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Original Research Paper

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INTRACEREBRAL HAEMORRHAGE - THE LONG ODD OF MITRAL CLIP IMPLANTATION FOR MITRAL REGURGITATION - A CASE REPORT

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ABSTRACT Mitral valve regurgitation is a disease attributable to defective closure of mitral valve, leading to back-flow of blood across the valve. It is the commonest variant of valvular heart disease. In cases with severe regurgitation, the circulating blood volume gets severely scarce, owing to regurgitation within left heart chambers. In individuals over the age of 65, who are at high risk of surgical intervention, the Mitraclip technique is a successful and minimally invasive treatment option for mitral regurgitation. However, despite FDA approval for the treatment of high-risk individuals with primary mitral regurgitation (MR), neurological complications such as intracerebral haemorrhage (ICH), cardiac complications like atrial fibrillation (AF) have been reported. The major goal of this case report is to draw attention to the prospect of intracerebral haemorrhage (ICH) following mitraclip implantation. As of this case, A 78-year-old female with multiple co-morbidities such as systemic hypertension and peripheral neuropathy presented with severe chest pain and was found to have severe MR, severe pulmonary arterial hypertension, normal left ventricular function, an ejection fraction of 68%, and underwent mitraclip implantation. The patient developed right occipital ICH following mitral clip implantation.

KEYWORDS : Mitral regurgitation, Intracerebral haemorrhage, Mitra clip

INTRODUCTION

Transcutaneous mitraclip implantation, a newer procedure, is also commonly used to treat severe MR, in patients with high surgical mortality risk and has proved to be beneficial. Despite its advantages, some risk factors and problems, including as intracerebral haemorrhage which is fairly uncommon, have been linked to mitraclip failure.

Intracerebral haemorrhage, is a catastrophic entity wherein a hematoma, which can be caused due to traumatic or non-traumatic causes, appears between the brain parenchyma with or without the involvement of ventricles. Among the causative factors, non-traumatic ICH is associated with high morbidity and mortality.

The immediate aim following diagnosis is to minimise the risk of rebleeding and hematoma expansion within the first 24 to 72 hours.[2]. ICH recommends correction (aiming INR < 1.4) using fresh frozen plasma (FFP), vitamin K, prothrombin complex concentrates as well as newly developed recombinant activated factor VIIa.[3]

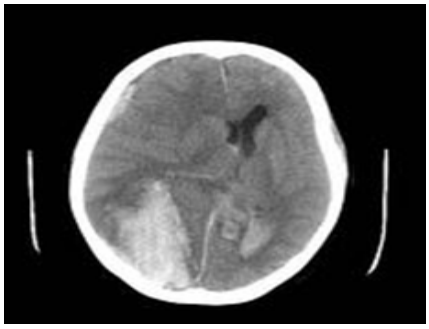

Figure 1: NCCT – right occipital hemorrhage

Case Study

This is a case of a 79-year-old female. She is a known case of systemic hypertension, hypothyroidism, peripheral neuropathy, underwent hysterectomy and bilateral total knee replacement a few years ago. The patient is a non-smoker and does not consume alcohol. In January 2022, she presented with complaints of chest discomfort, pain in the arm, neck, shoulder region, and restlessness for a day.

On examination, the patients' blood pressure was 170/90mmhg, pulse was 80 beats/minute, and regular. The patient was admitted and further evaluation was done. Electrocardiography was done and revealed normal sinus rhythm. Moderate-severe MR, mild Tricuspid regurgitation (TR), an ejection fraction of 64% without any left ventricular dysfunction, were seen on a 2D echo. [Refer figure 1].

The patient underwent coronary angiography, which revealed normal arteries. Post-procedure patient was stable and was discharged on anti-hypertensive, and diuretic medication. Two weeks after discharge, the patient was reviewed and a repeat 2D Echo was done, which revealed an ejection fraction of 60%, severe MR, mild TR, mild pulmonary artery hypertension (PAH) and normal ventricular systolic function. Two months after discharge, patient presented again with symptoms of heart failure (NYHA- New York heart association, class 4 symptoms). The patient had multiple episodes of such symptoms in the last few months.

On examination, vitals were stable, a pan-systolic murmur was heard. The patient was admitted, all laboratory investigations were within normal limits. 2D Echo done showed an ejection fraction of 68%, severe MR, severe PAH, and normal left ventricular function. A surgical mitral valve replacement was ruled out in this patient due to the presence of multiple co-morbidities and high mortality risk status.

The patient was hence planned for a trans-catheter mitraclip implantation for the severe MR and to treat its symptoms. Mitraclip (2x clip) was implanted under general anaesthesia under the guidance of a 3D trans-esophageal echocardiography via right femoral venous access. On the post-procedure echo, there was no PAH and trivial MR with a gradient of 4 mmHg. The patient was hemodynamically stable, failure symptoms resolved and the patient was discharged on antibiotics, antihypertensives, and anti-platelets.

A week after the procedure, the patient presented again, with slurring of speech, diminishing vision of left eye, vertigo. There were no seizures, headache. On examination, GCS – 15/15, vitals were stable. And the patient was re-admitted for further evaluation.On the day of admission, patient also complaint of

tachycardia, ECG was sought and patient was diagnosed to have Atrial Fibrillation. All other necessary investigations were done. NCCT-Brain showed subtle hypo-density in the right occipital lobe, ill-defined hyper density seen in the left occipital lobe along with diffuse cerebral atrophy and chronic microangiopathic changes. All the previously advised cardiac medications were withheld in view of the newly occurred ICH. 2D ECHO was done suggestive of LA – 4.3cm, LVEF=53%, mild TR, mitral clip seen. Following this, cardiology opinion taken, and patient was found to have mitral clip failure. RFT was deranged, nephrology opinion taken and the patient was found to have AKI on CKD. Repeat NCCT was done on the following day, and was suggestive of a large inter parenchymal hematoma measuring approx 5.4 * 3.9cm in the right parieto-occipital area, with surrounding edema. Acute subarachnois was seen along the right frontal , bilateral parietal and bilateral occipital sides (R>L). midline shift measuring upto 6.5mm seen towards the left side, along with mild uncal herniation. Patient was diagnosed to have right occipital sub arachnoid haemorrhage. And due to the multi system involvement, surgery was deferred and patient was advised conservative management. Patient was managed with anti-epileptics, antibiotics, diuretics, ionotrops, and other supportive medications.

CONCLUSIONS

As a minimally invasive procedure and due to prohibitive risks for a surgical procedure in high-risk mitral valve regurgitation groups of patients, mitraclip has been widely preferred. The above-mentioned example illustrates the association between mitraclip implantation, ICH and atrial fibrillation.

Although there is no difference in mortality between individuals with and without ICH, mitral regurgitation patients who are candidates for mitraclip implantation should be aware of the risks of ICH and related disease entities.

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