CASE REPORT

Ambulatory phlebectomy under tumescent local anesthesia in a kidney-transplant patient

Ambulantna flebektomija u uslovima tumescentne lokalne anestezije kod bolesnika sa transplantiranim bubregom

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Abstract

Introduction. Tumescent local anesthesia (TLA) is widely used for ambulatory surgery. Patients with transplanted organs are on immunosuppressive therapy and with risk for organ rejection or severe infection.

Case report. Saphenectomy with phlebectomy on the left leg under TLA was performed in a patient with kidney transplantation performed four years ago. A combination of 35 mg of 1% prilocaine-hydrochloride, 5 mL of 8.4% sodium bicarbonate and 500 μg of epinephrine in 460 mL of normal saline was used for TLA. Overall 750 mL of the solution was used. The patient had satisfactory postoperative analgesia and was discharged home on the same day. Blood levels of urea, creatinine, estimated glomerular filtration rate (eGFR) and tacrolimus concentration, measured preoperatively and on the second postoperative day, were in a regular range. Prilocaine blood concentrations determined on the 4th, 10th and 16th postoperative hours, were below toxic levels.

Conclusion. TLA in a kidney-transplanted patient performed for saphenectomy with phlebectomy proved to be a safe and reliable anesthesia method.

Key words: varicose veins; vascular surgical procedures; anesthesia, local; ambulatory care; treatment outcome; kidney transplantation.

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Introduction

Tumescent local anesthesia (TLA) assumes subcutaneous infiltration of a large volume of diluted local anesthetics that provides extensive regional anesthesia of skin and subcutaneous tissue. The targeted tissue becomes swollen and firm, or tumescent. TLA is widely used in ambulatory surgery since it is a safe and reliable method with low complication rate 1–4. TLA hypothetically can reduce the incidence of surgery and anesthesia complications in the patient on immunosuppressive therapy. Complications of general anesthesia
are mostly associated with tracheal intubation 5. Laryngeal mask airway has become a popular alternative to the endotracheal tube, but its use is not complication-free. The most serious complication is regurgitation of gastric content and possible aspiration 6. Neuroaxial or regional anesthesia provides analgesia and reduce pulmonary complications. However, patients under immunosuppressive therapy after solid organ transplantation are rarely considered as candidates for neuraxial techniques as the risk of central nervous system infection is increased 7. Risk of hemorrhagic or neurologic complications is higher in patients with altered immune status compared with healthy patients 7. Immunodeficient-state patients are at increased risk for infectious complications 8.

Pharmacological characteristics of many drugs used for general anesthesia and during postoperative period can be modified by immunosuppressive medications 5. Also, it was noted that perioperative massive fluid infusion can cause a significant tacrolimus blood level decrease 9.

**Discussion**

After organ transplantation surgery patients are on immunosuppressive therapy and every surgical procedure is considered to be a risk for transplanted organ rejection and serious infections. Preoperative risk assessment, optimal surgical treatment, and anesthesiology approach are carefully analyzed 13. The presented patient with the history of kidney transplantation had varicose veins on his left leg CEAP class III with inappropriate response to noninvasive treatment. TLA seemed to be anesthesia of choice for this patient based on data from the literature because of lowest incidence of complications during and after the surgery compared with general anesthesia and neuroaxial blocks 16–18.

Prilocaine is amide-type and long-acting local anesthetic medium with high potency. Prilocaine has three times faster clearance compared to mepivacaine and 1.5 hour shorter half-life compared to other anesthetics. Prilocaine is mostly metabolized in lungs by amidase and to a lesser extent in the liver and kidneys 19, 20. For phlebectomy the presented patient received a total dose of 525 mg prilocaine. That dose was sufficient to provide an analgesic effect, and at the same time, due to low concentrations in the tissue, absorption was slow, allowing sufficient time for plasma prilocaine metabolism 19. Measured prilocaine plasma concentrations were far below the toxic threshold (5 mg mL−1). With low concentrations of prilocaine, renal graft function was not compromised.

### Table 1

<table>
<thead>
<tr>
<th>Parameters</th>
<th>preoperative</th>
<th>postoperative (the 2nd day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea (mmolL−1)</td>
<td>6.9</td>
<td>7.3</td>
</tr>
<tr>
<td>Creatinine (mmolL−1)</td>
<td>91</td>
<td>93</td>
</tr>
<tr>
<td>Tacrolimus concentration (ngmL−1)</td>
<td>5</td>
<td>5.1</td>
</tr>
<tr>
<td>eGFR (mLmin−1)</td>
<td>85</td>
<td>83</td>
</tr>
</tbody>
</table>

Moreover, blood concentration of immunosuppressive agents remained stable in postoperative period. Kidney-transplanted patients usually have depressed values of eGFR and frequently they have (second or third stage of graft failure). Based on preoperative value of eGFR (85 mL min⁻¹) the presented patient had second degree renal insufficiency, which stayed unchanged after the surgery.

Epinephrine added to the solution reduced intraoperative blood loss and obviously prolonged analgesia. In addition, the possibility of postoperative hematoma and wound infection was minimized. TLA took more than 24 hours, and there was no need for additional analgesia.

Conclusion

TLA with prilocaine in the presented kidney-transplanted patient proved to be a safe and reliable anesthesia method considering unchanged values of eGFR, stable tacrolimus blood concentration and low prilocaine blood levels.

REFERENCES


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