Analysis of clinical application value of early tracheotomy on severe craniocerebral trauma patients.

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Abstract

Objective: To treat the severe craniocerebral trauma patients by using early tracheotomy and explore the influences on clinical effects and relevant indexes.

Methods: 76 severe craniocerebral trauma patients in our hospital were randomly divided into the control group and the observation group, each 38 cases. The control group was given tracheotomy after 24 h, the observation group was given tracheotomy within 24 h. Compared clinical effects, neurological deficit score improvement, pulmonary infection and so on of patients in two groups before and after treatment.

Results: Compared with the control group, effective rate of patients in the observation group increased obviously after treatment, there were statistical differences (P<0.05). Compared with the control group after the treatment, its neurological deficit score decreased obviously, there were statistical differences (P<0.05). Pulmonary infection rate in the treatment group lower than the control group obviously, there were statistical differences (P<0.05).

Conclusion: The clinical effects of early tracheotomy on severe craniocerebral trauma patients are obvious. It has wide application value in clinic, which needs further application.

Introduction

Severe craniocerebral injury is one of common diseases in clinic in hospital. Onset reasons of severe craniocerebral injury are complicated. Its incidence rate increases greatly every year. Its onset is rapid. Conditions are dangerous. Complications are multiple. Severe consciousness dysfunction, respiratory failure, bulbar paralysis etc. occur in clinic. Respiratory failure and pulmonary infection are the common complications of severe craniocerebral injury. Patients will have pulmonary infection because of respiratory central neurological injury of brain. The main reasons are airway exclusive secretion dysfunction caused by hospital acquired pneumonia and cough reflex attenuation [1,2]. It will aggravate disease conditions, prolong treatment time. Disability rate and death rate of patients are relatively high, which cause severe influences on prognosis of patients. Therefore, keeping airway smooth is the key point during treatment. At present, clinic often adopt early tracheotomy, which can improve ventilation of patients

effectively, correct hyoxemia, prevent pulmonary infection, guarantee smooth oxygen supply of heart and brain, further promote recovery of neurological function. Severe craniocerebral trauma patients were given early tracheotomy, it will lower pulmonary infection rate, guarantee respiratory smooth, avoid hyoxemia and brain anoxia, lower death rate [3]. Guaranteeing respiratory airway smooth of severe craniocerebral injury patients to lower life risk, complication incidence rate, improve its prognosis. Therefore, this study is to observe the clinical effects of earl tracheotomy on severe craniocerebral injury.

Materials and Methods

General data

It was diagnosed as severe craniocerebral trauma according to clinical data. 76 cases included after screening. All admitted patients met diagnostic criteria, of which, there were 37 males

and 39 females. After screening, they were randomly divided into the control group and the treatment group. The age of all patients was from 61.0 to 76 y old. The average age in the control group was 65.2 ± 6.4 y old. The observation group was 67.0 ± 6.3 y old. It has been approved by ethics committee in hospital and signed on consent form. Comparison of general data of sex, age etc. between groups, P>0.05, there were statistical differences. It had comparability.

Treatment methods

The conditions of all admitted patients in the control group and the observation group were given close observation, routine therapies of oxygen intake, cranial pressure lowering, anti-infection, nerve nutrition, nutrition support etc. timely. Pulmonary infection patients were given phlegm cultivation, and selected sensitive anti-infection according to drug sensitive test result. The treatment group was given tracheotomy after 24 h of trauma. The control group was given tracheotomy after trauma. The patients selected supine position when they were given tracheotomy. Patients took pyposokinesis position as much as possible. Trachea should be close to skin. After local anesthesia, selecting the part from lower part of cervical medial cricoid cartilage to upper part of thorax to cut a longitudinal incision, cut open skin and subcutaneous tissue layer by layer. Cutting open trachea after separation of tissue before trachea. Cannula was intubated into trachea. Trauma management was the last procedure. Symptoms improvement conditions of patients in the observation group and the control group during whole treatment process were observed [4,5].

Evaluation indexes

According to evaluation criteria of curative judgment, the effects were divided into three grades, they were excellent, effective, and ineffective [4]. Excellent: The symptoms of patients disappear after treatment, examination results were normal; effective: The symptoms of patients disappear after treatment partly, examination results decreased significantly; ineffective: The symptoms of patients not be alleviated even aggravated. Clinical treatment total effective rate=(excellent number+effective number)/total numbers × 100%.

Statistical management methods

Using SPSS 14.0 to do data comparison after treatment in two groups with different treatments methods. Using t-test, measurement data was represented by $\bar{x} ± s$. Enumeration data represented by (%) when using χ^2 test. P<0.05, there were significant statistical differences.

Results

Comparison of clinical effects

Compared with the control group, total effective rate of patients in the treatment group after treatment reached to 94.7%, increased 23.6%. Total effective rate in the treatment

group was relatively high. There were significant differences in total effective rate between groups (P <0.05, Table 1).

Table 1. Comparison of clinical effects (n).

Group	n	Excellent number	Effective number	Ineffective number	Total effective rate (%)
The treatment group	38	21	15	2	94.7[*]
The control group	38	17	10	11	71.1

Comparison of neurological function in two groups

Neurological function injury level of patients seen in Table 2. The control group before treatment compared with the treatment group, there were no obvious differences in neurological function defect scores between two groups (P>0.05). Compared with the control group after treatment, its neurological function defect scores decreased obviously, there were statistical differences (P<0.05).

Table 2. Comparison of neurological function injury conditions in two groups. Note: [*]meant P<0.05, there were significant differences between two groups after treatment.

Group	n	Before treatment	After treatment
Treatment group	38	72.27 ± 10.82	33.83 ± 4.50
The control group	38	73.11 ± 9.95	46.44 ± 5.26
P			<0.05

Adverse conditions after surgery

Total effective cases were included into this evaluation system after treatment, compared with the control group, incidence rate of adverse conditions (including wound healing, epilepsy, infection and hydrops) decreased obviously, there were statistical differences between groups (P < 0.05, Table 3).

Table 3. Adverse reactions after surgery.

Group	n	Incomplete wound healing	Epilepsy	Local infection	Hydrops	Incidence rate (%)
The treatment group	38	1	0	1	0	5.26
The control group	38	2	1	5	1	23.68

Discussion

Severe craniocerebral trauma as a kind of acute traumatic common diseases of neurological surgery department, often accompanies with increased acute craniocerebral pressure, it also as a kind of common symptoms after craniocerebral trauma. If craniocerebral injury patients are not given treatment timely, it will cause cerebral blood circulation dysfunction,

decreased cerebral perfusion pressure, insufficient cerebral blood circulation, cerebral compression, brain shift, cerebral metabolic dysfunction, even cerebral hernia etc., it will induce respiratory failure, finally death. Improper control will cause cerebral swelling, consciousness dysfunction, degeneration and atrophy of neurological tissue, which will induce cerebral diseases, threat health of patients [6-8]. Craniocerebral injury will cause inducing factors, such as condition degree, physiological and pathological factors and others. It not only needs to monitor hematoma and cerebral edema in intracrania, also has significant value on treatment and prognosis evaluation. In clinic, its condition is rapid, complications are multiple, treatment is relatively difficult, disability rate and death rate are really high, which threat life safety of patients severely [9,10]. Therefore, treatment methods are the key of solution. Tracheotomy as a kind of relatively simple minimal-invasive tracheotomy has been applied to the clinic widely. Tracheotomy is a kind of surgery that can cut open trachea in neck, then putting metal trachea cannula into it, which will lower anatomical dead cavity of patients, enhance ventilation of alveoli properly, reduce airway obstruction, further improve hypoxia of various organs and tissue of whole body.

Compared with the control group after treatment, effective rate of patients in the treatment group increase obviously. Curative effects are well in the treatment group after treatment, there are statistical differences between groups (P<0.05). Neurological function defect scores of patients in the treatment group after treatment decrease obviously comparing with the control group, there are significant differences (P<0.05). Adverse reaction rate decrease obviously after treatment, it shows early tracheotomy has its advantages in improving severe craniocerebral injury, has positive guidance.

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