Ekoloji 28(108): 355-360 (2019)

LETTER TO THE EDITOR

Clinical Observation of Short-Term Effect of Methylpre Dnisolone Pulse Therapy on in an Oxygen-rich Environments Acute Spinal Cord Injury

Xianghui Dong[1], Donglei Yue[2*], Pengzhen Lei[1], Binya Shi[1], Zhengming Sun[1], Yanhai Chang[1], Ming Ling[1]

[1]Orthopaedics Department, Shaanxi Provincial People's Hospital, Xi'an 710068, China

[2]Medical Records Room, Jining No. 1 People's Hospital, Jinan 272000, China

[*]Email: 15624093915@163.com

To observe and analyze the short-term efficacy of methylprednisolone pulse therapy in the treatment of acute spinal cord injury, and provide valuable guidance for clinical treatment. The patients were divided into study group (100 cases) for methylprednisolone pulse therapy and reference group (100 cases) for dexamethasone therapy. The treatment outcomes of the two groups were statistically compared. Results: Comparison of the overall treatment effectiveness of the two groups shows significant advantage of the study group over the reference group, $p < 0.05$; Conclusion: Methylprednisolone pulse therapy has a good short-term effect on acute spinal cord injury, which can promote patient recovery with great application value.

I Introduction

Zhi wang qian, Guang sheng wan, Yu feng shi, Ying yu. Correlation Analysis of Urban Environment Quality and Medical & Health Service on Issue 106, Pages: 233-239, Article No: e106018 Year: 2019, Year: 2019, in the article, With the development of economic standards around the world, spinal cord injury has an increasing incidence year by year. Spinal cord injury is the most serious complication of spinal injury which often leads to severe dysfunction of the limb below the injured segment. Spinal cord injury not only causes serious physical and psychological harm to the patient, but also imposes a huge economic burden on the whole society (Zhao et al. 2015). The prevention, treatment and rehabilitation of spinal cord injury become a major issue in the medical field due to the social and economic losses caused by the injury.

Early treatment of acute spinal injury involves on-site rescue, emergency treatment and early specialist treatment. Whether correct early treatment measures are taken directly affects patient's life safety and recovery of spinal cord function. When patients with acute spinal injury (shown in Figure 1 below) have satisfactory resuscitation, the primary treatment task is to prevent further damage to the damaged spinal cord and protect normal spinal cord tissue (Eiber et al. 2016). Meanwhile, a key link is to restore spine sequence and stabilize the spine. In terms of treatment, drug therapy is the most critical link to lower spinal cord damage level (Ma et al. 2017). This study is to observe the short-term efficacy of methylprednisolone pulse therapy in patients with acute spinal cord injury. The main purpose is to provide valuable guidance for its clinical treatment, with report contents shown as follows.

Figure 1. Imaging picture of acute spinal cord injury

II Data and Methods

The study was conducted in 200 patients definitely diagnosed with acute spinal cord injury in our hospital from January 2016 to October 2018. The criteria for inclusion and exclusion were: the duration from injury to admission is below 8 h (inclusive); MRI results clearly show spinal cord signal changes. The result of the imaging examination is shown in Figure 2 below.

Figure 2. Examination picture of the patient with acute spinal cord injury

By randomized grouping model, the patients were divided into study group and reference group, with 100 cases in both groups. In the study group, there were 56 males and 44 females, aged between 20 and 70 (48.9±3.1) years old; in the reference group, there were 58 males and 42 females, aged 22 and 72 (50.6 ± 3.9) years old. Comparison of relevant data of the two groups had comparability, $p>0.05$.

Dexamethasone treatment was performed on patients in the reference group, that is, intravenous infusion of dexamethasone 10-20 mg for one week. Patients in the study group underwent methylprednisolone pulse therapy, which strictly followed the high-dose methylprednisolone pulse treatment regimen recommended by the National American Spinal Cord Injury Society (NASCIS). The first dose was 30 mg/kg. Venous instillation was completed within 15 minutes, and continuous intravenous infusion of 5.4 mg / (kg•h) was performed for 23 h after a 45-minute interval. For the patients in both groups, intravenous drip infusion of 250 mL 20% mannitol was performed every eight hours. Meanwhile, proton pump inhibitors or H2 receptor inhibitor was adopted to actively prevent and control stress ulcer problems.

The short-term efficacy of the two groups was statistically compared. The evaluation indexes involved the time for muscle strength improvement of paralytic limb by 2 levels, time for unitary recovery, time for leaving the sickbed, including four criteria of recovery, markedness, effectiveness and ineffectiveness. Where, patient diagnosed with paralysis is considered as recovered if independent walking is possible with good fecal and urinary function (Jiang et al. 2016); the treatment is marked if the paralytic patient can walk when holding object; the treatment is effective if muscle strength and bladder function have improved after treatment, but independent walk or urination is impossible (Shah et al. 2017); the treatment is ineffective if there is no change before and after treatment or even death. The total effective rate is cure rate plus marked effective rate. At the same time, the patient's sensory function and exercise score before and after treatment were counted, and the complications were recorded.

III Results

As shown in Table 1 below, observation of overall treatment effectiveness reveals more significant advantages of the study group than the reference group, $p<0.05$, statistically significant.

Table 1. Comparison of the overall treatment effectiveness between the two groups [n(%)]

Group	Recovery	Markedness	Effectiveness	Ineffectiveness	Total effective rate
Study group (n=100)	56	40	4	0	96 (96.00)
Reference group (n=100)	30	52	16	2	82 (82.00)
X^2					10.29
p					<0.05

As shown in Table 2 below, comparison of the neurological recovery time of the patients shows shorter recovery time of the study group than the reference group, $p<0.05$.

Table 2. Comparison of neurological recovery time between the two groups ($\bar{x}$ ±s)

Group	Time for muscle strength improvement by two levels (d)	Time for urinary recovery (d)	Time for leaving the sickbed (d)

Study group (n=100)	10.28±3.24	7.04±2.12	15.97±4.58
Reference group (n=100)	24.36±5.06	10.89±3.16	23.05±5.36
t	12.28	15.64	10.27
p	<0.05	<0.05	<0.05

As shown in Table 3 below, after taking different treatment regimens, the follow-up results three months after discharge indicate that the study group has better sensory function and motor score improvement than the reference group, p<0.05.

Table 3. Comparison of sensory function and motor score before and after treatment in both groups ($\bar{x}$ ±s)

Group	sensory function score (point)		motor score (point)	
	Before treatment	3 months after discharge	Before treatment	3 months after discharge
Study group (n=100)	58.70±8.70	75.60±9.31	55.78±10.22	67.98±10.26
Reference group (n=100)	57.68±9.03	65.08±9.36	54.33±11.27	60.26±9.16
t	0.23	9.04	0.14	11.36
p	>0.05	<0.05	>0.05	<0.05

IV Discussion

Acute spinal cord injury is usually caused by a traffic accident or a fall from a high position, which can cause the patient to lose self-care ability in daily living and have sensory disorder, paralysis and so on. Surgical treatment is the main mode, but only the primary mechanical compression can be relieved, and it is not easy to restore secondary neurological deficits (Koshiyama et al. 2017).

Clinical application of glucocorticoids is relatively extensive (Saylan Cevik et al. 2019). Dexamethasone is a typical glucocorticoid with significant anti-inflammatory effects, which can avoid the action of inflammatory mediators, prevent leukocytes from accumulating in blood vessels, and ensure that blood vessels are in a smooth state. However, the treatment needs are not well met owing to its shortcomings of long-term neurological recovery time and large side effects. Methylprednisolone is also a typical representative of glucocorticoid. The mechanism of action is to inhibit lipid peroxidation and improve microcirculation in the injured spinal cord, while inhibiting ischemia after spinal cord injury. It can also reduce tissue ischemia and stabilize the cell membrane by maintaining spinal cord blood supply, reduce the levels of prostaglandins and thromboxane, and

greatly lower the degree of spinal cord edema. NASCIS II proposed that after 8 h of acute spinal cord injury, high-dose methylprednisolone is needed for treatment, which can significantly improve neurological function. However, during the application of this drug, because the dose is far beyond the conventional dose, it can also easily cause common side effects of glucocorticoid drugs, including increased infection risk and increased rate of metabolic diseases.

The results of this study showed that after the implementation of different treatment regimens, the study group had more reliable treatment outcomes than the reference group, and the patients did not have high complication rate with relatively minor side effects during the treatment with methylprednisolone. It shows that methylprednisolone has good safety and effectiveness in the treatment of acute myelitis, which is consistent with the related research results (Wang et al. 2018).

V Conclusion

In summary, Clinical Observation of Short-Term Effect of Methylpre Dnisolone Pulse Therapy on In an oxygen-rich environments Acute Spinal Cord Injury, and can promote rapid recovery of patients with great application value. Methylprednisolone can reduce capillary permeability, improve blood circulation and increase local blood flow volume. Meanwhile, during the treatment, no serious side effects were shown in methylprednisolone pulse therapy, and the small amount of blood sugar increase may concern the combined use of some antibiotics, neuroprotective agents and gastric protection agents during the treatment.

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