Original Resear	Volume - 11 Issue - 08 August - 2021 PRINT ISSN No. 2249 - 555X DOI : 10.36106/ijar Neurology STROKE POST TRANS-AORTIC VALVE IMPLANTATION (TAVI): A CASE REPORT
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(ABSTRACT) Background: Transaortic valve implantation (TAVI) has emerged as a desired treatment option for patients with severe aortic stenosis due to their high surgical risk factors. Even though the current clinical data points to transaortic valve implantation to be superior to conventional surgical aortic valve implantation, the occurrence of neurological complications such as stroke, post TAVI has raised concerns. The objective of this clinical case report is to bring to notice the occurrence of stroke post TAVI.

Case description: We herein describe the case of an 82-year-old male who developed stroke one week after transaortic valve implantation. One week after the procedure, the patient was presented with stroke symptoms such as weakness over the left upper and lower limb, slurred speech, and was immediately brought to the hospital. Due to timely stroke intervention and physiotherapy the patient manifested good recovery and was discharged after three weeks.

Conclusion: This case report thus demonstrates the complication of a relatively safer procedure.

KEYWORDS: Stroke, severe aortic stenosis, trans-aortic valve implantation

INTRODUCTION

Aortic stenosis, as we know is one of the most serious heart valve conditions leading to narrowing of the aortic valve and restricted flow of blood from the left ventricle to the aorta. In severe cases of aortic stenosis, the aortic valve needs to be replaced to relieve the symptoms and improve blood flow.^[1] The aortic valve can be replaced by a mechanical valve or biological prosthetic valve either with the help of a surgical procedure (SAVR- Surgical aortic valve replacement) or a minimally invasive procedure called Trans-aortic valve implantation (TAVI).^[1] The majority of the patients with severe aortic stenosis undergo either one of these two procedures. Trans-aortic valve implantation is preferred over surgery as it is minimally invasive and avoids surgical risks.^[2]

Recent studies have demonstrated the increased risk of stroke in patients that went TAVI.^[3] Many factors attribute to the increased risk of stroke.^[2] In this case report, we discuss one such case of a patient who developed a stroke after undergoing TAVI.

Case report

This is a case of an 82-year-old male with known case of type 2 diabetes mellitus, systemic hypertension, and post left anterior descending artery recanalization (done three years back). The patient presented with shortness of breath, chest pain, and fatigue, which he developed over a couple of months and consulted a cardiologist. Echocardiography was done which showed severe aortic valve stenosis (mean transaortic pressure gradient >0mmHg), left ventricular dysfunction, ejection fraction of 43%. The patient was planned and taken up for the trans-aortic valve implantation procedure, due to symptoms of severe Aortic stenosis.

The procedure was done under general anaesthesia via right femoral artery access. Post-procedure patient was recovering well. Echo demonstrated a normal functioning bio prosthetic, ejection fraction was less than 50%.

One week after TAVI, the Patient suddenly developed weakness over the left upper and lower limb and slurred speech, and was immediately brought to the hospital. On examination, the patient was conscious, oriented, vitals were stable and had features of left hemiplegia. Urgent Magnetic resonance imaging (MRI) scan was done and it revealed acute cerebrovascular accident – infarct in the right ganglio capsular and corona radiata. [Refer figure 1].

The patient was admitted and routine investigations were sent and found to be within normal range. The patient was treated with injection Heparin 2500 units four times a day and dual anti-platelets. The patient recovered well after treatment. Patient was advised physiotherapy and rehabilitation and discharged. Patient was reviewed three weeks after the treatment course and good recovery was seen.



Figure 1: Demonstrating the infarct in the right ganglio capsular and corona radiata

DISCUSSION

As we already discussed trans-aortic valve implantation (TAVI) is a minimally invasive procedure widely used in cases of severe aortic stenosis. Although it relieves the symptoms and discomfort caused by aortic stenosis and remains to be the first line of treatment, one of its major complications is the occurrence of stroke. Two meta-analysis studies by Eggebrecht H et al., and Shah k et al.,with 10,000 and 5000 subjects respectively, found the increased risk of stroke after the trans aortic valve replacement procedure in comparison to the conventional surgical method and also detected that the mortality rate was high in the first 30 days after stroke.^[34] However, another study conducted as a randomized control trial by Leon MB et al., indicates that the risk of stroke is equal with both TAVI and SAVR.^[5]

Apart from stroke, TAVI can lead to other bleeding disorders as well.^[6] TAVI increases the risk of stroke especially in patients on antithrombotic treatment. A case-control study involving 10,711 patients demonstrated that patients on blood thinners had a higher chance of stroke. Another study by Nombela-Franco L et al., demonstrated that patients on oral anticoagulant treatment were at a

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higher risk of stroke post TAVI when compared to patients on antiplatelets.^{17]} Some studies also mention that the pathology behind the stroke after TAVI is due to an embolus rather than a haemorrhage.^[2,7] It is studied that patient's cardiovascular risk factors such as diabetes, hypertension, smoking, age, atrial fibrillation, dyslipidemia, and stress could be the reason for the stroke. Also, mechanical factors such as the valve implantation procedure and prosthesis could add to the list of risk factors leading to an embolic stroke was found by Muscente F et al.[2] The same study also mentioned that the cerebral perfusion defect is noted irrespective of the type of valve or vessel used for catheter access. This was supported by another study, according to which within the first 24 hours (acute stroke) the chances of stroke are high and could be due to procedure and prosthesis related factors, subacute stroke could be due to newly diagnosed atrial fibrillation and late-onset stroke could be due to old atrial fibrillation and cardiovascular disease risk factors.⁶

Limitation

The case presented in this case report is an example of increased risk of stroke after Trans-aortic valve replacement. Even though many other randomized control trials and meta-analyses have been conducted to assess and compare the outcome of stroke after TAVI and SAVR, there is a lot of uncertainty. The cause of the stroke also remains unclear. Moreover, this study reports only one such case of TAVI leading to stroke, hence we cannot provide statistical data related to the incidence of stroke.

CONCLUSION

We would like to conclude by saying that even though the procedure is minimally invasive, it has many dreadful complications, one of them being stroke. More research is required to understand the causes and risk factors leading to stroke and help prevent such complications and improve long-term outcomes. Studies are also required to understand the safety and efficacy of this procedure.

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