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CLINICAL CASES

ANESTHESIA FOR SUPRACONDYLAR AMPUTATION IN PATIENT WITH ACUTE CORONARY SYNDROME

ANESTESIA PARA AMPUTACIÓN SUPRACONDÍLEA EN PACIENTE CON SÍNDROME CORONARIO AGUDO

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ABSTRACT

Peripheral arterial insufficiency is a disease that is associated with known atherogenic risk factors, and is more common in people with hyperlipidemia, diabetes mellitus and smoking habit. A case of a 67-year-old woman with a history of hypertension, diabetes mellitus and old myocardial infarction is presented. She was admitted for signs of acute inflammation of the right leg due to peripheral arterial insufficiency. 8 days after admission she presented an acute coronary syndrome without ST segment elevation with pump failure (Killip class II), and once compensated she was scheduled for emergency supracondylar amputation due to ischemic gangrene. It was decided to use selective spinal subarachnoid from the right leg, which was applied without complications and favored the proper develop-

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ment of the planned surgery. At 72 hours, the patient was discharged from the ICU, with metabolic compensation and without cardiovascular symptoms.
Key words: Anesthesia, peripheral arterial disease, amputation, acute coronary syndrome

RESUMEN
La insuficiencia arterial periférica es una enfermedad que se asocia a factores de riesgo aterogénico reconocidos, y es más frecuente en personas con hiperlipidemia, diabetes mellitus y hábito de fumar. Se presenta el caso de una mujer de 67 años de edad, con antecedentes de hipertensión arterial, diabetes mellitus e infarto de miocardio antiguo, que ingresa por signos de inflamación aguda del miembro inferior derecho como consecuencia de una insuficiencia arterial periférica. A los 8 días del ingreso presentó un síndrome coronario agudo sin elevación del segmento ST, con fallo de bomba Killip II, y una vez compensada fue anunciada para amputación supracondílea de urgencia, debido a una gangrena isquémica. Se decidió utilizar anestesia espinal subaracnoidea selectiva del miembro inferior derecho, a cual se aplicó sin complicaciones y favoreció el adecuado desarrollo de la cirugía planificada. A las 72 horas la paciente fue egresada de la UCI, sin sín-
Palabras clave: Anestesia, enfermedad arterial periférica, amputación, síndrome coronario agudo

INTRODUCTION

Peripheral arterial insufficiency is a common disease and cause of hospitalization in elderly patients in secondary care services. It is associated with known atherogenic risk factors, mainly hypertension, hyperlipidemia and smoking habit, and is associated to other conditions such as diabetes mellitus and ischemic coronary disease[2,3].

Ischemic gangrene –a serious complication of peripheral arterial insufficiency– causes, usually, lower limb amputation. Patients who suffer this complication are scheduled for surgery, where the anesthesiologist plays a critical role, essential in the control and treatment of intraoperative complications[4], due to the characteristics of comorbidities that occurs in this type of pacient[4,5].

Next we present a case where the aforementioned and also the role of the anesthesiologist in this type of surgery and in this type of patient is highlighted.

CASE REPORT

67 year old women of rural origin and history of hypertension, type 2 diabetes mellitus and old myocardial infarction (2008), which leads to regular treatment with enalapril 40 mg/day, furosemide 60 mg/day, spironolactone 75 mg/day, nitrosorbide 30 mg/day, aspirin 125 mg/day and slow insulin 30 IU/day. She was admitted in the hall of Surgical Specialties on July 5, 2011, to be assisted by the Angiology Department of University General Hospital "Roberto Rodríguez Fernández" in Moron, due to the presence of pain, swelling, redness, heat and functional impotence of the right leg, from foot to knee, with cyanosis and serous and bloody blisters on the back foot. A peripheral arterial insufficiency was diagnosed and 8 days after admission, the patient developed severe chest pain of more than 30 minutes duration, not relieved with the administration of 3 doses of sublingual nitroglycerin, and it was accompanied by polypnea that prevented decubitus position. Physical examination found: respiratory rate (RR) of 28 per minute, heart rate (HR) 100 beats per minute, blood pressure (BP) of 150/90 mm Hg, normothermia, adequate diuretic rate (0.5-1 ml / kg / h) and crackling rales in both lung bases.

Complementary analysis showed:

- Hemoglobin 91 g/l
- Hematocrit 0.27 %
- Creatinine 111 µmol / l
- Glucose 19 mmol/l
- Electrocardiogram: ST V_4-V_6 segment depression and negative T waves in leads I, aVL, V_4, V_5. Minutes later, a widening of the QRS complex appeared as a sign of acute intraventricular blockade of the left bundle branch (Figure).
- Chest X-ray: signs of bilateral pulmonary congestion.
- Serum electrolytes: Na 120 mEq/L, Cl 82 mEq/L, K 3.3 mEq/L.
- Arterial gasometry: pH 7.48, PO_2 88 mmHg, PCO_2 38 mmHg, HCO3 21 mEq/L.

A non-ST segment elevation acute coronary syndrome with Killip II pump failure was diagnosed. Oxygen at 3 L/min delivered by nasal cannula, nitroglycerin infusion at 0.125 mcg/kg/min, fraxiparine and the baseline treatment were administered. At 72 hours the patient was without angina, but continued with polypnea (RF 24 per minute), with AT ranging from 140/85 and 120/80 mmHg, HR of 90 beats per minute,

afebrile, with adequate diuresis, hydrated with crystalloid, and no pedis and posterior tibial pulses in the right leg were noticed.

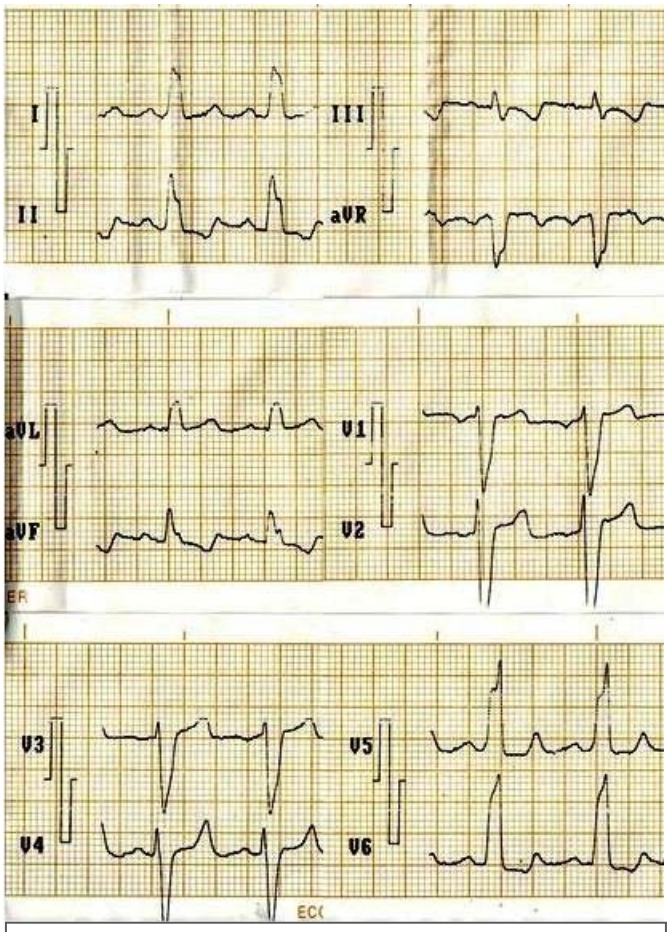

Figure. Electrocardiogram with left bundle branch block.

The patient was scheduled for emergency surgery on the 16th day of the same month, for knee amputation of the right leg due to ischemic gangrene. On arrival to the operating room the electrocardiogram (lead D_{II}) and peripheral oxygen saturation (SpO_2) 88%, RR was 28 per minute, HR of 96 per minute and blood pressure of 130/80 mmHg. It was decided to use spinal subarachnoid anesthesia selective of right leg, for which a lumbar puncture with trocar No. 22 was performed in the space L4-L5 in lateral right decubitus position, and hyperbaric lidocaine 75 mg was administered and the patient was kept at this position until she was adequately anesthetized. Later, after checking the anesthetic level reached in selective right leg up to D_{12}, the patient was placed in supine semi-recumbent position, and surgery began. During the opening minutes of surgery the patient showed a decrease in BP to 100/60 mmHg, which was treated with 0.2 mg of intravenous phenylephrine, in the rest of the intraoperative period, vital parameters behaved as follows: systolic BP 130 - 120 mmHg, diastolic BP 80-70 mmHg, HR 88 beats per minute, RR 26 per minute, SpO2 92-94%, without further reductions in BP and HR, no emesis, and spontaneous ventilation with supplemental oxygen at 3 L/min through a nasal cannula. The fluid administration was restricted to 350 ml of gelofusin colloid solution and operative time was 40 minutes. The patient was moved to the Intensive Care Unit (ICU), where the following complementary blood tests were performed: hemoglobin 90 g/L, hematocrit 0.27 %, glucose 5.4 mmol/L, serum sodium and potassium 129 and 3.55 mEq/L, and arterial hemogasometry (pH 7,52; PCO_2 36,6 mmHg; PO_2 90 mmHg; HCO_3 29,3 mEq/L; BE 6,1 mEq/L).

One hour after surgery the patient had no angina or dyspnea, or disorientation, she was cooperative, in good overall condition, without need of supplemental oxygen; SpO_2 94-98 %, BP 130/80 mmHg, HR 88 beats per minute and RR 20 per minute. At 72 hours, she was discharged from the ICU.

DISCUSSION

Since the patient showed cardiovascular decompensation, evidenced by dyspnea due to intolerance to supine position, crackling rales, signs of lung congestion, chest pain, and need of supplemental oxygen and nitroglycerin infusion due to acute myocardial ischemic suffering, it was necessary to choose the safer anesthetic technique, because general endotracheal anesthesia usually requires supine position, general anesthetics are myocardial depressants, muscle relaxants are vagolytic, produce tachycardia and increased myocardial consumption of oxygen, the laryngoscopy and endotracheal intubation produce sympathetic and vagal reflex responses, or both, with tachycardia-bradycardia, hypertension-hypotension, which should be avoided[4-6]. Halogenated agents lead to hypotension, and the superficiality of general anesthesia to hypertension and tachycardia, situations that worsen myocardial ischemia, with risk of myocardial infarction during the intraoperative period[6,7]. This is why we opted for selective regional technique with low doses of local anesthetic, in which a low sympathetic autonomic blockade occurs, without compromising cardiorespiratory function, keeps venous return, and thus avoids instability in blood pressure and the need to infuse large volumes of fluid in a patient with compromised cardiopulmonary func-

tion. Furthermore, this technique keeps the patient awake and breathing spontaneously with supplemental oxygen.

Despite the rather low figures of hemoglobin, it was decided not to transfuse blood and ensure the adequate blood volume and transport of oxygen with colloids substances to prevent acute lung injury induced by blood transfusion (TRALI) in previously damaged lungs[6].

In this way, the result was an intraoperative procedure without complications, with minimal use of medications and a patient who returns to the ICU with a successful postoperative evolution.

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