Case Report

Spontaneous epidural hematoma complicated by systemic lupus erythematosus: one case report

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Abstract: In this study, an unusual case of intracranial hemorrhage is presented. It is spontaneous epidural hemorrhage, the complication of Systemic Lupus Erythematosus. In this case, a 29-year-old female presented with vomiting and continuous headache and computed tomography revealed the right frontal parietal and temporal epidural hematoma. The patient had been diagnosed SLE one year ago. Together, these observations indicated that the patient needs a surgery to reduce the intracranial pressure. Following surgery, the symptoms were eradicated but 7 hours later after surgery the review head CT showed that left epidural hemorrhage. According to the surgery index, we decided to give the patient non-operative treatment and the intracranial hemorrhage was under control. We thought this was the surgery complication but it’s not. On the eighth day after surgery, the patient had a sudden headache with vomiting again and head CT revealed that left epidural hemorrhage. But this time we just gave non-operative treatment and especially added the dose of glucocorticosteroid. 12 days later, the patient’s symptoms were under control and she was discharged from hospital. We also reviewed the literature about spontaneous epidural hemorrhage and bilateral epidural hematomas.

Keywords: Spontaneous epidural hematoma, systemic lupus erythematosus, treatment

Introduction

Epidural hematoma is a common type of hematoma often located the supratentorial hemispheres convex between the skull inside plate and the dura mater. Population-based studies show that up to 30% of traumatic intracranial hematomas are caused by epidural hemorrhage. 90% of the epidural hematomas are related with linear skull fractures because fractures or transient deformations of skull can tear dural arteries or venous sinus in fossa to cause bleeding or fracture diploe bleeding and at this time CT performed as a wide range of fusiformis high density. However, it is extremely rare for spontaneous bilateral epidural intracranial hemorrhage in SLE which may be related to immune mediated vasculitis. Whether an acute epidural hematoma patient were given a surgery or not, they all should receive a timely and reasonable non-operative treatment especially the patients accompanied with severe brain primary injury and (or) secondary brain damage. Written informed consent was obtained from the patient.

Case presentation

A 29-year-old female patient visited the Affiliated Hospital of Inner Mongolia University for Nationalities. The female who presented with a two-day history of sudden headache and vomiting was admitted to the Department of Neurosurgery. Physical examination showed the butterfly erythema on her face and mouth ulcer and no head trauma was found, but there was no prominent abnormality in neurological examination. The patient and her family denied any trauma history. The CT was performed when the patient just was admitted to the hospital and the head CT showed the right frontal temporal-parietal epidural hematoma. One year ago, the patient was diagnosed with systemic lupus erythematosus and from then on she has been received the treatment of oral medicine.
After admission, the patient took some routine checks such as routine blood test, blood clotting inspection, etc, and the results were all within normal range. These observations indicated that the patient could be given the craniotomy surgery that cleaning up epidural hematoma under general anesthesia. In the process of surgery, we didn’t find any skull fracture line and congenital structure deformity and about 60ml blood was removed. Following the surgery, we gave the patient antibiotics to prevent infection, nutrition, glucocorticoid and other supporting treatments. Seven hours later, we made a review head CT showed that right frontal temporal-parietal epidural hematoma was completely removed, but left temporal-parietal epidural hematoma was discovered about 20 ml. We didn’t give the patient a second surgery instead of non-operation treatment especially large dose of corticosteroid and other treatments. Meanwhile, experimental tests showed that occult blood in urine +2, urine protein +2; C3: 0.7 g/l; lg M: 0.4 g/l; high-sensitivity C-reactive protein: 26.34 mg/l; 24-hour urinary protein excretion 4053.6 mg/l. During the period, the patient’s uncomfortable feeling had reduced significantly and the dose of glucocorticoid was also gradually decreased to the normal prior-surgery. But patient headache was aggravated on the eighth day after surgery. So we had to review the head CT which showed that epidural hematoma on the left side was enlarged comparing with that seven hour after surgery. Like last time, we taken non-operation treatment such as increasing glucocorticoid dosage. Interestingly, the symptoms were gradually improved and till twentieth day after surgery the third review head CT indicted that the area of high density became smaller than seven hour after surgery. At last, the patient didn’t complain headache or other uncomfortable feeling and was discharged from hospital.

Discussion

In our body, the immune system struggles between responding to foreign antigens and tolerating self-antigens to delicately keep tissue homeostasis every day. If self-tolerance is broken, the development of autoimmunity can be the consequence such as systemic lupus erythematosus (SLE). SLE is considered to be a multifactorial disease comprising various processes in a harmful way and cell types acting abnormally [1]. In SLE, the neurological damage of nervous system is a serious complication.

Cerebral vascular pathological changes caused by development of autoimmunity in SLE patients included cerebral thrombosis, cerebral infarction and cerebral hemorrhage which were serious threat to the lives in SLE [2]. Ischemic cerebrovascular disease is common in clinic, but meanwhile the case complicated by intracranial hemorrhage is rare. Although
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there are reports of epidural hematoma at home and abroad, there are no reports about bilateral epidural hematoma in SLE patients (see Figure 1).

The patient in this case was in accordance with the SLE diagnostic criteria of the American College of Rheumatism in 1997. Previous research revealed that cerebral vasculitis in SLE had been related with self-immune and within it the complement activation played an important role in the process. The detail angiogenesis mechanisms involved complement activation, immune complex deposition in the vascular wall, and these substances would increase the permeability of blood brain barrier and then the vascular endothelial cells were stimulated by inflammatory cytokines or their own antibody [3]. All of these would lead proteins or cells to enter the central nervous system to cause immune damage such as cerebral cortex atrophy, severe infarction, hemorrhage, ischemic cerebral infarction and multiple sclerosis in many small intracranial arteries and veins [1].

In our case, at first, the patients occurred right intracranial vascular hemorrhage, then left bleeding, taking in account the rapid change in the case, as well as patients with the original disease, and when increasing the dose of corticosteroids, the patient’s condition had been effectively controlled (see Figure 2). This showed that bilateral intracranial vessels were very fragile, the patient was not old and no other risk factors for arterial degeneration, so we thought that due to the failure control for SLE such as facial butterfly-shaped erythema and oral ulcers occurring repeatedly and intracranial vessels invaded by inflammatory factors. At last the blood vessels ruptured.

The treatment of SLE with epidural hematoma, if the patient is in line with the conditions of surgery, in principle, the patient must be given epidural hematoma removal surgery. In our case, due to prior-surgery patients had taken a long-term use of glucocorticoid hormone (see Figures 2, 3). Therefore, we increased doses of hormones before the preparation in order to prevent hormone crisis. Of course, if the patient does not meet the requirements of surgery, the doctor must pay more attention to the changes of patient’s condition, such as patient’s consciousness, the headache, limb numbness, etc. In short, we must be alert to the possibility of intracranial hematoma enlarging in patients given non-operation treatment.

We believe that besides the surgery treatment for the patients with epidural hemorrhage caused by SLE on the acute phase, especially we have to add corticosteroids dosage, just like the case which is the best evidence of the treatment of hematoma enlargement by increasing

Figure 3. Headache symptom was worsened seven days after surgery, left frontotemporal hematoma was increased compared with that before surgery in review seven days after surgery.

Figure 4. Hematoma becomes equal density 20 days after surgery.
corticosteroids dosage. In addition, patients with SLE complicated with epidural hemorrhage, CT high density region decreased faster than the traumatic epidural hematoma, in our case only 19 days was the patient discharged from our hospital (see Figure 4).

The patient is lack of examination in the aspect of vascular pathology, and the patient’s condition changes will be followed up.

Conclusion

In conclusion, to treat spontaneous epidural hemorrhage caused by SLE whether surgery or non-operation treatment, appropriately increasing the corticosteroid dosage play an important role for prognosis.

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Disclosure of conflict of interest

None.

Abbreviations

CT, Computed tomography; Head CT, Computed tomography scan on Head; SLE, Systemic Lupus Erythematosus; C3, Complement 3; IgM, Immunoglobulin M.

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