation occurred at the surface and the inner of microspheres, moreover, there were remained microspheres matrix after 14days degradation.

Conclusions The incorporation of local anesthetics into injectable PLGA microspheres can be useful in providing prolonged spinal anesthesia effects.