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Case report

Severe cardiomyopathy secondary to pheochromocytoma: Usefulness of magnesium sulfate. Case report☆

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ABSTRACT

The following report on the perioperative anesthetic management of severe cardiomyopathy and resection of pheochromocytoma tumors offers a clinical and pharmaceutical experience with a good outcome for a high-risk pathology with little available world literature. The female patient accesses emergency services in distress with tachycardia, labile blood pressure, dyspnea, and severe abdominal pain. Clinical studies reveal heart failure, an adrenal mass, and derivates of high levels of catecholamines in the blood, which leads to the diagnosis of severe cardiomyopathy induced by pheochromocytoma. The medical management for the acute crisis is performed with therapy in the intensive care unit, antihypertensives and magnesium sulfate. Once stabilized, a laparoscopic tumor resection followed. Her postoperative progress was adequate with a progressive resolution of symptoms. Cardiomyopathy secondary to pheochromocytoma is a pathology with high morbimortality and low frequency and is produced by the action of great quantities of catecholamines released subacutely due to hemorrhagic tumor necrosis or manipulation of the pheochromocytoma. It requires strict care in its acute crises and during surgery for its definitive resection. This report shows our experience with the usefulness of magnesium sulfate as a contributory drug in the control of this pathology throughout the perioperative period due to its mechanism of action and pharmacodynamics. Its easy availability in hospitals, the good clinical results it produces, and its scientific backing are important factors that make it a pharmacological option for pheochromocytoma.

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Cardiomiopatia severa secundaria a feocromocitoma: utilidad del sulfato de magnesio. Reporte de un caso

Palabras clave:
Cardiomiopatía hipertrófica
Cardiomiopatía dilatada
Feocromocitoma
Sulfato de magnesio
Glándula suprarrenal

RESUMEN

El siguiente reporte de manejo anestésico perioperatorio de cardiomiopatía severa y resección de tumor de feocromocitoma, ofrece una experiencia clínica y farmacológica con buen resultado, de una patología de alto riesgo con poca literatura mundial. La paciente ingresa al servicio de urgencias con angustia, taquicardia, tensión arterial lábil, disnea y dolor abdominal severos. Sus estudios clínicos revelan insuficiencia cardiaca, masa suprarenal y derivados de catecolaminas elevados en sangre, que hacen diagnóstico de cardiomiopatía severa inducida por Feocromocitoma; se realiza el manejo médico de la crisis aguda con terapia en unidad de cuidado intensivo, antihipertensivos y sulfato de magnesio y una vez estabilizada se lleva a resección tumoral laparoscopica. Su evolución postoperatoria fue adecuada, con resolución progresiva de los síntomas. La cardiomiopatía secundaria a feocromocitoma es una patología de alta morbimortalidad e inusual frecuencia, producida por la acción de grandes cantidades de catecolaminas liberadas de modo subagudo por necrosis tumoral hemorrágica o manipulación de feocromocitoma, que requiere manejo estricto en su crisis aguda y en la cirugía de resección definitiva. Este reporte muestra la experiencia de la utilidad del sulfato de magnesio, como fármaco coadyuvante en el control de esta patología durante todo el periodo perioperatorio, por su mecanismo de acción y farmacodinamia. Su fácil accesibilidad hospitalaria, buen resultado clínico y soporte científico son factores importantes para ser considerado una opción farmacológica en Feocromocitoma.

Introduction

Pheochromocytoma refers to a tumor originating in the catecholamine producing chromaffin cells, located mainly in the adrenal medulla.[1] The main clinical signs of the acute effect of catecholamines secreted in high concentrations are: hypertension, palpitations, headache, anxiety, sweating, and paleness. Potentially lethal complications, like arrhythmia, heart or peripheral ischemia, cardiomyopathy, and cerebrovascular disease, can occur due to the acute and uncontrolled release of catecholamines during the induction of anesthesia or tumor resection surgery. An unusual preoperative presentation is severe cardiomyopathy with hypertension, hypertrophic or dilated myocardial compromise, pulmonary edema, and arrhythmias.[2] Adequate handling of the acute crisis is based on the control of cardiac contractility with stabilization of rhythm, rate, and arterial pressure.[3]

Case

We report the case of a 42-year-old female patient, without important pathological antecedents, who was admitted to the coronary unit with symptoms of anxiety, polypnea, sweating, and abdominal pain and distension. Upon admission, she presented a labile arterial pressure between 180/120 and 95/60 mmHg, a heart rate of 115 bpm, a mitral systolic murmur, and jugular engorgement. The electrocardiogram showed evidence of sinus tachycardia, and the transthoracic echocardiogram showed left ventricular dilation, severe global hypokinesis, a restrictive diastolic pattern with an E/A ration of 3.8 cm/s, an ejection fraction of 20%, systolic pressure of the pulmonary artery of 85 mmHg, and severe tricuspid and mitral insufficiency (Figs. 1 and 2). Cardiac enzyme levels were normal, as was the coronary arteriography.

Before the abdominal scanography that reported an image of a right suprarenal tumor with necrosis, pheochromocytoma was suspected and the administration of doxazosin at 4 mg/day and bisoprolol at 1.5 mg/day. The plasma levels of catecholamine derivates (metanephrine at 2063 pg/ml (normal < 90) and normetanephrine at 1291 (normal < 200)) and

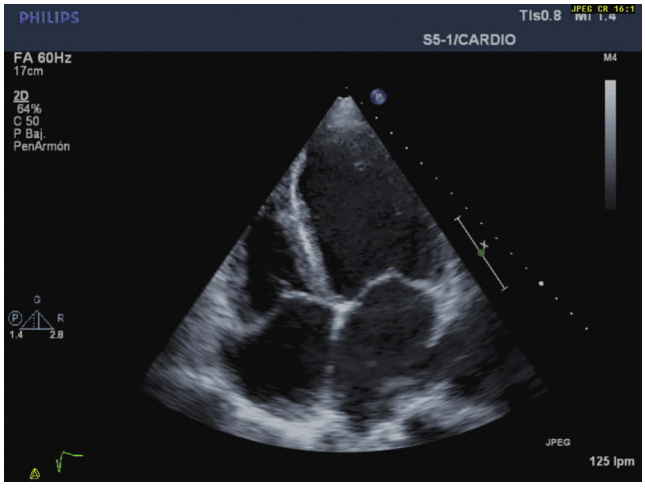

Fig. 1 – Preoperative transthoracic echo. Ejection fraction of 20%.
***Source*: authors.**