

Staphylococcal endocarditis after chicken pox in a child with structurally normal heart

Sir,

Chicken pox (varicella) is usually a benign childhood illness, but it can occasionally cause life-threatening complications. Complications related to varicella are mainly neurologic and infectious. Cardiac complications of chicken pox include myocarditis, pericarditis, and rarely infective endocarditis.

An 18-month-old child presented with 1 week history of high-grade fever and respiratory distress. Two weeks back, he had a fever with rash and was clinically diagnosed to have chicken pox. The patient was apparently asymptomatic for the next 1 week. At this point, he had a recurrence of fever with breathing difficulty and presented to us. On examination, he had brown hyperpigmented macules of 1–2 mm size all over the trunk, pallor, tachycardia, tachypnea, and crepitation in chest bilaterally. Cardiovascular examination revealed hyperdynamic precordium with grade III/VI pan systolic murmur in the apex. Chest X-ray showed cardiomegaly with features of pulmonary venous hypertension.

Laboratory investigations showed neutrophilic leukocytosis and moderate anemia. His blood culture showed growth of methicillin-sensitive *Staphylococcus aureus*. Echo showed large vegetation of 1.3 cm × 0.7 cm size on the posterior mitral leaflet with perforation of posterior mitral leaflet with severe mitral regurgitation [Figure 1]. Apart from receiving intravenous antibiotic as per the sensitivity report, he was also given medications for heart failure. His heart failure was refractory to medical management, and he developed features of disseminated intravascular

coagulation and succumbed to his illness before surgical intervention could be done.

In the literature, only a handful of case reports has highlighted this rare complication of chicken pox.^[1,2] A variety of pathogens including *S. aureus*, *Streptococcus pyogenes*, Group A: Beta-hemolytic *Streptococcus* have been implicated in these reports.

The exact cause of susceptibility to bacterial infection after chicken pox is not clear. Superadded bacterial infection occurring on the skin lesions caused by chicken pox could serve as a nidus for invasive infections. Suppressed function of dendritic cells and subsequent negative effect on T-helper cells may partly explain this.^[3] Transient granulocyte killing defect associated with varicella has also been described previously.^[4]

Exactly, how a systemic infection can cause endocarditis in a previously normal heart valve is not clear. In general, infective endocarditis occurs in previously malformed heart valves or is associated with conditions promoting valve injury like central venous catheters. Most reported cases of postvaricella endocarditis have been in children with previously normal heart.^[1,2] It could well be that these so called normal hearts might be abnormal to begin with and only manifest symptoms due to decompensation after infective endocarditis.

Varicella is known to predispose to vasculopathy of both large and small cerebral vessels in both leading to neurological complications. The pathogenic mechanism of this vasculopathy is a viral infection of the cerebral arteries.^[5] Could varicella cause a similar infection of the endothelium and damage the heart valves? This question needs further research.

We conclude that infective endocarditis is a rare complication of chicken pox and more research is needed to understand the exact pathogenesis of this complication of varicella.

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Conflicts of interest

There are no conflicts of interest.

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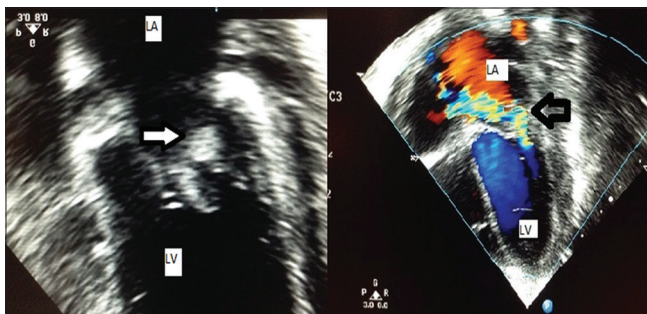


Figure 1: Echocardiography in apical four chamber view showing diastolic (left) and systolic (right) frames. Vegetation is seen in posterior mitral leaflet (white arrow pointing right), and mitral regurgitation is seen to occur through perforated posterior mitral leaflet (black arrow pointing left). LA = left atrium, LV = left ventricle

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