International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 396-400 www.ijdmsrjournal.com ISSN: 2582-6018

Stuck valve managed with Low molecular weight heparin in a resource limited country: A case report

Keshav Budhathoki[1], Shyam raj Regmi[2], Sudhir Regmi[2], Bishnu Mani Dhital[2], Ananda GC[2], Sabina Sedhai[2], Shahid Murtuza[2], Puran Gurung[2], Amir Khan[3], Sagar Thapa[3]

Department of Cardiology, Chitwan Medical College and Teaching Hospital, Bharatpur, Chitwan, Nepal
Corresponding Author: Keshav Budhathoki
Department of Cardiology
Chitwan Medical College and Teaching Hospital, Chitwan, Nepal

Submitted: 10-09-2021 Revised: 22-09-2021 Accepted: 25-09-2021

ABSTRACT:
Mechanical Prosthetic valve thrombosis is the major complication of valve replacement surgeries in developing countries like Nepal. Thrombotic complication of prosthetic valve is mainly due to poor compliance to anticoagulation and irregular follow up with irregular international normalized ratio (INR) checkup as they live in remote part of Nepal. Thrombolytic therapy is a good non-invasive alternative to surgical intervention in a carefully selected patients but our patient neither want to go to hospital where she got her operation done previously nor wants to undergo thrombolysis. So, we managed with low molecular weight heparin (LMWH) along with vitamin K antagonist warfarin. In a week time under cinefluoroscopy, there was no obstruction left and prosthetic valve leaflets looks complete normal in motion. In conclusion, what we can say is that, in non-complete stuck valve in hemodynamically stable patient, LMWH can be an alternate choice of treatment.

Key Words: Anticoagulation, LMWH, Mechanical Prosthetic Mitral Valve, Stuck valve, Thrombosis.

I. INTRODUCTION:

Mechanical prosthetic valve thrombosis (PVT) is a dreadful complication in patients with mechanical prosthetic heart valves replacement, particularly in the mitral location.[1]Inadequate anticoagulation is the main cause of PVT. The incidence of PVT is high and contributes to significant mortality in mechanical prosthetic post valve surgery in developing country like Nepal due to lack of patient awareness regarding disease and medication intake, lack of medicalcheckupand laboratory facility in the remote areas and also because of financial issues. The incidence rangesfrom 0.5% to 8% per year in aortic and mitral location but upto 20% in the tricuspid position.[2]With recentdevelopment in prosthetic valves devices, aggressive anticoagulation therapy and with patients' awareness, the incidence of prosthetic valve thrombosis is getting lower but often present with bleeding as well as thrombotic complication due to unavailability of PT/INR monitoring clinical setup at local area due to geographical and financial constraint as well as lack of manpower and equipment. European society of cardiology recommends surgery for all irrespective of clinical status while society of heart valve diseases recommends thrombolytic therapy for all patients without contraindication[3]but the risk of thrombolytic therapy include bleeding, systemic embolism and failure to restore valvular functionand should be compared against the risk versus benefit of surgical intervention though the therapy is commonly surgical.[4]As there is high mortality in redo surgery,thrombolytic therapy has emerged as a non-invasive andsatisfactory alternative therapy.[5] We present a case ofnon-complete mechanical prosthetic valve thrombosis on cinefluoroscopy who is hemodynamically stableand to discuss whetherthis patientis likely to benefit from low molecular weight heparin therapy.

II. CASE PRESENTATION

A 22 years old female patient from remote area of chitwan called Madi presented to Cardiology OPD at Chitwan Medical College with the history of progressive breathless of NYHA class I-II, on and off Palpitation and dizziness since 5-6 days. She was a known case of status post Mital Valve Replacement with LAA ligation three and half years back in other hospital but document not available besides her warfarin logbook. She gave the history of not taking any medication since one years on her own wish thinking that nothing will happen to her. On examination, her Saturation was 94% on room air, pulse was 104bpm and blood pressure was 100/56mmHg. On auscultation, prosthetic click sound was muffled and low in

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 396-400 www.ijdmsrjournal.com ISSN: 2582-6018

intensity. Immediately taken for 2D transthoracic echocardiography which reveal prosthetic mitral valve peak gradient being 18mmHg and mean gradient being 9.5mmHg with mild TR with TRPG 32mmHg (Fig 1) which helped us in suspecting the prosthetic mitral valve thrombosis. She refused to undergo transesophageal echocardiography. Thereafter, she was taken to CATH-LAB to confirm the problem in the replaced mechanical valve bycinefluoroscopic as our hospital is a tertiary level hospital where we do have the facility of CATH-LAB.Cinefluoroscopy revealed one leaflet being thickened and completely stuck with thrombosis and another leaflet being thickened with thrombosis but only slightly compromised mobility (Fig 2). Routine blood test showed INR of 1.2 and other being normal. As our institute don't have the facility of cardiothoracic surgery, we ask patient and patient party to go to Kathmandu for surgical management where her operation was previously performedbut patient and patient party denied referral to Kathmandu because of their financial problem. So,after explaining the management protocol, its advantage and disadvantage, we anyway have to treat her in our hospital. We again gave them two options for medical management either thrombolysis which is the best option though chances of bleeding is there or low molecular weight heparin which may not be as effective as thrombolysis. Patient and patient party again denied for thrombolysis. So, we started treatment with LMWH along with vitamin K antagonist (warfarin) on patient and patient party choice. On third day, we repeated the cinefluoroscopy which showed slight improvement in leaflet movement (Fig 3) which was previously completely immobile and INR at that time being 1.8. Cinefluoroscopy again was repeated on seventh day of LMWH which showed complete resolution of thrombosis and normal bileaflet prosthetic valve movement (Fig 4) and got discharged on 8th day with oral vitamin K antagonist with INR of 2.5. Now, it's been thirteenmonths and she is doing well and is under regular follow up with good compliance to medication and INR being on target range.

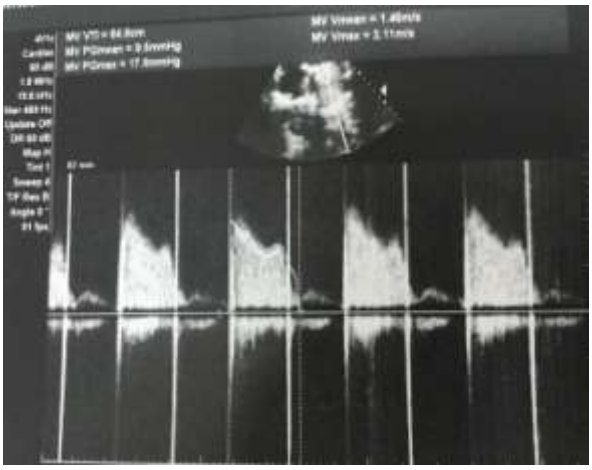

Fig 1: Echo on presentation showing mean gradient across Mitral Valve = 9.5mmHg.

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 396-400 www.ijdmsrjournal.com ISSN: 2582-6018

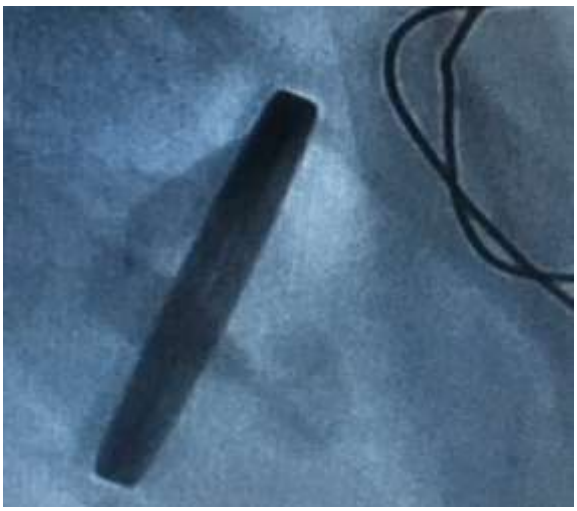

Fig 2:Cinefluoroscopy: On the day of presentation with both thickened leaflets with completely immobile one prosthetic valve leaflet with partial movement of other leaflet with connection by thrombosis at one pole.

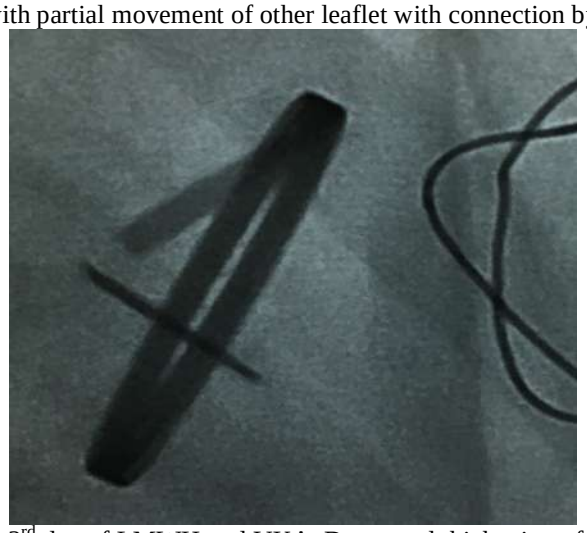

Fig 3:Cinefluoroscopy: On 3rd day of LMWH and VKA. Decreased thickening of prosthetic valve leaflet with slight opening which was previously connected with thrombosis

Fig 4:Cinefluoroscopy: On 7thday of anticoagulation: Complete resolution of thrombosis and normal mobility of both prosthetic valve leaflets.

III. DISCUSSION:

Prosthetic valve thrombosis (PVT) is a defined as any thrombus in the absence of infection, attached to or near an operated valve, occluding part of the blood flow or hindering valvular function. PVT is a life threatening

complication in patients with mechanical heart valves and it is particularly prevalent in those with inadequate anticoagulation or poor compliance to anticoagulation.Prosthetic valve replacement is still on the rise as rheumatic heart disease is still prevalent in developing country like Nepal. Many patients present with early or late complication of valve replacement. Common complication associated with prosthetic valve include bleeding, infective endocarditis and stuck valve.The incidence of PVT is 0.1 – 5.7% per year according tothe type of valve, its location and the adequacy of anti-coagulation.4 PVT has four clinical presentations: silent (i.e., thrombus usually discovered incidentally by transesophageal echocardiography), embolic, obstructive or with a combination ofembolic and obstructive manifestations.5 Clinical manifestations can include symptom directly related to the obstruction degree and/or due to embolic phenomena. Urgently, TTE followed by TEE are essential for diagnosis of PVT and for assessing the cause and degree of valve dysfunction. Cinefluoroscopy is a non-invasive decent test as it can help to diagnose obstructive mechanical heart valve thrombosis as well as exclude it by confirming the presence or absence of decreased leaflet motion. It can also serve as a valuable test providing complementary information when other exams are inconclusive given the fact, it has superior accuracy in detecting leaflet motion when compared with echocardiography.6

In a large study, 21% of the cases of PVT occurred in the first month after the prosthetic heart valve replacement.[7]Location of the prosthetic valve implantation plays an important role in the thrombogenicity. Prosthetic mitral valve thrombosis is 2-3 times more frequent than aortic thrombosis. Thrombosis of tricuspid mechanical prosthetic valve is 20 times more frequent than left sided PVT.[8]Traditionally, surgery has been the treatment of choice for obstructive mechanical prosthetic valve thrombosis but fibrinolytic therapy is emerging recently and being alternative to surgical treatment.[9]Currently, there is also an intense debate regarding the best therapeutic approach when choosing between surgery and fibrinolysis. However because of the high risk of cerebral thromboembolism during thrombolysis for left sided PVT, its use is reserved mainly for high risk surgical candidates.[10.11]Inadequate INR values, irregular follow up and poor compliance to medication are the reasons for the high incidence of PVT in developing country like Nepal.There is a scarce of literature regarding the best strategy when patient presented with non-complete obstructive PVT with restrictive disc motion but stable hemodynamically.

Eventhough, there is no guideline for the use of LMWH in stuck valve, we are left with no treatment option by patient and patient party so to save the life of the patient with her consent, we proceeded with the treatment with LMWH along with warfarin with the observation of the patient meticulously for the appearance of unwanted symptoms or complications. On 3rd day of treatment, repeated cinefluoroscopy which showed some improvement in leaflet movement. So, continued with the same treatment monitoring the INR closely with the target above 2.5.During treatment, the patient did not develop any unwanted symptoms or complications. Repeated cinefluoroscopy on 7th day showed normal movement of prosthetic valve leaflets which was restricted on previous cinefluoroscopy.

IV. CONCLUSION:

In non-complete obstructive prosthetic valve thrombosis with hemodynamically stable patient, low molecular weight heparin can be an alternative approach of management besides going for surgical intervention or thrombolysis immediately.The obstruction may resolve over time with subcutaneous low molecular weight heparin along with oral vitamin K antagonist warfarin with the maintainance of INR above 2.5.

REFERENCES:

[1]. Vongpatanasin W, Hillis LD, Lange RA. Prosthetic heart valves.N Engl J Med 1996; 335(6):407–16.
[2]. Karthikeyan G, Math RS, Mathew N et al. Acceleratedinfusion of streptokinase for the treatment of left sidedprosthetic valve thrombosis: A randomized controlledtrial. Circulation 2009; 120:1108-14.
[3]. Vahanian, A., Alfieri, O., Andreotti, F et al. 2012 Guidelineson the management of valvular heart disease. Europeanheart journal, 2012; 33(19): 2451-96.
[4]. Cannegieter SC, Rosendaal FR, Briet E. Thromboembolic and bleed-ing complications in patients with mechanical heart valve prostheses.Circulation 1994;89(2):635–41.
[5]. Lenygel M, Fuster V, Keltai M, Roudaut R, Schulte H, Seward J, et al.Guidelines for management of left-sided prosthetic valve thrombosis: arole for thrombolytic therapy. J Am Coll Cardiol 1997;30 (6):1521–6.
[6]. Cianciulli TE, Lax JA, Beck MA, Cerruti FE, Gigena GE, Sacherri MC, etal

Cinefluoroscopic assessment of mechanical disc prostheses: its valueas a complementary method to echocardiography. J Heart Valve Dis.2005;14(5):664-73.

[7]. Durrleman N, Pellerin M, Bouchard D, et al. Prosthetic valvethrombosis: twenty year experience at the Montreal HeartInstitute. J Thorac Cardiovasc Surg 2004;127:1388–92.

[8]. Thorburn CW, Morgan JJ, Shanahan MX, Chang VP.Long-term results of tricuspid valve replacement and theproblem of the prosthetic valve thrombosis. Am J Cardiol1983; 51:1128–32

[9]. Luluaga IT, Carrera D, D'Oliveira J, et al. Successfulthrombolytic therapy after acute tricuspid valveobstruction. Lancet 1971;1: 1067–8.

[10]. Birdi I, Angelini GD, Bryan AJ. Thrombolytic therapy forleft-sided prosthetic heart valve thrombosis. J Heart Valve Dis 1995; 4:154–9.

[11]. Forster T, Kardos A, Varga A, et al.Systemic thrombolysisin acute prosthetic valve thrombosis.Orv Hetil 1991;132:2323–5.