

# An Unusual Complication of Infective Endocarditis Involving Bicuspid Aortic Valve

## Running Title: A Fireball in the Heart

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**Received date:** December 07, 2020; **Accepted date:** January 04, 2021; **Published date:** January 08, 2021

**Citation:** Vijay kumar JR, Arnab G Chaudhury, K H Srinivas, C N Manjunath. (2021) An Unusual Complication of Infective Endocarditis Involving Bicuspid Aortic Valve. International Journal of Clinical Case Reports and Reviews. 6(3); DOI: [10.31579/2690-4861/100](https://doi.org/10.31579/2690-4861/100)

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### Abstract:

Bicuspid aortic valve is commonly associated with infective endocarditis with serious peri annular complications. We report a case of 37-year-old male patient presented with infective endocarditis involving bicuspid aortic valve with leaflet perforation and severe aortic regurgitation. Mitral valve was involved secondary to aortic valve endocarditis as a kissing lesion with severe mitral regurgitation. Anterior mitral leaflet (AML) had aneurysmal dilatation with mobile vegetations inside it. In colour Doppler, AML aneurysm was looking like a fireball inside the left atrium. Patient was treated with antibiotics and referred to surgery for aortic and mitral valve replacement.

**Key Words:** aneurysm; aortic valve; infective endocarditis

### Introduction:

Bicuspid aortic valve is the most common congenital heart lesion; it is found in 1%–2% of the general population. Infective endocarditis (IE) is a well-recognized complication (prevalence 0.4/100000) and usually presents in the fourth and fifth decades of life<sup>1</sup>. Rarely it can involve the mitral valve as a kissing lesion or drop lesion. We report a case of 37-year-old male presented with infective endocarditis of bicuspid aortic valve with anterior mitral leaflet (AML) aneurysm as a kissing lesion from aortic valve vegetation.

### Case report:

A 37-year-old male patient presented with low grade intermittent fever of 15 days duration. On examination, patient had pallor, raised jugular venous pressure (JVP) with prominent v wave, high volume collapsing pulse with peripheral signs of aortic run off. Blood pressure (BP) was 130/40/0. Cardiovascular system examination revealed hyperdynamic apex, loud P2, pansystolic murmur in mitral area & early diastolic murmur in neo-aortic area. Clinically diagnosis of severe aortic regurgitation with severe mitral regurgitation with pulmonary arterial hypertension was made.

Electrocardiogram (ECG) showed sinus rhythm left ventricular (LV) enlargement with volume overload, left atrial enlargement. Chest x ray showed LV cardiomegaly with pulmonary venous hypertension. Blood investigations revealed anaemia (Hb8g/dl), leucocytosis with elevated acute phase reactants. Blood culture showed growth of streptococcus mitis sensitive to Ceftriaxone & gentamycin. Echocardiography revealed bicuspid aortic valve with anterior posterior orientation (FIGURE 1B,) with severe aortic regurgitation (FIGURE 2). Mobile grapelike vegetations were seen attached to the aortic valve leaflets (FIGURE 1A). A globular unruptured aneurysm of anterior mitral leaflet was seen with mobile vegetations inside the aneurysm (FIGURE 3). Severe mitral regurgitation was noted. Trans oesophageal echocardiography (TEE) with 3D reconstruction revealed oval shaped perforation of posterior aortic leaflet measuring 1.5 x 0.7 cm. It also demonstrated AML perforation (0.9 x 0.9) with unruptured aneurysm (FIGURE 5) measuring 1.3 x 1.3 cm along with aortic valve vegetations touching the AML aneurysm (FIGURE 4 ) suggestive of “KISSING LESION” of AML. In colour Doppler, the aneurysm is looking like a FIRE BALL in the heart (FIGURE 4). Patient was treated with antibiotics and advised for double valve replacement.

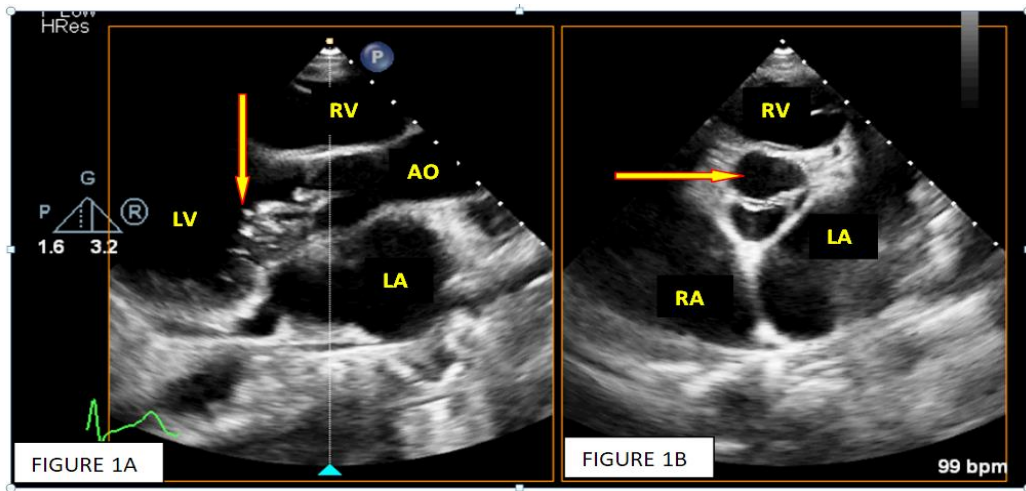


FIGURE 1A: Transthoracic Echocardiography, Parasternal Long Axis View Showing Vegetations (arrow) Attached To Aortic Valve Leaflets

FIGURE 1B: Transthoracic Echocardiography, Parasternal Short Axis View Showing Bicuspid Aortic Valve (arrow) with Antero Posterior Orientation

LA: left atrium, LV: left ventricle, RA: right atrium, RV: right ventricle, AO: aorta

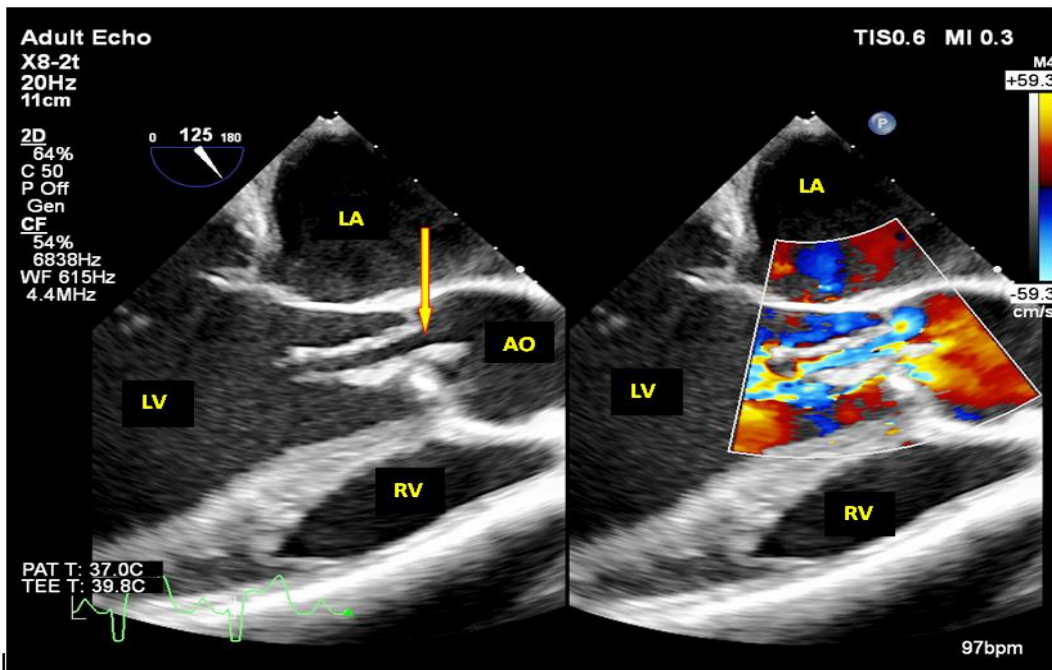


FIGURE 2: Transoesophageal Echocardiography Long Axis View Showing Perforated Aortic Valve Leaflet (arrow) with Severe Aortic Regurgitation

LA: left atrium, LV: left ventricle, RV: right ventricle, AO: aorta

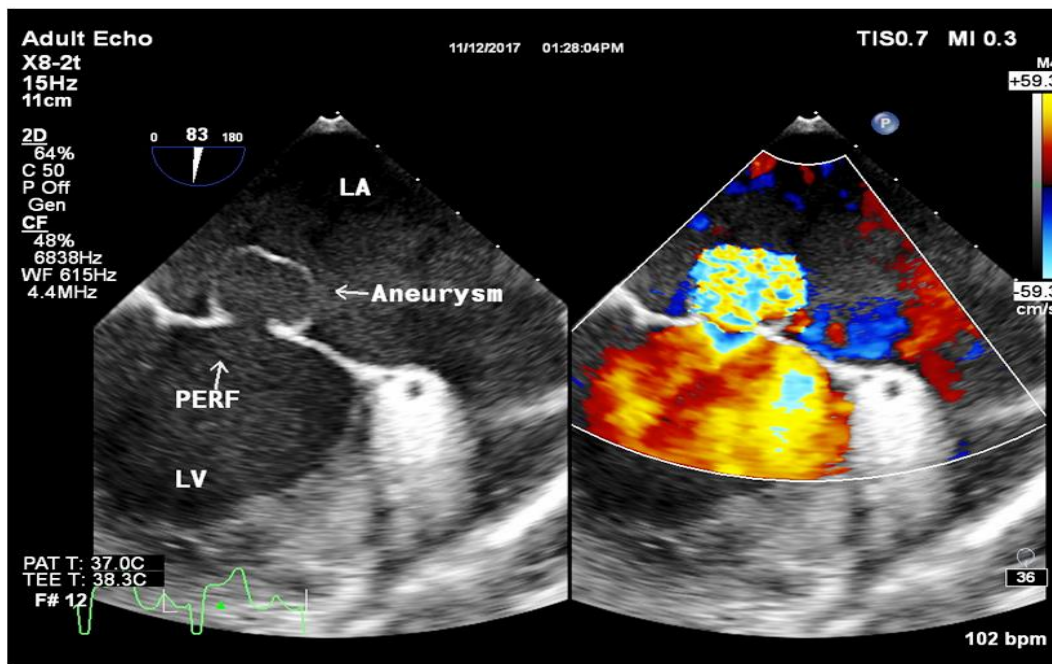


FIGURE 3: Transoesophageal Echocardiography two chamber view showing globular aneurysm of anterior mitral leaflet with perforation (PERF) at ventricular side. Colour Doppler shows a FIREBALL like appearance. LA: left atrium, LV: left ventricle.

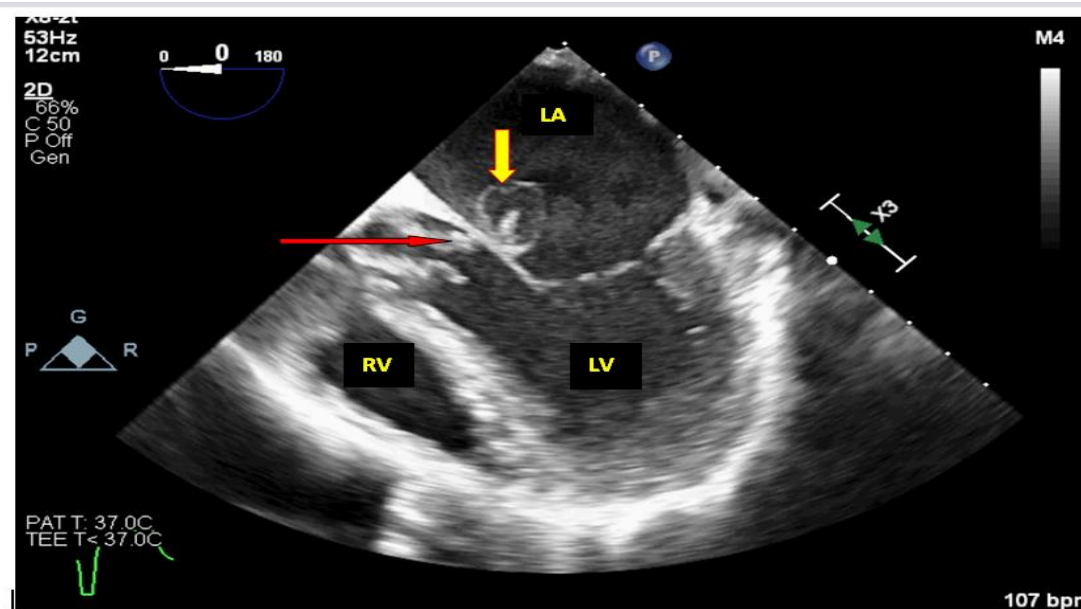


FIGURE 4: Transoesophageal Echocardiography Four Chamber View Showing Aortic Valve Vegetations (Red Arrow) Touching The Aneurysm (Yellow Arrow) Of Anterior Mitral Leaflet-The Kissing Lesion. LA: left atrium, LV: left ventricle, RV: right ventricle.

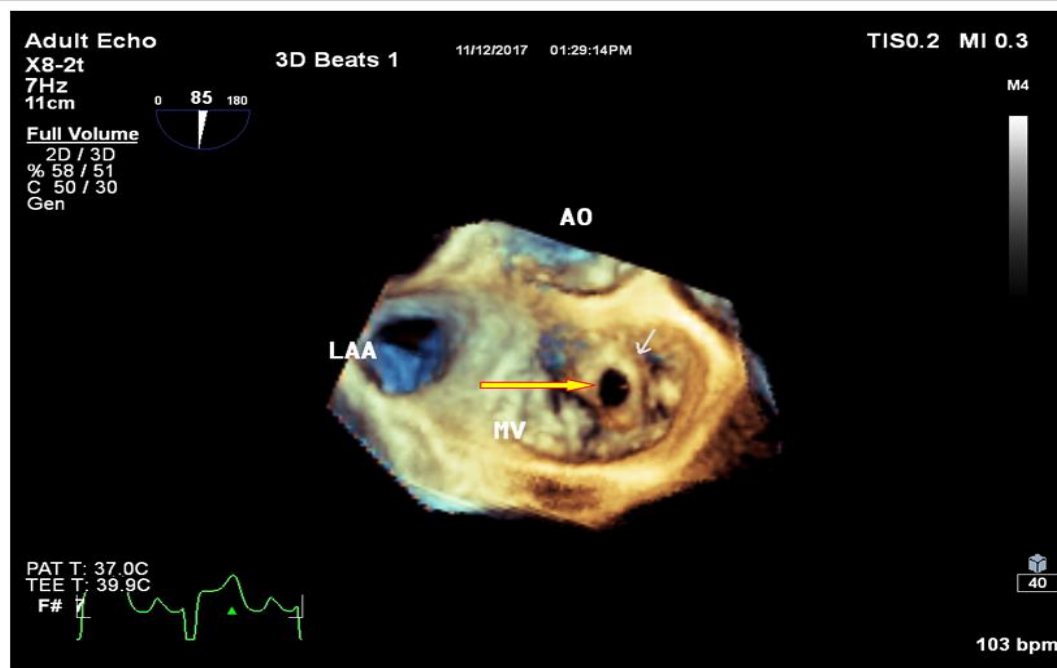


FIGURE 5: Transoesophageal Echocardiography With 3D Reconstruction Showing The Anterior Mitral Leaflet Aneurysm (white arrow) From Ventricular Side With Perforation (yellow arrow). MV: mitral valve, AO: aorta, LAA: left atrial appendage.

### Discussion:

Congenital bicuspid aortic valve is common and, in most cases, remain undetected until infection or calcification supervenes. It is one of the most common cardiac predispositions for native valve endocarditis (NVE)<sup>2</sup>. IE is severe and tends to occur in the fourth and fifth decades of life, requiring major surgery in most cases. Mortality associated with bicuspid aortic valve IE is 28%, according to the study by Skehan et al<sup>3</sup>. There is a high incidence of serious complications, specifically heart failure (72%) and aortic root abscesses (30%). As in NVE in general, staphylococci (12% of them are coagulase negative) and viridans streptococci accounted for nearly three-quarters of the cases affecting bicuspid aortic valves<sup>2</sup>. In our case we isolated streptococcus mitis as the causative organism.

Mitral valve involvement secondary to IE of bicuspid aortic valve is exceedingly rare. Three mechanisms are proposed for the spread of infection<sup>5</sup>. First, “drop” lesion, where the jet of Aortic regurgitation strikes the AML & embeds organisms causing abscess or aneurysm<sup>5</sup>. Second, “kissing” lesion, where aortic valve vegetations prolapse into LVOT touching the AML<sup>5</sup>. Third, “contiguous” spread of infected tissue from aortic valve to AML<sup>5</sup>. Drop lesion of AML caused by klebsiella pneumonia was reported from our institute<sup>4</sup>. This time we report this case of KISSING lesion of AML from infective endocarditis involving bicuspid aortic valve – a “fireball in the heart”.

### Conclusion:

Kissing lesion in mitral valve with aneurysm of anterior mitral leaflet secondary to aortic valve vegetations is a rare entity but can occur. Timely diagnosis is necessary to prevent complications and improve outcome.

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