

요추부 수술 후 경막외 무통방법과 지속적 정맥 주입에 의한 통증 조절의 효과 비교

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= Abstract =

Effects of Continuous Intravenous Analgesia Versus Epidural Analgesia after Lumbar Spinal Surgery : A Prospective Study

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Objective : The purpose of this non - randomized prospective study was to evaluate the safety and efficacy of continuous intravenous nalbuphine - ketorolac - droperidol(CIA) versus continuous infusion of epidural morphine - bupivacaine(CEA) for pain control after lumbar spinal surgery.

Methods : Twenty - one patients who underwent spine surgery including laminectomy, fusion with fixation were assigned to receive an intravenous bolus of nalbuphine 5mg and ketorolac 15mg, followed by a continuous infusion of nalbuphine 25mg, ketorolac 105mg, and droperidol 5mg mixed with normal saline 98cc(2cc/hr). Twenty patients received a bolus infusion of morphine 2mg and 0.125% bupivacaine 8cc followed by a continuous intravenous infusion of 100cc 0.125% bupivacaine and morphine sulfate 8.0mg(2cc/hr). Pain score was measured on a visual analogue scale(VAS). It's safety and efficacies were compared with the results of continuous infusion of epidural morphine - bupivacaine, which was reported previously by same authors. A continuous infuser was used to give epidural morphine - bupivacaine and intravenous nalbuphine - ketorolac - droperidol.

Results : In general, mild pain, pain less than 3 VAS scores, was observed postoperatively from 30minutes to 72hours in CEA group, and from 6 hours to 72 hours in CIA group. The early postoperative pain was controlled easily in 6 hours in CEA group, compared to CIA group($p < 0.05$). However, there was no statistical significance in 72 hours on pain scores between CEA and CIA groups after 6 - 12hours of pain managements. Pruritus, nausea and vomiting, and urinary retention were more frequent in CEA group.

Conclusion : CIA and CEA are considered effective methods in postoperative pain managements. However, adequate doses in early intravenous infusion and continuous intravenous analgesia with nalbuphine - ketorolac - droperidol will be needed for better control in early postoperative pain with less side effects.

KEY WORDS : Epidural anesthesia · Intravenous anesthesia · Nalbuphine · Ketorolac · Droperidol · Lumbar spinal surgery.

서 론

가

가

가
 (continuous epidural analgesia : CEA)
 (continuous intravenous analgesia : CIA)
 CEA 가
 ,
 , hemo - vac
 가 가 .
 2)7)9). CEA CIA
 9)11). morphine
 opioid
 (NSAIDs)가 7).
 opioid - NSAIDs nalbuphine - ketorolac - droperidol
 CIA , visual analogue scale
 (VAS)
 CEA 17).

0.125% bupivacaine morphine sulfate 8.0mg
 2cc가 . CIA
 bolus nalbuphine 5mg ketorolac
 , nalbuphine 25mg, ketorolac
 105mg, droperidol 5mg normal saline 98cc
 100cc가 . 2cc
 가 Baxter(Baxter Healthcare
 Corporation, Deerfield, IL, U.S.A.) . CIA,
 CIA
 10 visual analogue
 scale(VAS)
 . VAS 7
 , 3
 가
 , 10 , 30 , 1 , 6 , 12 , 12
 72 . CIA
 8 48
 . VAS VAS ,
 VAS , ,

대상 및 방법

1997 8 1998 1
 20 morphine sulfate
 bupivacaine CEA
 , 2001 1 4
 21 nalbuphine -
 ketorolac - droperidol CIA
 VAS
 . 70 , 18 , , , ,
 .
 1).
 . CIA
 9 11 7
 , CIA 14 . CIA
 bolus morphine 2
 mg 0.125% bupivacaine 8cc , 100cc

CIA
 8 48
 paired sample T - test
 p - value 0.05 가
결 과
 VAS CIA
 30 , CIA
 6 VAS 3 (Fig.
 CIA
 30 , CIA
 6 VAS 3 (Fig. 2). VAS
 가 CIA
 7.75 ± 1.18, CIA
 7.32 ± 0.03 .
 CIA CIA
 VAS

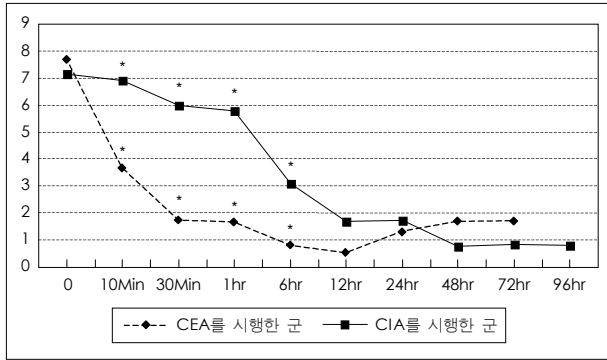


Fig. 1. Pain scores measured by Visual Analogue Scale in lami-nectomy group. * : p<0.05 compared between CEA group and CIA group.

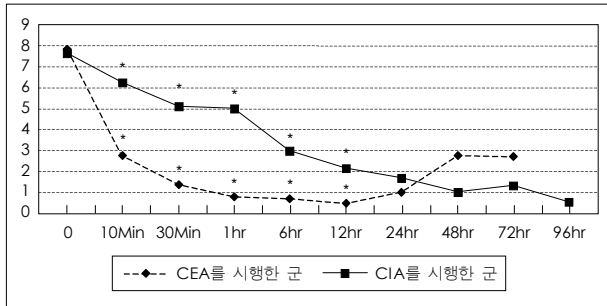


Fig. 2. Pain scores measured by Visual Analogue Scale in fu-sion group. * : p<0.05 compared between CEA group and CIA group.

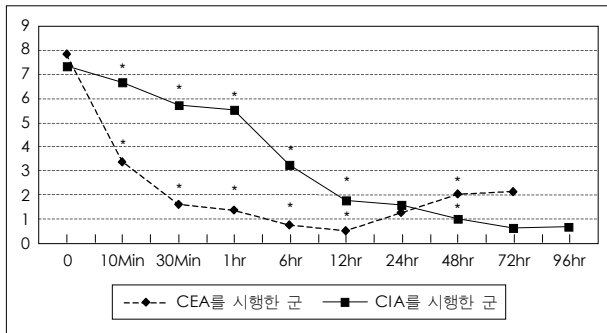


Fig 3. Pain scores measured by Visual Analogue Scale in Pa-tient data. * : p<0.05 compared between CEA group and CIA group.

(p>0.05)(Fig. 3).

CEA
30 , CIA 6
VAS 3 . CIA
CIA
48
VAS 가 3 VAS 가 가
, CIA
6

Table 1. Side effects due to continuous epidural analgesic

| Side effect | Number of patient(%) |
|------------------------|----------------------|
| Pruritus | 1/20(5%) |
| Nausea/vomiting | 2/20(10%) |
| Urinary retension | 2/20(10%) |
| Respiratory depression | 0/20(0%) |
| Total | 4/20(25%) |

Table 2. Side effects due to continuous intravenous analgesic

| Side effect | Number of patient(%) |
|-------------------------|----------------------|
| Nausea/vomiting | 1/22(4.5%) |
| Respiratory depression | 0/22(0%) |
| Cardio-vascular problem | 0/22(0%) |
| Total | 1/22(4.5%) |

6~12
가 (p=0.062).
CEA / 가 2
, 1 , 가 1 (Table 1),
CIA / 가 1
(Table 2).

고 찰

nalbuphine - μ-
κ- 가
morphine 60~80% 2)13)15), morphine
가 . Morphine
1998 CEA
morphine
Caudal block morphine
7.9% 가
19). Nalbuphine
opioid
12)13)
Ketorolac NSAIDs cyclooxygenase
prostaglandin
, ketorolac

morphine morphine , morphine nalbuphine
 ,
 1)6)18) . Opioid CEA CIA
 , , 48
 ,
 (Chemoreceptor trigger zone) 가 (psychotomimetic reaction),
 ,
 3)5) . Ketorolac 30 2) .
 60mg 15 30mg 6 CIA 가 CEA
 , 10 8) . 12
 , CEA
 가 , 48
 CEA 가
 nalbuphine CEA
 nalbuphine 5mg keto- 48
 rolac 15mg , 가
 nalbuphine 25mg, ketorolac
 105mg, droperidol 5mg normal saline 90ml 48 , CIA
 100ml가 2ml가 CEA
 가
 , nalbuphine 50mg 21 8 48
 , 3 , 4 가 .
 2) . morphine CEA CIA
 가 nalbu- 6
 phine 30mg/70kg , 12 , 48
 10) . 48 . VAS 3
 nalbuphine 25mg , 1 morphine 가
 , (rebound phenomenon)
 CIA 가 CIA 12
 nalbuphine , 6 CIA
 nalbuphine , ketorolac , 가 CEA
 가 , opioid , 가 nalbuphine
 가 , 가
 droperidol 가 . Drope- 4) .
 ridol butyrophenone dopamin
 ,
 CEA 2 , CIA
 1 가
 가
 . CIA CEA
 가
 . CIA CEA

결 론

6
가 , 가
, CEA 가 ,
가
CEA
6
nalbuphine CIA
가
.
• : 2001 7 10
• : 2001 10 29
• :
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