Clinical observation of ultra-early minimally invasive treatment of intraventricular hemorrhage

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Abstract: Objective To investigate the application value of ultra-early minimally invasive treatment of intraventricular hemorrhage. **Methods** From April 2009 to January 2012, 26 cases of patients with intraventricular hemorrhage were treated by implementing continuous external drainage ventricle plus intraventricular infusion of urokinase therapy (observation group) within seven hours. 30 patients served as controls (control group) in the corresponding period who were not implemented with ultra-early minimally invasive treatment. **Results** The patients were given drainage, hematoma disappearance time of (7.2 ± 0.5) days in the control group were given postoperatively irrigation and drainage, hematoma elimination time (8.6 ± 1.2) days, the two groups had significantly different data comparison (t = 11.2122, P <0.05), was statistically significant. After 6 months of follow-up observation, observation group after treatment, 5 cases of grade Ⅰ, Ⅱ grade 12 cases, Ⅲ grade 7 cases, Ⅳ grade 1 cases, Ⅴ grade 1 case. The control group after treatment, six cases of grade Ⅰ, Ⅱ grade 12 cases, Ⅲ grade 7 cases, Ⅳ grade 4 cases, Ⅴ grade 1 case. Observation group and control group the proportion of grade Ⅳ statistically significant difference (X2 = 0.23, P <0.05). **Conclusions** The lateral ventricle drainage early intraventricular infusion of urokinase plus intraventricular hemorrhage is simple, safe and effective, no special contraindications, worthy of clinical application.

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Key words: cerebral hemorrhage; drainage; urokinase; puncture

Intraventricular hemorrhage mainly divided into primary and secondary cerebral hemorrhage cerebral hemorrhage are two secondary intraventricular hemorrhage more common. Intraventricular hemorrhage, acute onset, rapid progression, and its dangerous disease and high mortality. Intraventricular hemorrhage mortality has been reported as high as 31.06% ~ 76.37% [1]. Our hospital from April 2009 to January 2012 were treated 26 cases of patients with intraventricular hemorrhage, all patients were treated with ultra-early intracerebroventricular continuous external drainage and secondary intraventricular infusion of urokinase therapy, the treatment effect is significant, and now the results of treatment summarized as follows:

1 Materials and Methods

1.1 General information: The hospital from April 2009 to January 2012 were treated 26 patients with intraventricular hemorrhage, 16 males and 10 females; aged 38 to 81 years, mean 57.45 years old. By CT scan showed a single ventricle hemorrhage 11 cases, 15 cases of double lateral internal bleeding. Patients with early existence, headache, dizziness, nausea, vomiting and other clinical manifestations. Of which 10 patients had superficial coma, 11 cases of patients with moderate coma and 5 patients had deep coma. Onset of this group of patients to surgery interval of 2 to 7 hours. And select the corresponding period not implemented very early invasive treatment of 30 patients served as controls (control group). Basic information on two groups of patients showed no significant difference (P> 0.05), statistically insignificant, comparable.

1.2 Procedures: First local anesthesia, lateral anterior horn tube to be punctured, blood-side selection of 2 ~ 4mm diameter of the silicone tube or rubber drainage tubes, the drainage tube fixed to the scalp pulled through the tunnel, above the ventricles Level 10 ~ 15 cm drainage measures is carried out in vitro. Intraventricular hemorrhage whole existence and cast to shape, must catheter in the bilateral anterior horn of the lateral ventricle, intraventricular hemorrhage, you can not cast shaped tube with unilateral way. In the first day after surgery, the use of urokinase 2 ~ 50 000 U, while adding saline, alternating with unilateral or bilateral drainage tube through the simultaneous injection after injection drainage tube occlusion release after 1 hour, 1 or 2 times / day, once every 3 to 5 days. If the patient in serious condition after the first two days trip in subarachnoid puncture BCSF release as much as possible, and then washed with saline, 1 day, puncture ventricular drainage tube to give occlusion, continued an hour later Open clipping, etc. appear brighter state CSF puncture suspended. The patients ventricular drainage for 7 to 14 days 11 cases of patients, 20 days for patients to one case. 30 patients in the control group did not implement ultra-early minimally invasive surgery, given conventional craniotomy to remove the hematoma treatment.

1.3 The evaluation based on the prognosis of

cerebral hemorrhage grading (ADL classification) [2] assessed the efficacy: Ⅰ level: basic cure bleeding, brain function was restored; Ⅱ levels: treatment effect, the patient can take care of themselves; Ⅲ grade: condition improved, patients need to help others living or bedridden; Ⅳ stage: the patient is unconscious vegetative state; Ⅴ grade: The patient died.

1.4 Statistical analysis of the data in this study to take SPSS19.0 statistical software for data analysis and processing, measurement data taken t test, count data taken X2 inspection, P <0.05, statistically significant.

2 Results

2.1 Comparison of surgical patients in observation group given drainage, hematoma disappeared for 3 to 14 days, the average time was (7.2 ±0.5) days in the control group of patients given irrigation and drainage, hematoma elimination time is 6 to 16 days, with an average time is (8.6 ±1.2) days, two groups of data comparison with significant differences (t = 11.2122, P <0.05), was statistically significant.

2.2 Comparison of clinical efficacy through the two groups of patients after 6 months of follow-up observation, observation group after treatment, 5 cases of grade Ⅰ, Ⅱ grade 12 cases, Ⅲ grade 7 cases, Ⅳ grade 1 cases, Ⅴ grade 1 case. The control group after treatment, six cases of grade Ⅰ, Ⅱ grade 12 cases, Ⅲ grade 7 cases, Ⅳ grade 4 cases, Ⅴ grade 1 case. Observation group and control group compared the proportion of grade Ⅳ was significantly (P <0.05). Detail in Table 1 below:

Table 1. Patients followed up for 6 months after clinical treatment

Group	Case	Ⅰ grade	Ⅱ grade	Ⅲ grade	Ⅳ grade	Ⅴ grade
Observation group	26	5(19.2)	12(46.2)	7(27.0)	1(3.8)	1(3.8)
Control group	30	6(20.0)	12(40)	7(23.3)	4(13.4)*	1(3.3)

Note: compared with the observation group,(statistically significance on* P <0.05)

3 Discussion

Intraventricular hemorrhage in high morbidity and mortality, especially in two or more and the whole of the ventricular system intraventricular hemorrhage, acute onset and rapid increase deterioration, is a medical emergency. Studies have reported that patients with cerebral hemorrhage after hemorrhage, 6 to 7 hours after hemorrhage oppression around the brain tissue can lead to cerebral edema, brain damage and even appeared uncertain extent of necrosis, prolonged illness is getting heavier and heavier. All should try to clear early cerebral hemorrhage intraventricular hemorrhage, increased intracranial pressure to reduce, in order to avoid the emergence of obstructive hydrocephalus, to minimize secondary damage, promptly reply cerebrospinal fluid pathway normal cycle operation and timely control disease progression, pay attention to timeliness is a key step in effective treatment [3].

Ultra-early minimally invasive surgical treatment of intraventricular hemorrhage intraventricular hemorrhage is within 7 hours after the early relieve pressure on the brain hematoma rapidly reduce intracranial pressure, improve the cure rate and quality of life of patients [4]. Urokinase is a thrombolytic agent, a solvent may be quickly and efficiently thrombus, accelerate the decomposition of fibrin, the re-activated plasminogen, no side effects on brain tissue, without damage. By intraventricular infusion of urokinase can effectively remove intraventricular hematoma can also be cleared as soon as intraventricular hemorrhage, accelerate the clearing of the brain and intraventricular hemorrhage.

Not only can the rapid removal of intraventricular hemorrhage, also clear hematoma within the brain parenchyma, thus urokinase can accelerate blood in the ventricles and brain removal.

Lateral ventricle during our ultra-early treatment of both external drainage intraventricular infusion of urokinase therapy plus intraventricular hemorrhage, and for some patients assisted lumbar puncture, the patient BCSF release, can effectively improve the hematoma and hydrocephalus on the brain oppression, significant clinical effect, effectively alleviate the patient's condition. Surgical experience: (1) using the ultra-early surgery, if signs of cerebral edema in patients with mild or no brain edema, hematoma should be removed as soon as possible in order to avoid the occurrence of cerebral edema; (2) If the discovery is due to hematoma herniation occurs should be removed as soon as possible, reduce patient morbidity and mortality; (3) intraventricular hematoma timely removal simultaneous ventricular drainage of cerebrospinal fluid in patients with cerebral circulatory disorders can lift as soon as possible; (4) ultra-early surgery to stop bleeding in patients in a timely manner , to prevent re-bleeding and hematoma becomes larger, can effectively improve awareness and nerve

function recovery after surgery, and the other after surgery urokinase in the effective prevention of blood clots blocking the drainage pipe but can also accelerate the liquefaction of intraventricular hemorrhage drainage.

In summary, the application of ultra-early minimally invasive way to treat patients with intraventricular hemorrhage, with obvious surgical indications for patients judged to be timely and accurate, once confirmed in a timely manner to carry out ultra-early minimally invasive treatment; choose bleeding side lateral ventricle rake angle tube is the best choice, this catheter convenient way to operate, but some remain in the possession of a long lateral ventricle, draining surface area has been increased to avoid drainage tube twists and postoperative management is also very convenient, ventricular drainage tube height is higher than the level that allows the full flush of cerebrospinal fluid hematoma, and the drainage tube is not easy to block; pinch can not be too mechanical, the pinch occurs during intracranial pressure, drainage tube in time to open and maintain drainage patency; urokinase single dose of 2 to 50 000 U same time the application carefully, after seven hours of bleeding in patients using the best; drainage of cerebrospinal fluid in the discovery colorless and transparent, the CT scan shows no hemorrhage, drainage tube can be clamped on, 24 hours after the breakdown observed in patients without symptoms of increased intracranial pressure may be extubation. Patients pinch significantly increased intracranial pressure can be taken to clear the hydrocephalus shunt surgery, then disconnect the external drainage tube.

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