

## Research Article

# The effect of electro acupuncture on the wake of coma patients with severe brain trauma

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## Abstract

**Objective:** to observe the effect of electroacupuncture therapy on the awakening of patients with severe cerebral trauma.

**Methods:** from April 2016 to March 2017, 60 coma patients with severe brain injury in our department were randomly divided into two groups, including electro acupuncture treatment group(30 cases) and control group (30 cases), and comparative observation and analysis of the clinical results.

**Results:** the good rate of electro acupuncture treatment group was 73.3%(22/30) and the control group was 40.0% (12/30), and the difference was statistically significant ( $P < 0.05$ ).

**Conclusion:** electro acupuncture therapy has a better effect on the awakening of patients with severe brain trauma.

**key words:** brain injury; coma; electro acupuncture; wake-promoting

Severe brain injury is a common disease of neurosurgery, its prognosis is poor, patients life self-care ability is poor, such as long-term coma, high morbidity and mortality. According to the above condition, clinician had been looking for a better treatment to promote the treatment effect of patients with severe head injury, especially for the wake-promoting, including acupuncture and moxibustion, hyperbaric oxygen, cupping, nutrition, nerve medicine. [1,2] This paper intends to study the effect of electroacupuncture on the method of promoting waken and the influencing factors of prognosis, which is of great practical significance. From April 2016 to March 2017, 60 coma patients with severe craniocerebral trauma were treated with electroacupuncture in our department. The report is as follows.

## Clinical data

### Ethics Approval and Consent to Participate

This research has been approved by the ethics committee of

the Second Hospital affiliated to Nantong University. Informed consent has been obtained and this investigation has been conducted according to the principles expressed in the Declaration of Helsinki. And the authors have obtained written informed consent of all the patients.

Selected cases: 1, Patients with severe brain injury in 6 h after injury, the Glasgow coma scale (Gcs) score was no more than 8; 2, Between 16 and 65 years old; 3, No primary disease in brain; 4, No serious combined injury; 5, The patients with craniocerebral injury, whose lifetime >72 h and in coma station over 7~14 d, were sorted to promote waken treatment, except for the serious irreversibility of the brain stem; 6, At 5~10 d after the stable condition, the patient was still in a coma. The treatment group and control group were randomly divided into two groups. After grouping, the clinical data of the two groups were not statistically significant ( $P > 0.05$ ).

## Treatment

### The control group

The use of conventional treatment, including the operation of emergency surgical treatment of patients with severe brain

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trauma to save their lives; Maintain the patient's vital signs and internal environment stability; The use of phenytoin sodium and barbiturate drugs; Nutrition support; High pressure oxygen; The treatment of complications was treated with dehydration, anti-infection, and neurotrophic agents.

### The treatment group

On the basis of routine treatment, we use electroacupuncture assisted therapy. Take Shuigou Point, Neiguan Point, Laogong acupoint, Shenmen (H 7), ten xuan acupoint, sanyinjiao (sp6), Yongquan acupoint, according to the dysfunction assisted by Quchi (LI 11), Waiguan point, point li 10, Zusanli point, Hegu acupoint. Some point, such as Neiguan Point, Laogong acupoint connected by type G6805.2 cupping therapy apparatus, with 8~13 Hz frequency, continuous wave, retaining needle for 30 min. 1 time a day, 10 times a course.

## Results

### Efficacy criteria

Using the GOS scoring method by Jennett et al., the results of the evaluation were evaluated in one month later after the injury.

#### Including five stages

1. Good: mind clear, verbal and limb function return to normal.
2. Middle: mind clear, life can be self-reliant.
3. Heavy: mind clear, Take care by others.
4. Plant survival: long-term coma, cortical or deoencephally.
5. Death.

### Treatment effect

As can be seen from table 1, the difference between the two groups is statistically significant ( $P < 0.05$ ). The treatment group was significantly better than the control group. It is suggested that the adjuvant therapy is effective for severe brain injury.

## Discussion

Existing studies have shown that [2, 3] electroacupuncture protects brain tissue by reducing  $Ca^{2+}$  internal flow of nerve cells in rats with brain injury. Electric acupuncture can regulate gene expression of the BCL-2 (protect nerve cells of B cell lymphoma) and bax (antagonistic protein of BCL-2 which damages nerve cells), reduce  $Ca^{2+}$  flow inside nerve cells, thus achieve the goal of neural protection.

**Table 1:** comparison of prognosis of the two groups.

| Grop            | N  | Good | Middle | Heavy | Plant survival | Death |
|-----------------|----|------|--------|-------|----------------|-------|
| treatment group | 30 | 22   | 4      | 0     | 1              | 3     |
| control group   | 30 | 12   | 6      | 5     | 4              | 3     |

Note: compared with the control group,  $P < 0.01$ .

Neiguan points is the eight confluent acupoints connecting the eight extra channels, can increase cerebral perfusion, improve the brain circulation, and restore the mind by acupuncture; Shuigou Point can be switched on brain wake up, improve cerebral blood oxygen supply, adjust the catecholamine levels, make the sympathetic nerve in a relatively stable state by acupuncture; Sanyinjiao (sp6) has the effect of nourishing the kidney and can promote the metabolism and repair of the brain tissue, so that the brain can wake up. The physiological function of the Yongquan acupoint is adjusted. These acupoint are used together to promote the metabolism, repair of the brain tissue, and celebrate brain wake-promoting. Acupuncture treatment can be directly to dilate blood vessels, increase oxygen and blood supply of ischemic area, at the same time acupuncture will activate a network of brain stem function, increase the excitability of nerve cell, make in the inhibition of brain cells to wake up. Acupuncture can strengthen drug intracranial pressure effect, improve the flow of blood to the brain tissue, and to some extent can inhibit the formation of free radicals and chain reaction, and therefore can have the effect of regulating channels, balance of Yin and Yang, promote the recovery of nerve cell structure and function, so as to achieve therapeutic purposes.

Electrical stimulation can cause changes in the level of neurotransmitter in the brain, which is beneficial to the release of cerebral cortex inhibition, which is of great significance for the awakening of coma patients. [4, 5] Electrical stimulation can also help improve the cerebral blood flow in coma patients and promote the recovery of brain function. [5, 6]

## Conclusion

Electro acupuncture therapy has a better effect on the awakening of patients with severe brain trauma.

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