

INTRATHECAL NEUROLYSIS FOR PALLIATION OF LEGS SEVERE PAIN OF
CERVICAL CANCER PATIENTS

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Resume. The intrathecal neurolysis is a well-documented technique that can provide excellent and prolonged pain relief. In this study included twenty-five patients with cervical cancer, who suffered severe leg pain, resistant to opioids. Observation was enrolled during 8 weeks after intrathecal neurolysis. Patients were divided into 2 groups: group I included the patients who received intrathecal neurolysis, group II included patients who used morphine continuously. The pain score, performance status and morphine consumption were recorded regular at a week intervals. Pain scores were strongly reduced in group I after the intrathecal neurolysis ($P \leq 0.05$), and these patients used significantly less daily doses of morphine ($P \leq 0.001$). In group II pain score was stable, and patients continued to receive high doses of opioids with inadequate pain control and side effects of opioids. Physical performance improved within patients group I, in contrast, performance was decreased in group II ($P \leq 0.001$).

The intrathecal neurolysis is the effective method for palliation of severe intractable leg pain of patients with cervical cancer.

Key words: pain, intrathecal neurolysis, cervical cancer, morphine, opioids.

ИНТРАТЕКАЛЬНЫЙ НЕЙРОЛИЗИС ДЛЯ ОБЛЕГЧЕНИЯ СИЛЬНОЙ БОЛИ В НОГАХ
У БОЛЬНЫХ С РАКОМ ШЕЙКИ МАТКИ

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Резюме. Инtrateкальный нейролизис это хорошо документированная техника облегчения сильной, хронической боли. В исследование включены 25 больных с раком шейки матки и сильными болями в ногах, резистентных к опиоидам. Наблюдение продолжалось в течение 8 недель после инtrateкального нейролизиса. Больных разделили на 2 группы: I группа включала больных после инtrateкального нейролизиса, II группа включала больных, получающих морфин. Интенсивность боли, общее состояние, потребление морфина записывались регулярно в недельном интервале. Шкала боли были сильно уменьшены в I группе после инtrateкального нейролизиса ($P \leq 0.05$), и эти больные пользовались значительно меньшими дозами морфина ($P \leq 0.001$). В группе II боль была стабильной, и пациенты продолжали получать высокие дозы опиоидов с неадекватным контролем боли и побочными эффектами от опиоидов. Физические данные и производительность улучшены в группе I, в отличие от этого, производительность была снижена в группе II ($P \leq 0.001$).

Инtrateкальный нейролизис является эффективным методом для паллиативного лечения тяжелой неразрешимой боли в ногах больных раком шейки матки.

Ключевые слова: боль, инtrateкальный нейролизис, рак шейки матки, морфин, опиоиды.

Introduction.

Cervical cancer is one of the gravest threats to women's lives. It is estimated that over a million women worldwide currently have cervical cancer. In 2012, 528 000 new cases of cervical cancer were diagnosed, and 266 000 women died of the disease, nearly 90% from low- to middle-income countries [1]. Since 1990, cancer remains the second leading cause of population mortality in Mongolia. The 5 leading cancers within women are liver, stomach, cervix, esophagus, and lung cancer [2]. Pain is one of the most common symptoms experienced by the cancer patients [3]. Pelvic cancer causes visceral, neuropathic, and somatic pains.

In more than 60% of patients with a malignant disease of the pelvic organs, invasion of the nerve trunks and sacrum results in neuropathic pain [4]. This can cause symptomatic sensory loss, causalgia, and deafferentation. In a study of 2261 patients, Saphner T and colleagues [5] found lumbosacral plexopathy caused by retroperitoneal lymph node metastases as the most common neurologic complication in patients with advanced cervical cancer [6]. Pain can be well managed with conventional analgesics and adjuvants in 80%-90% of cancer patients according to the World Health Organization (WHO) analgesic ladder for cancer pain relief. However, in 10% to 20% of patients, it remains difficult to

manage, and these patients are the candidates to some form of interventional technique [7]. The neurolysis by alcohol is a well-documented technique that can provide excellent and prolonged pain relief in selected cases [8-9]. Pain relief was described as usually lasting for more than three months and sometimes even up to a year [10]. Intrathecal neurolysis dates back to 1931 when Dogliotti described the use of subarachnoid alcohol for the treatment of sciatic pain [8]. Since that time, chemical neurolysis via the intrathecal route considered and indicated in advanced, irreversible, and progressive illness for patient with a short life expectancy [11]. Advantages claimed for intrathecal neurolysis are: 1) the ease of performance with simple equipment; 2) ease of repetition if necessary; 3) a low complication rate when proper technique is observed; 4) and suitability for aged or debilitated patients [12]. Subarachnoid neurolysis noted a 78-84% favorable response in patients with somatic and neuropathic pain [13].

Materials and methods.

This study was conducted on 25 patients, aged 40-60 years, who were referred to the "Achtan" Clinical hospital of Ulaanbaatar, Mongolia. All patients had one side leg pain according to dermatomes in L4-5 (7-right, 5-left side) with a prominent neuropathic component, secondary to unresectable cancer or metastasis. The diagnosis of tumor or metastasis

was based on primary USG and CT (computed tomography) examination, and was confirmed after biopsy. Patients were evaluated regarding pain characteristics (localization, intensity, duration, quality and irradiation) and randomly assigned to one of two experimental groups of 12 to 13 patients each. All patients had pain intensity scores 7.53 ± 0.86 and used oral morphine in 111 ± 41.82 mg/daily doses. In these patients, the pain management was insufficient. For the purposes of the study, patients were divided into 2 groups, and at regular intervals for a week, pain scores, performance status, and morphine consumption of each patient were recorded. Group I included the patients who received intrathecal neurolysis, while group II included the patients who continuously used morphine and conventional pharmacological treatment.

The intensity of pain was evaluated by Wong-Baker FACES® Pain Rating Scale.

The performance status was measured by Karnofsky Performance Status Scale:

100 (A)-Normal, no complaints; no evidence of disease

90(A)-Able to carry on normal activity; minor signs or symptoms

80 (A)-Normal activity with effort; some signs or symptoms of disease,

70 (B)-Cares for self; unable to carry on normal activity or to do active work

60 (B)-Requires occasional assistance but is able to care for most of his needs

50 (B)-Requires considerable assistance and frequent medical care

40 (C)-Disabled; requires special care and assistance

30 (C)-Severely disabled; hospitalization necessary; active supportive treatment is necessary

20 (C)-Very sick; hospitalization necessary; active supportive treatment is necessary

10 (C)-Moribund; fatal processes progressing rapidly
0 - dead.

Intrathecal neurolysis was conducted by the following procedure:

All patients in group I were moved to the operating room, basic monitors were applied, and IV access was secured. Patients were first placed in the lateral spinal position with the painful side up. After aseptic measures were taken, a 22 gauge spinal needle was inserted at the correct vertebral level (L4-L5)

of dorsal nerve roots until the subarachnoid space was reached. After confirming free flow of CSF, the patient was rolled over by about 45 degree anteriorly to place the dorsal root in the upper most position. The patient was propped up with pillows and stabilized with straps, so the patient could remain in this position for a significant period of time. Then, the tuberculin syringe containing absolute alcohol was attached to the spinal needle and absolute alcohol was injected in 0.1ml increments. The first increment filled the dead space of needle. When 2nd incremental dose of 0.1ml absolute alcohol was injected, the patient felt burning pain in dermatomal distribution which confirmed the position of the spinal needle at the dorsal nerve roots. After confirming the correct dermatomal level, a total of 0.7ml of absolute alcohol was injected in 0.1ml increments very slowly until causing neurolysis.

Data Analysis.

Data of morphine consumption, the pain intensity, and side effects grades were compared separately every week. The review used the Mann –Whitney U test. The results were statistically analyzed by the chi- squared analysis. $P < 0.05$ was used as statistical significance.

Results.

Twenty-five patients were enrolled in the study which lasted 8 weeks. All patients of the group I responded to a diagnostic block before the intrathecal neurolysis. Mean age of the patients who received the neurolysis was 50.58 ± 7.77 ; the mean age of patients who used morphine was 51.69 ± 6.76 ($P=0.71$).

Pain was reported in 12 cases of group I and in 13 cases of group II. On the day before the intrathecal neurolysis, the groups did not have a significant difference regarding the Wong Baker scale ($p \leq 0.64$). The pain scores were strongly reduced in group I throughout the period of observation after the intrathecal neurolysis ($P \leq 0.05$), and most notably, the pain scores of 2-3 were sustainable from the 1st until the 8th weeks (Table 1).

On the day before the intrathecal neurolysis, the groups did not have a significant difference in morphine consumption ($p \leq 0.20$).

Opioid consumption in both groups during the 8 weeks of observation after the intrathecal neurolysis was statistically different ($P \leq 0.001$). Patients in group I used significantly lower daily doses of morphine ($P \leq 0.001$). In group II - the daily doses of morphine increased and pain control was inadequate,

Table 1.

Intensity of pain in group I and group II during 8 weeks of observation

Weeks	Group I			Group II			P value
	n	Mean	Std. Dev	n	Mean	Std. Dev	
1	12	8.00	0.74	13	7.00	1.633	0.06
	Intrathecal neurolysis			Morphine use			
2	12	3.92	1.16	13	3.92	1.038	0.98
3	12	2.83	0.93	13	3.38	0.650	0.09
4	12	2.42	0.90	13	3.54	0.660	0.002
5	12	2.58	1.08	13	3.46	0.660	0.02
6	11	2.64	0.67	11	4.27	1.272	0.001
7	11	2.64	0.80	7	3.86	1.069	0.01
8	9	3.00	1.32	4	3.50	0.577	0.49

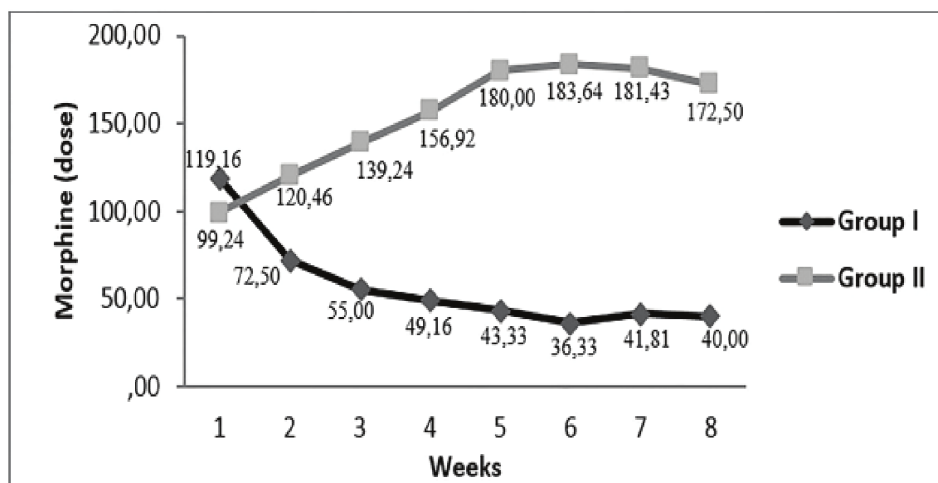


Fig 1. Opioid consumption of patients in group I and group II throughout 8 weeks of observation

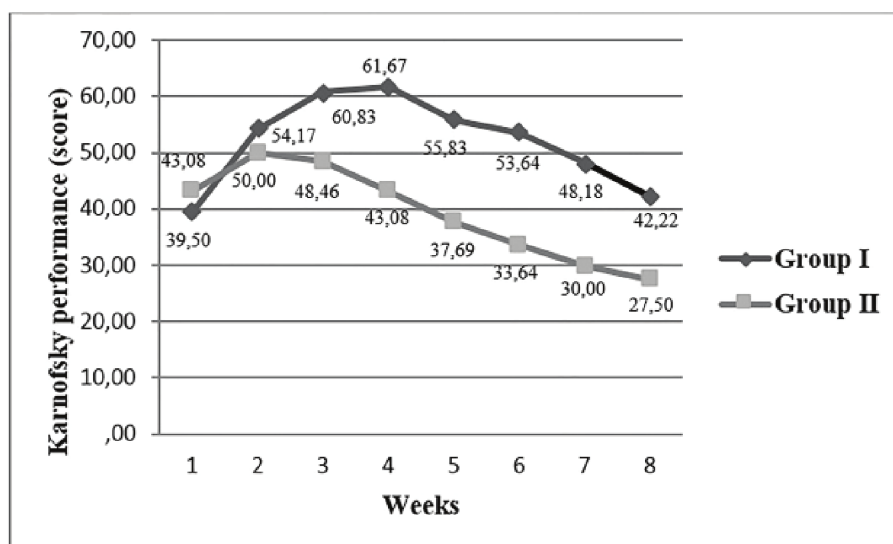


Fig 2. Karnofsky performance scores in group I and group II during 8 weeks of observation.

patients had pain scores 3-5 even after use of morphine.

Both groups did not differ significantly regarding the Karnofsky performance score on the day before the intrathecal neurolysis ($P \leq 0.62$). On the 3rd week, the Karnofsky performance score in patients of group I significantly improved to 61.67 ± 10.29 . The performance score of the patients of group II permanently decreased to 27.50 ± 5.00 . Karnofsky performance scores were significantly higher in group I, than in group II throughout the 8 weeks of observation following intrathecal neurolysis. This was statistically significant in both groups $P \leq 0.001$

Discussion

Our study shows, that intrathecal neurolysis is effective for selected patients with cervical cancer, who suffer from severe intractable pain at the L4-5 vertebral level and on one side of the body.

Many authors have described the intrathecal neurolysis by the various neurolytic substances for the treatment of cancer pain. In recent years, alcohol and phenol have been

the most commonly used substances for this purpose. There are the literatures consisting of observations, reports and book chapters reflecting the opinions of experienced clinicians [15]. In marked improvement of pain relief has been recorded by various authors. Dogliotti reported good results in 59% of 150 cases, and no improvement in 15 -20% [8]; Stern obtained complete relief in 70% of 50 patients and partial relief in 30%, while Adson found complete relief in 40% of 40 cases, partial in 30%, and no relief in 30%. Greenhill and Schmitz treated 25 women for intractable pain due to malignant conditions of the female genitalia and reported, that 20 had complete relieve, and 3 partial relieve. They had 2 failures, but in one of these, pain was completely relieved by a second injection at a higher level [14]. Russell treated 22 patients with complete relief in 21 and partial relief in 1 [16]. The results of intrathecal neurolysis in 252 patients with malignancy have been reported by Richard C. Hay. The procedure has proved to be very useful in alleviating segmental pain. Pain relief was obtained in 78% of the patients, with complications in 2%. The technique used

was the standard intrathecal injection of absolute alcohol in small increments up to 1 cc. per inter space of the vertebra [17]. In our study 12 patients had no complications. 2 patients (9%) needed a repeated neurolysis, because of recurring pain. After the second injection, the pain was completely relieved.

Conclusion.

The results of the study confirm that intrathecal neurolysis significantly reduced the intensity of cancer pain, opioid consumption, and improved the physical performance in patients with cervical cancer pain.

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