

Management of Post-nephrectomy Delirium in Patients with Traumatic Renal Rupture: A Case Report

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Abstract

Background

Postoperative delirium is a typical impairment in cognition, especially for those older patients who suffered from surgery, characterized by an acute change in confusion and inattention. Due to the lack of reliable predictive markers of postoperative delirium, The onset time of postoperative delirium is unpredictable, and the treatment of postoperative delirium is brutal.

Case presentation

The case is of a 65-years-old man with kidney rupture, multiple fractures of the ninth rib, and diabetes suffered from nephrectomy and gastrointestinal decompression. Then he developed delirium 59 hours after surgery. By treating them with benzodiazepines (midazolam + diazepam) actively and so on, he recovered well and was discharged from the hospital.

Conclusion

A combination medication strategy of midazolam and diazepam effectively treated postoperative delirium after nephrectomy due to traumatic renal rupture. Besides medication, our case highlights the importance of care and psychological guidance in postoperative delirium.

Keywords: Postoperative Delirium, Nephrectomy, Traumatic Renal Rupture, Midazolam, Diazepam

Introduction

Postoperative delirium (POD) is the most common surgical complication in older adults, occurring in 15 % to 25 % of patients following elective major surgery [1]. Besides, POD is a dramatic change in mental status that affects more than 7 million hospitalized patients in the U.S each year and also increases the probability that a patient will be hospitalized for 30 days after discharge [2]. There are

few reports about postoperative delirium after nephrectomy for traumatic renal rupture. This case study discusses the case of traumatic renal rupture and reviews the literature. Therefore, after obtaining the patient's authorization and consent, we publish his clinical data to provide a reference for medical workers.

Case presentation

Patient Chief Complaint and Past History

A 66-year-old male who fell from a boat 3 hours ago ruptured his kidney, with a history of diabetes, no history of hypertension, coronary heart disease, chronic obstructive pulmonary disease, asthma, and no history of drug and food allergies.

Physical Examination

The patient was conscious when he was admitted to the hospital. The skin on the left waist is local redness and swelling with tenderness. Catheterization showed that red urine flowed from the urinary catheter, about 200 ml.

Accessory Examination

An abdominal CT scan showed the left kidney rupture and the left ninth rib fracture.

Healing Process

The patient was admitted to the hospital for a left-sided nephrectomy and was given blood transfusions during the operation. The patient developed delirium 59 hours after the procedure and regained consciousness 127 hours after the operation. During the POD process,

the patient returned to a conscious state after changing quiet wards, proper restraint, adjusting sleep time, and drug sedation.

Diagnostic Assessment

The laboratory test results when the patient was in the initial and final stage of POD are shown in **Table 1**.

The result of the MRI of the brain when the patient is in the state of POD is shown in **Figure 1**.

Table 1 . The laboratory test results when the patient was in the initial and final stage of POD

	Before the POD	After the POD
Hemoglobin	78 g/L	72 g/L
RBC count	2.50×10 ¹² /L	2.39×10 ¹² /L
Platelets	123×10 ⁹ /L	226×10 ⁹ /L
Plasma prothrombin time	11.8 s	12.40 s
International Normalized Ratio	1.02	1.03
D-dimer assay	3860 ng/ml	7250 ng/ml
Serum sodium	139 mmol/L	139 mmol/L
Serum potassium	3.89 mmol/L	3.68 mmol/L
Serum calcium	2.03 mmol/L	1.95 mmol/L
serum creatinine	80 umol/L	67 umol/L

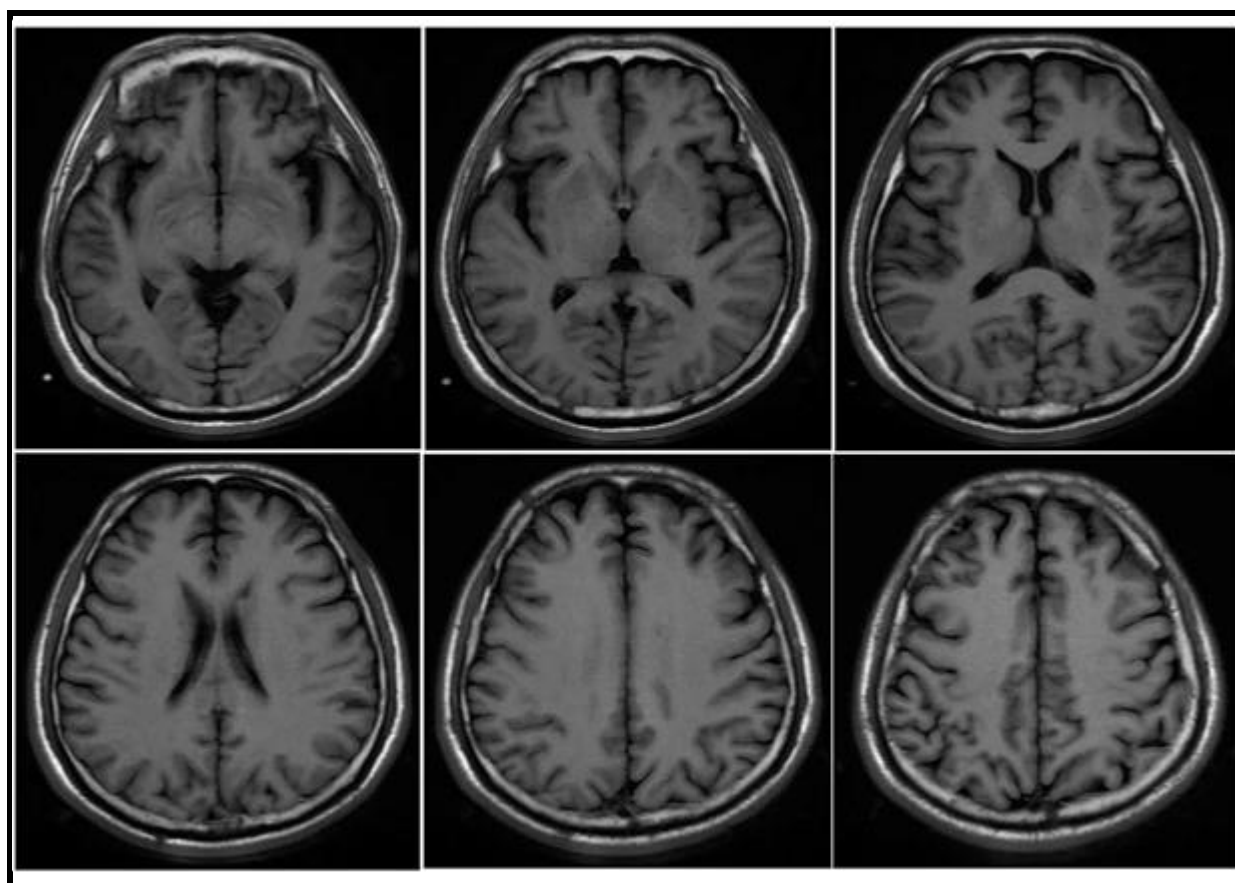


Figure 1: The result of MRI in brain when the patient in the state of POD

Local brain tissue in the left basal ganglia was softened with gliosis, and there were a few lacunar ischemic foci in the right frontal lobe and bilateral occipital lobe.

The Detection Method of POD

The confusion assessment method (CAM) was used to detect patients with POD [3].

Interventions and Follow-Up

The doctor told the patient that if he felt unwell after being discharged from the hospital, he should return to the hospital immediately for further treatment. At the 6-month follow-up, the patient recovered well.

Discussion

POD is a common medical problem treated as a complication due to unrecognized, misdiagnosed, and undertreated by doctors or nurses[4]. Therefore, it was essential to identify and assess risk factors early in the treatment of POD.

There were risk factors associated with POD, such as levels of perceived stress [5], Postoperative inflammatory reaction [6], levels of postoperative pain[7], a history of cerebrovascular disease, low Hasegawa Dementia Scale-Revised score < 20 points, low serum albumin level < 3.5 g/dL and long surgery duration >4 h [8]. Besides, there are biomarkers associated with POD, for example, amino acids, melatonin, Interleukin-6 (IL-6), interleukin-8 (IL-8), interleukin-1 (IL-1), interleukin-2 (IL-2), C-reactive protein (CRP), insulin-like growth factor 1, S-100B, apolipoprotein- E (APO-E), cortisol, estradiol, TNF-alpha [9]. However, current articles are enough to predict the risk of POD, but there was not enough evidence to support using any single biomarker as the sole risk of the disease marker for POD [10]. Therefore, care should be the main agenda for POD in further research. Most nurses and doctors in China considered delirium a severe problem, but their cognition of rage was lacking [11]. In Germany, although nurses believed POD and related problems were highly correlated, doctors seem to have limited knowledge of these conditions [12]. Taken together, compared to doctors, nurses are highly concerned about delirium. Therefore, nurses should play a central role in POD coordination and care. If this standard is going to be established, then

Conclusion

Our case reports are unique and informative. We need more evidence to support using any single biomarker as POD's sole risk or disease marker.

Besides, we need more evidence to support the evidence that POD is more likely to occur in patients with only one kidney due to the poor metabolism of anesthetics. Therefore, we should pay attention to the role of care in POD patients. The effectiveness of drug therapy for POD is a difficult question, and more studies are needed to confirm the reliability of the results.

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Statement of Ethics: Approval was received from the Ethics Board of the Hainan Western Central Hospital. The patient has signed

clinical nurses must be educated and authorized to implement nonpharmacological interventions for patients with POD.

The voice of a loved one was an adequate measure of nonpharmacological treatment. A study shows that recording the mother's voice may effectively reduce emergence agitation in children undergoing bilateral eye surgery [13]. Although the result was not statistically significant in our observation that patients were less agitation in the company of their family members.

Besides, some nonpharmacological interventions, such as lower voice thresholds in the morning and higher voice thresholds during the day, are associated with an increased incidence of delirium in the intensive care unit [14]. The duration and frequency of restraint were positively correlated with fever [15]. Patients in a single bedroom take a lower risk of delirium than those in a multi-bedroom [16].

Finally, it has been controversial whether antipsychotic treatment is effective for delirium. There was rare evidence to support the use of antipsychotics for agitation, and anesthesia guidelines recommend avoiding benzodiazepines in older patients[17,18]. However, in our report, a patient with POD was successfully cured with midazolam, and there was no postoperative cognitive decline in the patient at the 6-month follow-up. In the case of excluding individual differences, it is necessary to research the safety and reliability of midazolam in elderly patients with POD.

written informed consent for the publication of this case report and any associated images.

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Author Contribution

Yang Yu, Yingxiu Chen and Zuxuan Gu made contributions to the full management of patients in clinical practice, Wenfeng Zeng contributed in the writing of the manuscript, Weixing Pan contributed to the concept and design. All authors read and approved the final manuscript

Data Availability Statement: The data supporting the results of this article included within the article and its additional files.

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