

LETTER TO THE EDITOR

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Severe liver dysfunction that required transfusion therapy after laparoscopic antireflux surgery

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To the Editor,

We present a case of severe liver dysfunction that required transfusion therapy after laparoscopic antireflux surgery. What is of special interest is that hyperkalemia was observed during operation as a potential precursor of the impairment. To our knowledge, no other similar cases have been reported on the procedure. The patient was a 78-year-old female who underwent laparoscopic antireflux surgery for esophageal hiatal hernia under sevoflurane-remifentanyl-rocuronium general anesthesia. Rectus abdominis sheath block and transversus abdominis plane block were also performed. Her medical history included hypertension, diabetes, and sick sinus syndrome that had been controlled with catheter ablation and administration of bepridil hydrochloride hydrate for 4 years. In preoperative electrocardiogram, sinus bradycardia (47 bpm) was observed. Her preoperative K⁺ level was 4.4 mEq/l. Thirty minutes after the start of surgery, elevated K⁺ (6.3 mEq/l) on arterial blood gas analysis was observed. Therefore, in addition to potassium free fluids and furosemide administrations, glucose-insulin therapy was performed. The K⁺ level decreased to 4.7 mEq/l in 2 h. The total surgery time was 275 min. During the anesthesia, no electrocardiographic abnormalities that can occur due to hyperkalemia (i.e., peaked T-wave, loss of P wave, or wide or deformed QRS) were observed. The minimum heart rate was 53 bpm. Postoperative blood test showed severe hepatic dysfunction (worst values in the first 24 h: K⁺, 5.9 mEq/l; aspartate aminotransferase, 4612 U/l; alanine aminotransferase, 3950 U/l; lactate dehydrogenase, 8237 U/l; platelet count, 9000/μl; fibrin degradation products,

520 μg/ml; and international normalized ratio of prothrombin time, 1.4). Contrast-enhanced computed tomography revealed reduced perfusion in the right hepatic lobe and lateral segment. The use of a liver retractor and a silicon disc in the reverse Trendelenburg position to retract the liver was considered to have caused the hepatic injury. Transfusion therapy (60 U of platelet and 6 U of fresh frozen plasma in 3 days) was performed. The patient was diagnosed as having disseminated intravascular coagulation syndrome, and thrombomodulin alfa was also administered for 7 days. The patient's condition was observed to have improved (values immediately before discharge: aspartate aminotransferase, 35 U/l; alanine aminotransferase, 248 U/l; lactate dehydrogenase, 162 U/l; platelet count, 80,000/μl; fibrin degradation products, 15.3 μg/ml; and international normalized ratio of prothrombin time, 1.05). She was discharged 14 days after surgery.

Several cases of hyperkalemia in laparoscopic gastrectomy have been reported (Takeyama et al. 2019). Our case suggests that there might be a similar risk in a case where a liver retraction procedure is performed. Intraoperative elevated potassium levels may offer an opportunity to detect the occurrence of liver damage. Repositioning or intermittent release of the retractor could prevent liver damage (Kitajima et al. 2015). Written informed consent was obtained from the patient for this report.

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Authors' contributions

ST, SO, AH, and TH treated the patient. ST and SO wrote the manuscript. SK helped treat the patient and write the manuscript. All authors read and approved the final manuscript.

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Competing interests

The authors declare no competing interests.

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