PERIODICUM BIOLOGORUM
VOL. 115, No 2, 265–266, 2013

UDC 57:61
CODEN PDBIAD
ISSN 0031-5362

Clinical experience

The use of an ultrasound-guided popliteal block for hallux valgus surgery in a patient with myasthenia gravis

GORDANA KRISTEK
IVANA HARŠANJI DRENJANČEVIĆ
SLAVICA KVOLIK
DANIJELA GULAM
TOMISLAV RUŽMAN

University Josip Juraj Strossmayer in Osijek,
Faculty of Medicine
Clinical Hospital Center Osijek
Department of Anesthesiology,
Reanimatology and Intensive Care
J. Huttlera 4, 31 000 Osijek, Croatia

Correspondence:
Ivana Haršanji Drenjančević
University Josip Juraj Strossmayer in Osijek
Faculty of Medicine
Clinical Hospital Center Osijek
Department of Anesthesiology,
Reanimatology and Intensive Care
J.Huttlera 4, 31 000 Osijek, Croatia
E-mail: ivanahd@vip.hr

Abbreviations
MG – Myasthenia gravis
VAS – Visual analogue scale

Received May 15, 2013.

INTRODUCTION

Myasthenia gravis (MG) is an autoimmune disease which affects neuromuscular transmission, causing muscle fatigue and weakness *(1)*. The myasthenic patients are always a challenge to the anesthesiologist, because they demonstrate various responses to the neuromuscular blocking agents. The post-operative risk of respiratory failure has always been a matter of concern *(2, 3)*. We report a successful use of the ultrasound guided popliteal block for elective foot surgery in a 46-year old woman with MG, showing that this regional anesthesia technique, by avoiding the use of neuromuscular blocking agents, provided safe care for this patient.

CASE REPORT

A 46-year old woman was admitted for the elective hallux valgus surgery of her right foot. Over the last few years, she had been treated for myasthenia gravis (Osserman stage II), hypothyreosis, chronic gastritis and sideropenic anemia. Her daily medications on admission were: pyridostigmine bromidum, azathioprine, prednisolone, levothyroxine sodium, risedronate sodium, pantoprazole, tramadol and ferrous fumarate. A few years earlier she was subjected to general anesthesia for myomectomy due to uterine myoma, without complications. The patient was well prepared for surgery, with no absolute neurological contraindications for the operation and no abnormalities identified in laboratory tests. She was ASA physical status III. She received levothyroxine 100 μg orally in the morning and 100 mg of hydrocortisone intravenously. After a careful assessment, it was decided that the anesthetic technique for this patient and this kind of surgery would be peripheral blockade. Before the beginning of the procedure, venous access and standard monitoring was established (pulse oximetry, electrocardiography and noninvasive arterial blood pressure monitoring) and the patient was taken in lateral position with the operative extremity nondependent. After skin preparation with chlorhexidine, the ultrasound guided popliteal block was performed. With ultrasound guidance tibial and common peroneal nerves were successfully located and the needle was directed in optimal position while the injection of local anesthetic was carried out. Levobupivacaine 0.5% in dosage of 150 mg (30 ml) was injected slowly in 5-ml increments with gentle aspiration between doses. After completion of the procedure, sensory (warm, cold, touch, pain) and motor (absence of foot mobility) blockade were evalueted in 15-minutes intervals. Visual analogue scale (VAS) was used for pain score recording. A paralysis of the right foot and VAS score 0 was

recorded after 60 minutes and complete block was achieved. Patient was taken to the operation theatre and positioned supine. Tourniquet was applied around the talocrural joint of the right foot with the pressure of 250 mmHg. The surgery was completed within 45 minutes and went uneventfully. During the surgery the patient was respiratory and circulatory stabile and needed no supplemental drugs. A tourniquet time was 60 minutes. There were no systemic or neurological side effects attributed to the local anesthetics during the perioperative period. After the surgery the patient's respiratory function and circulatory status were uncompromised. The duration of sensory block was 18 hours and motor function returned to normal within 14 hours after the injection of the local anesthetic. There was no exacerbation of myasthenia gravis and the patient was discharged on the second postoperative day. Three months later, the same patient was admitted for elective hallux valgus surgery of her left foot. The same regional anesthetic technique was successfully used again.

DISCUSSION

Regional anesthesia techniques are supposed to be a better choice for MG patients. There is a lack of controlled studies in patients suffering from MG, concerning anesthetic management under regional anesthesia. Some case reports suggest precaution in using neuroaxial anesthesia techniques and tourniquet because of possible exacerbation of myasthenia gravis *(4)*. Brodsky and coworkers described the use of bilateral tourniquet applied on thighs following spinal anesthesia, and hypothesized that the lactate release after prolonged ischemia could have cause the exacerbation. Bilateral tourniquets and the prolongation of the tourniquet time contributed the increase of the lactate released *(4)*. Our patient had the tourniquet applied around the talocrural joint, due to the performance of the popliteal block. In this way we tried to include the smallest possible part of the leg which would be subjected to the ischemia during the tourniquet application and reperfusion injury after the tourniquet release. Following this meticulous approach tailored for our patient, we also avoided the simultaneous and bilateral use of the tourniquet and popliteal blockade. The patient was suggested to return after three months for corrective surgery of the left foot, so large doses of local anesthetic as well as bilateral usage of the tourniquet could be avoided.

In conclusion, the use of the peripheral nerve blockade is safe in patients suffering from myasthenia gravis. The meticulous approach and the safest anesthetic technique, tailored for every patient, are always a matter of concern for the anesthesiologist, especially when a concomitant disease like MG is present.

REFERENCES

1. MOTOMURA M, NARITA MASUDA T 2013 Autoantibodies in myasthenia gravis. *Brain Nerve 65:* 433–9
2. DE BOER H D, FUCHS-BUDER T 2012 Residual neuromuscular blockade and myasthenia gravis. *Acta Anaesthesiol Scand 56:* 932–3
3. SINHA A, AHMAD K, HARROP-GRIFFITHS W 2001 The use of vertical infraclavicular brachial plexus block in a patient with myasthenia gravis: effects on lung function. *Anaesthesia 56:* 165–70
4. BRODSKY M D, MELISSA A, SMITH M D, JENNIFER A 2007 Exacerbation of myasthenia gravis after tourniquet release. *Journal of Clinical Anesthesia 19:* 543–545