Anaesthetic management of a rare variety of cardiac myxoma for emergency decompression laminectomy

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Keywords: ventriclular myxoma, laminectomy, embolisation

Abstract

Primary cardiac tumours are rare. Right ventricular myxomas and a combination of right atrial and ventricular myxomas are very rare. A patient with myxoma has several problems, including haemodynamic compromise in a particular position, embolisation and hypoxaemia because of low output and possible shunts. All of these problems increase the risk of having anaesthesia. We present a case of a rare combination of right atrial and ventricular myxoma. A patient presented with sudden onset paralysis of both limbs and was posted for emergency decompression laminectomy.

℗ Peer reviewed. (Submitted: 2012-08-02. Accepted: 2012-09-17.) © SASA South Afr J Anaesth Analg 2013;19(1):71-72

Introduction

Primary cardiac tumours are very uncommon (0.03-0.05%). Most of these tumours are myxomas.[1] Approximately 75% of these are left atrial. Only 25% are right atrial. Right ventricular myxomas are very uncommon (5-10%).[2] Right-sided myxomas pose numerous problems, such as outflow obstruction leading to hypotension with position change, pulmonary embolisation and right heart failure. We describe a rare case of right atrial and right ventricular myxomas in a patient who was posted for emergency laminectomy. Our aim in reporting this case is to highlight the possible problems that anaesthesiologist face when dealing with these cases.

Case report

A 26-year-old woman presented at the hospital with complaints of breathlessness, mild-grade fever and swelling in both legs which she had experienced for 10 days. Over five days, she had developed weakness in both her legs, which progressed gradually to grade zero weakness on the last day.

On examination, she was mildly febrile, with a heart rate of 120 beats per minute and respiratory rate of 32 breaths per minute. Jugular venous pressure was raised. Bilateral air entry in the base of the chest was decreased. There was a muffled first heart sound and gallop rhythm on auscultation. The lower limbs' power was grade zero and reflexes were absent. She had hepatosplenomegaly. There was a swelling at the mandibular angle on the right side with some restriction of the mouth opening because of pain.

She was seropositive for retrovirus. All other routine blood investigations were normal. The electrocardiogram (ECG) showed T-wave inversion in V2-V6. Two-dimensional echocardiography showed a 2 × 4 cm mass occupying 70% of the right atrium. Another pedunculated mass that was adherent to the right ventricular wall obstructed the tricuspid valve. A myxoma of the right atrium and ventricle was suspected. Magnetic resonance imaging of the spine clearly showed a well-defined extradural soft tissue lesion in the spinal canal extending from L2 to S1. A neurogenic tumour or granulation tissue was suspected. Fine-needle aspiration cytology of the swelling near the mandible showed reactive lymphadenitis.

She was assessed as American Society of Anesthesiologists grade III. Her high-risk cardiac condition was taken into account, so written informed consent was obtained for emergency decompression laminectomy. Two large- bore intravenous lines were secured and intravenous fluids started. A pulse oximeter, defibrillator and respiratory gas monitor were attached.

Glycopyrrolate 5 µg/kg was given intramuscularly. Ondansetron 4 mg, ranitidine 1 mg/kg, midazolam 0.03 mg/kg and pentazocine 12 mg were given intravenously. After preoxygenation with 100% O_2, induction using titrated doses of 300 mg sodium pentothal and rocuronium 0.8 mg/kg was commenced. After intubation with a flexometallic number

32 tube, the throat was packed. The patient was carefully and slowly turned into a prone position, while continuously monitoring her blood pressure and ECG. It was borne in mind she that could experience sudden hypotension. In anticipation of sudden hypotension and cardiac arrest, all preparations were made to immediately return her to a supine position. Anaesthesia was maintained with an O_2:N_2O mixture (50:50%) with isoflurane and vecuronium.

The patient remained haemodynamically stable immediately after being turned into the prone position, but after 15 minutes, her systolic blood pressure fell to 60 mmHg. An infusion of dopamine 5 µg/kg/minute was commenced and fluids were titrated to response. The blood pressure returned to 100 mmHg systolic.

The extradural mass appeared to be granulation tissue and could be excised completely. She remained haemodynamically stable thereafter. The dopamine was gradually tapered off.

On completion of the surgery, she was slowly turned into a supine position and reversed after the return of consciousness and adequate muscle tone. Blood loss was roughly 100 ml. The postoperative period was uneventful.

Discussion

Right atrial and ventricular myxomas are very rare. However, they pose numerous problems, including decreased venous return leading to hypotension, pulmonary embolisation, embolisation to the systemic circulation because of shunts, and obstruction to the outflow and prolapse of the pedunculated myxoma, leading to further haemodynamic compromise. Generally, multiple and pedunculated myxomas are familial. Our patient did not provide any family history.[2] Many myxomas are associated with syndromes such as naevi, atrial myxoma, myxoid neurofibroma and ephelides, lentigines, atrial myxoma and blue naevi. Carney's complex includes spotty skin pigmentation, myxomas, endocrine overactivity and schwanommas. The spinal mass could have been a schwannoma, but the histopathological analysis later showed non-Hodgkin's lymphoma, probably of human immunodeficiency virus association.[3]

Most reported cases of myxomas are of patients who were posted for myxoma resection. The anaesthetic management of such cases for noncardiac surgery is seldom reported. Anaesthetic challenges of right atrial and ventricular myxomas include an unpredictable response to the anaesthetic agents, arrhythmias, possible obstruction to the ventricular outflow because of a change in position, and other problems because of right-sided failure.[4]

A major consideration was the emergency nature of the surgery. Because of this, an arrangement for cardiopulmonary bypass, if required, and emergency excision, could not be planned. As the paralysis was of recent onset, immediate surgical decompression could have produced neurological improvement. As such, the surgeons were eager to operate on the patient immediately.

Moritz and Azad have reported a case of right atrial myxoma in which the patient was scheduled for a myxoma excision. The patient experienced a severe episode of hypotension after induction of anaesthesia and required chest compressions, possibly because of obstruction to the right ventricular outflow or fixed low cardiac output state. The patient was revived successfully with epinephrine and chest compressions alone. In this case, the doctors had the security of knowing that cardiopulmonary bypass was available on standby.[1]

Van der Heusen et al operated on a patient with right atrial myxoma that partially obstructed the outflow. To prevent hemodynamic instability during induction, the patient was preloaded with fluids. A femoral arteriovenous cannulation was performed for cardiopulmonary bypass initiation in case complete obstruction with haemodynamic collapse occurred.[5]

Ideally, this patient's surgery should have been performed in a cardiac theatre with all the necessary preparations for cardiopulmonary bypass in case the myxoma caused a sudden obstruction to the outflow tract. However, this was not possible owing to time and financial constraints.

An intravenous line through the right jugular vein was avoided to prevent fragmentation and embolisation of the myxoma.[2] Intraoperative transoesophageal echo can diagnose and keep track of tumour dynamics and haemodynamics.[6,7] Titrated doses of anaesthetic agents prevented sudden collapse.

Later, the histopathological report of the mass showed high-grade non-Hodgkin's lymphoma, probably because of human immunodeficiency virus. Chemotherapy was started.

Right-sided atrial and ventricular myxomas are very rare. The coexistence thereof significantly increases morbidity. Such patients can present to the anaesthesiologist for embolectomy, craniotomy and tumour excision. Our aim in reporting this case was to highlight the possible problems that are faced by the anaesthesiologist in such cases.

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