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Short Communication

Anaesthesia for valvular heart diseases: A clinical communication

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1. Introduction

Valvular heart diseases (VHD) are disorders of cardiac valves and are either accquired or congenital. The incidence of these diseases are 13.3 % in age group more than 75 years.[1] These group of disorders are important to anaesthesiologist as it causes significant hemodynamic changes peri-operatively which is usually secondary to abnormalities of ventricular loading. Initially patients tolerate with compensatory mechanisms but at later stages, hemodynamic overload occurs causing various cardiac events including sudden cardiac death.

Table 1: Important terminologies for VHD

Terminology	Characteristics
Stenosis	Obstruction for forward flow causing pressure overload
Regurgitation	Backward leak of blood causing volume overload
Preload	Amount of blood loaded in to left ventricle before contraction
After load	Forces that resist blood flow out of left ventricle
Trans valvular pressure gradient	Difference in pressure between two valves during systole

1.1. Pre-operative evaluation

In this section, we will discuss on how to evaluate a patient with VHD who has come for a non-cardiac surgery. Important goals of assessing such a patient should focus on the severity of the cardiac disease, degree of impairment of contractility and to check for presence of any other major associated systemic disease.[2] Evaluating a detailed history and physical examination can be crucial. Factors such as exercise tolerance, dyspnea, murmurs and congestive heart failure symptoms can tell about the functional status of the patient and degree of impairment. It also signifies on compensatory mechanisms. Murmurs of VHD can be confusing, so we came up with a mnemonic MRS ASS, where Mitral Regurgitation and its equivalent in right heart, tricuspid regurgitation have Systolic murmurs and the stenotic part of them cause diastolic murmurs. The second part, where Aortic Stenosis and its equivalent in right heart, pulmonic stenosis cause Systolic murmurs and the regurgitant part of them cause diastolic murmurs. Next important part on evaluation is about the current ongoing drugs that the patient is on. Beta blockers are commonly used in patients with stenotic heart lesions, to slow the heart rate and prolong the time for forward flow.[3] If so, continue on the day of surgery. ACE inhibitors and ARBs are commonly used for blood pressure and after load control. Diuretics are used to prevent heart failure hence, electrolytes are to be checked. Anti-dysrhythmic drugs if ongoing, to be

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continued.

Investigations which can tell about the current status of the lesion and heart are ECG which can show certain hypertrophic changes such as P-mitrale in left atrial enlargement, presence of ventricular hypertrophy and presence of any arrhythmias currently.[4] Chest X-ray is also very important, as it can show chamber enlargement, valve calcification, cardiomegaly and presence of any pulmonary edema. 2D Echo which is the best non invasive study for VHD can reveal the diagnosis, anatomy of heart valves, presence of any regional wall abnormalities, presence of pulmonary arterial hypertension, chamber size, septum size, leaflet coaptation, annulus size and doppler pressure gradients. Cardiac catheterization can diagnose regurgitant lesions. Age above 40 years old need cardiac catheterization before valve replacement in view of any possible coronary artery disease.

Most of the patients with VHD will be on anticoagulants and managing it for surgery with bridging technic is crucial. If the surgery does not expect much of blood loss then anticoagulants can be continued but for major surgery, warfarin should be discontinued 3 to 5 days prior to surgery and low molecular weight heparin (LMWH) has to be started till 24 hours before surgery. Restart LMWH post surgery as soon as possible depending on surgical factors and restart oral anticoagulant later. Antibiotic prophylaxis to prevent infective endocarditis has been limited to very few conditions such as dental procedure and for procedures of respiratory tract which are categorized as high risk individuals.[5]

2. Conclusion

Evaluating a patient with VHD for a non cardiac surgery needs careful observation of signs and symptoms with proper interpretation of investigations. The goal should be to avoid any abnormal rate, rhythm and hemodynamic changes. Pre-operative modifications of drugs with anticoagulant bridging therapy is essential. Appropriate invasive and non invasive monitoring needs to be used to achieve intra-operative goals.

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4. Conflict of Interest

None.

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