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Case Note

A case of left atrial myxoma: Anaesthetic management

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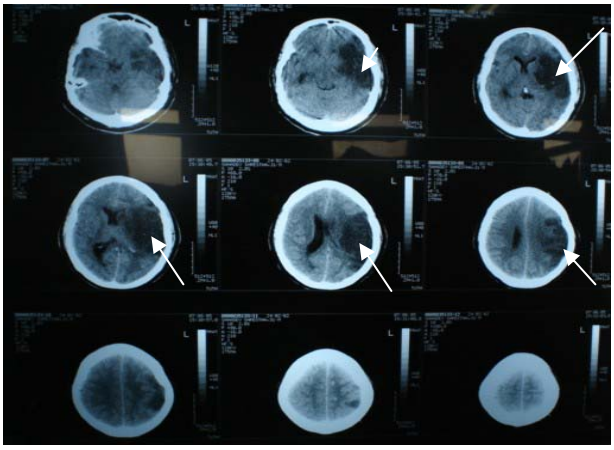
Abstract
Left Atrial Myxomas are notorious for their varied presentations. We describe one such case which initially presented with hemiparesis and seizures and was diagnosed as cerebral infarction and treated accordingly and decompression craniotomy with hinge flap was done for raised ICP and impending brain herniation. The main cause was a left atrial myxoma, which was diagnosed only in follow up. The myxoma has embolised to give rise to cerebral infarction. The LA myxoma was then successfully operated under general anaesthesia and Cardiopulmonary bypass (CPB).

Key words: Hemiparesis, Cerebral infarction, Left Atrial (LA) Myxoma

A 31yr old male, was brought to emergency of Chitwan hospital with history of loss of consciousness since 24 hrs, abnormal movement of whole body, frothing from the mouth, and reduced movement of right side of the body. CT scan of head showed infarction of Lt MCA territory. The patient was managed conservatively in the line of Ischaemic Cerebral Infarction with Aspirin, Clopidogrel and Phenytoin. As the patient was deteriorating neurologically, the patient was referred to Kathmandu, TUTH. In Emergency, GCS was 9/15 ($E_3M_5V_1$) with pupils B/L 4mm and normal reaction to light; Patient had right sided hemiplegia and was aphasic. Rest of the findings were normal. Patient was maintaining oxygen saturation on spontaneous respiration though respiration was noisy with stertor. As the patient was not improving and there was gross midline shift on CT scan of head, (Fig. 1) the patient was planned for Decompression Craniotomy.

Preoperative investigations were within normal limits. Decompression Craniotomy with hinge flap was done under General Anaesthesia. After the surgery was complete, in two hours, patient was not extubated and kept in ICU as pre op GCS was poor. The patient was kept on ventilator, CMV mode with Tidal Volume 600ml and RR 16/min and paralysed with Vecuronium; and Midazolam and Morphine were given for sedation and analgesia. After four days, Ventilator parameter was changed to Assist control mode and then to SIMV with Pressure support. Central line was removed and patient was extubated on fifth post op day. The patient was then shifted to Neuro ward and was then discharged home with the advice of regular Physiotherapy, Phenytoin and Aspirin, and was advised to follow up after one week with reports of Echo-cardiogram. ANA, RA Factor and Anti Cardiolipin Antibody were all negative.

Fig 1: CT scan of the patient showing hypodense areas suggestive of Left cerebral infarction



In follow up, the echocardiogram showed a mass in the Left atrium around 3.2cm X 1.9cm, probably a Left Atrial Myxoma, EF: 63% (Fig 2). The patient was then referred to Department of Cardiovascular and Thoracic surgery and was planned for excision of LA Myxoma.

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Fig 2: Echocardiography showing mass in the Left atrium (arrow)

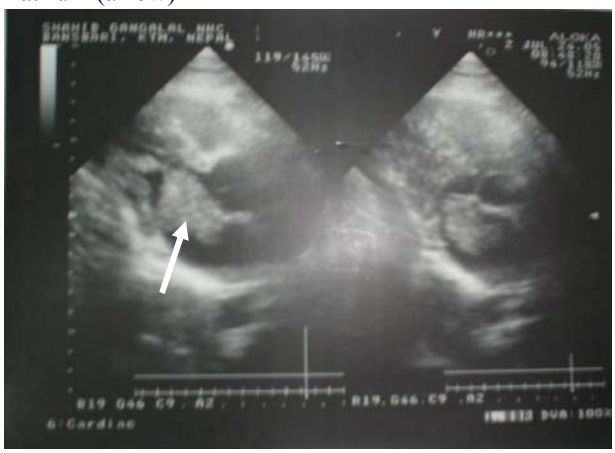
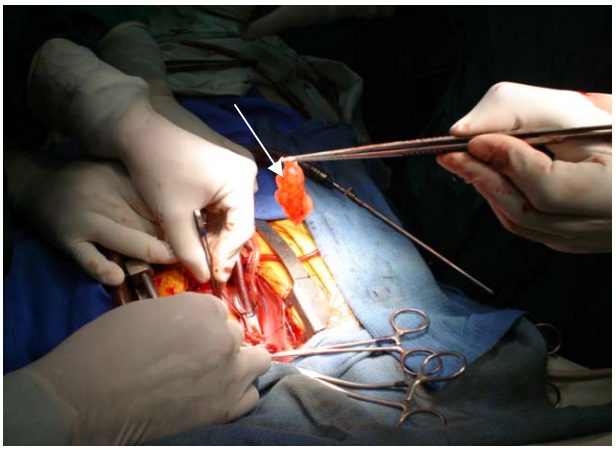


Fig 3: LA myxoma, just after excision (arrow)



LA Myxoma Excision under General Anaesthesia on CPB was planned. All the routine preoperative investigations were within normal limits. Weight of the patient was 72 kgs. Patient was taken into operating room and arterial line was secured in right radial artery under local anaesthesia. Inj. Morphine 10 mg was given and General anaesthesia was induced with STP 350mg. Intubation was done with cuffed endo-tracheal tube with IDD 8mm, after 5 min of Inj. Vecuronium 8 mg IV. Anaesthesia was maintained with oxygen, halothane and Nitrous oxide. 7 Fr triple lumen central venous catheter was inserted through right subclavian vein. Baseline ACT was 150sec. Patient was heparinized with 28000 IU of IV Heparin and ACT was maintained > 8min and the patient went into cardiopulmonary bypass. Total Cross clamp time was 40mins and total Bypass time was 44mins. During the bypass, patient was anaesthetized with intravenous Propofol infusion.

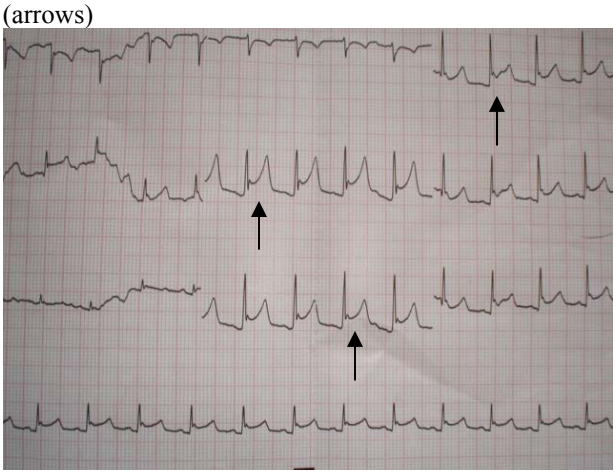
Intra-operative findings were LA Myxoma of 5cm X 5cm, with a stalk attached to IAS. Excision of LA Myxoma was done including part of IAS to which the myxoma was attached and the ASD created was closed with pericardial patch.

Intraoperative investigations, arterial blood gas analysis, Hb, sugar, and electrolytes were within normal limits. Inj. Protamine 280mg IV was given for reversal of heparin effect. ACT was 120 secs after protamine injection. Total Duration of Anaesthesia was 4hrs and 25mins and total duration of surgery was 4hrs. The patient received 1.5L of Ringers Lactate, 1.5L of Normal Saline, 500ml of Haemaccel (Gelatine 3.5%) and Two pints (700ml) of fresh O+ve blood were also transfused intraoperatively.

The patient was transferred to ICU, with endo tracheal tube in situ, sedated with Propofol infusion. HR was 90 bpm and BP was 118/78 mmHg, on Dopamine infusion @ 7µg/kg/min. Patient was extubated in ICU after few mins and was kept on Venturi mask with 50% oxygen, RR 20/min and SpO_2 maintained at 97%. For analgesia, Inj. Morphine 1mg was given IV hrly and SOS. As the chest drain had 130ml collection, Inj. Transaximic acid 1 gm was given IV stat. As the blood pressure was maintained, the dopamine infusion was decreased and stopped the same day. Post operative investigations were within normal limits except serum potassium which was 3.3 mmol/L and Inj. Potassium chloride was started in infusion 20 mmol 8 hrly. After 4 hrs in ICU, ECG monitor showed ST elevations and 12 lead ECG was done which showed concave upward ST elevation in all the leads. Consultation with the surgical team was done and this ST elevation was considered because of pericardial reaction and no active treatment was planned for this. (Fig. 4).

All parameters and investigations were normal on first post operative day. Oral sips were started, was well tolerated and so kept on liquid diet till evening. ECG showed persistent ST elevations, but was decreasing. Chest drain showed 480ml collection in 24 hrs. Chest physiotherapy was started.

Fig 4: ECG taken in ICU showing concave upward ST elevation in all leads due to pericardial reaction (arrows)



On second postoperative day, ECG changes settled back to normal, all investigations were normal, serum Potassium was 5.3 mmol/L so potassium supplements was stopped. Chest drain had 70 ml in last 24hrs, with no collection since four hours and thus chest drain was removed. Arterial line was removed and semisolid diet was started. Inj. Enoxaparin 60mg S/C BD was started from evening. Chest physiotherapy and respiratory exercises was continued.

On third postoperative day, all routine investigations were normal; Foleys catheter and Central Venous Catheter were removed. Semi solid diet was changed gradually to normal diet. The patient was then shifted to the ward where he was observed for three more days whilst the chest and limb physiotherapy was continued. LMWH was stopped on seventh post operative day and was discharged. He was then advised to follow up after one week and continue physiotherapy.

On follow up, the patient was fine with residual hemi paresis and motor aphasia, regularly on physiotherapy and on treatment with Aspirin, clopidogrel, and phenytoin; He was smiling, smiling with a hope of getting better each day toward a better future.

Discussion

Cardiogenic embolisation occurs in 15% of all ischemic infarcts, commonly because of atrial fibrillation, valvular heart disease, cardiomyopathy, prosthetic valves in around 90%, but 10% of such embolisation occurs because of mitral valve prolapse, paradoxical emboli, endocarditis, and cardiac myxoma[1].

Myxomas are commonest primary benign intracavitatory tumours with the incidence of 0.5 per million populations[2]. Myxomas account for 0.3% of all cardiac surgeries performed[3]. Myxomas are twice as common in females than in males and mean year of occurrence is 55 years[4]. Myxomas commonly arise from the left atrium but 25% occurs in the right atrium or ventricles[3,1].

Clinically, they are characterized by triad of embolisation, obstruction of blood flow, and constitutional symptoms (Goodwin's triad)[4]. 17-59% of patient with myxoma present as embolic event, while cerebral embolisation occurs in upto 45%, and this commonly occurs in the middle cerebral artery territory as in our case[4,1,12].

Obstruction to blood flow can present with heart failure or syncope in 41 – 79% of cases. [1] Left ventricular outflow tract obstruction because of the mass can mimic mitral stenosis and can cause pulmonary hypertension and even congestive heart failure[1]. Right sided myxoma can also be associated with obstruction and can present as cardiovascular collapse during induction of anaesthesia[1].

Fever, malaise, weight loss, fatigue, anaemia, and raised erythrocyte sedimentation rate are common constitutional symptoms which occur in around 90% patients with myxomas[4,1]. These features resolve immediately after surgery and are believed to be due to release of inflammatory mediators from tumour cells[5,1].

Structurally, myxomas are of two types, one with round, non mobile surface, and another polypoid type with irregular shape, mobile surface and this latter type has the higher incidence of embolism and this is the commonest type to prolapse into the ventricles[6,13].

Surgical management is the treatment of choice for myxomas but open heart surgery immediately after cerebral embolisation is considered contraindicated due to problems of hemorrhagic infarction or progressive cerebral oedema.[6] But another school of thought considers immediate surgery as the treatment, as recurrent embolisation can be fatal.[14, 6] The recurrence of myxoma has been reported to be less than 2% on most series.[1]

Anaesthetic considerations will be as for the patient going for a cardiopulmonary bypass (CPB). A detail history and a meticulous clinical examination is a must. Risk factors for cardiovascular diseases, other co-morbid conditions, NYHA classification for functional status of the patient should also be

assessed properly[7]. Preoperative evidence of heart failure, pulmonary hypertension and evidence of outflow obstruction should be looked for, and treatment started if present. [10] Patient with history of embolism should be properly anticoagulated according to guidelines for anticoagulation and then planned for surgery[10]. Apart from routine blood and urine investigations, chest roentgenogram, electrocardiogram, and echocardiogram is essential. Echocardiograms not only give the size of the tumour, but can also locate the origin of the myxoma[13]. In this regard; trans-esophageal echocardiogram (TEE) is superior to transthorasic echocardiogram (TTE)[1].

Even though arrhythmias are uncommon, atrial arrhythmias if present should be treated with either pharmacological or electric cardio- version as indicated[11]. In patients with evidence of embolism, other investigations are required depending on site of embolism. CT scan and MRI are helpful in embolic stroke while Doppler studies are helpful in cases of peripheral vessel involvement, e.g. carotid or femoral arteries[7,9].

Adequate premedication helps in allaying anxiety, and avoids detrimental haemodynamics due to it[7]. Apart from basic monitoring; invasive arterial pressure monitoring and central venous line placement is a must in patient undergoing myxoma excision[7]. Pulmonary artery catheterization is not necessary unless there are specific indications for it. The use of TEE has now been considered a useful tool for intraoperative diagnosis, localization of the tumour, and also for confirmation of adequate removal[1]. The anaesthetic regimen for conducting anaesthesia for myxoma excision is not different from any other cardiac surgery, but a balanced anaesthetic approach is now the preferred method[7,10]. Opiates, along with volatile anaesthetic agents, which have additional advantage of inducing ischemic preconditioning (in patients likely to have ischemic myocardial insults), and any of the commonly used muscle relaxants can be combined for the balanced approach[7,10]. Benzodiazepines, forms a core component of the balanced approach and midazolam in particular is preferred for minimal effect on coronary blood flow autoregulation. After the aortic cross clamping and the patient on CPB, anaesthesia can be maintained with the volatile agent through the CPB or can be maintained on low dose propofol infusion for sedation[7]. However induction with propofol is not advised because of action causing significant depression of myocardium, and hypotension owing to decrease systemic vascular resistance[10,7].

After the excision of tumour and repair of the opening site, weaning from CPB and reversal of heparin with protamine, checking regular blood gas parameters and activated clotting time are similar to any other cardiac surgery[7,8]. Fast track cardiac anaesthesia or early extubation following surgery is the goal and shall be preferred unless any complications or contraindications occur[7,10].

Regional anaesthetics, intrathecal or epidural have advantages because of their desirable effects on stress response, haemodynamics, coronary perfusion pressure, myocardial blood flow redistribution and chances of early extubation, but their use is not common, maybe because of concerns for anticoagulation, and potential to cause haematoma and its neurological consequences[7,10].

Post-operatively the patient should be monitored in an intensive care unit or other high dependency units, where constant supervision, monitoring and vigilance are available[7,8]. Anticoagulation should be resumed postoperatively in patients with history of embolism, and in those who were on anticoagulation preoperatively[7]. High incidence of arrhythmias and conduction disturbances have been reported both in early and late post operative periods[11].

Conclusion

In patient with embolic stroke, it's important to perform echocardiograph as early as possible to exclude cardiac cause. Even though the incidence is less, the detection and surgical management of myxomas usually is a permanent method to prevent further embolic events which can be fatal. By far, Balanced General Anaesthesia on Cardiopulmonary Bypass forms the basis of Anaesthetic management of Cardiac myxomas. However specific individual considerations will have to be made regarding drugs, doses, regional anaesthetic choices, anticoagulation and post operative management.

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