

## Spectrum of echocardiographic findings associated with systemic fungal infections

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### Background

Fungal blood infections are a difficult to identify uncommon occurrence in hospitalized pediatric patients. Fungal endocarditis is typically described as dense heterogeneous vegetations. Recently we noted four pediatric patients with increased echogenicity within the myocardium but without clear vegetation who were also identified to have systemic fungal infection. This provoked review of echo findings in all patients with systemic fungal infections in the last 18 months.

### Methods

98 patients at C.S. Mott Children's Hospital had positive fungal cultures over the last 18 months. Echos from around the time of positive culture were reviewed by one of two reviewers and scored on a scale of 0-5 for presence of endocardial brightenings, nodular thickenings, and vegetations. We also evaluated for presence of ventricular dysfunction and abnormal valve regurgitation. Echos identified as having even borderline findings were scored by two independent viewers.

### Results

Out of 98 total patients with positive fungal cultures in the last 18 months, 49 patients had echos performed around time of positive culture that demonstrated:

| # Patients | Score | Description   |
|------------|-------|---|
| 28 (57%)   | 0     | Normal  |
| 9 (18%)    | 1+    | Faint myocardial brightenings, probably normal                                  |
| 4 (8%)     | 2+    | Myocardial brightenings   |
| 6 (12%)    | 3+    | Myocardial brightenings, nodular thickening of chordae and/or papillary muscles |
| 1 (2%)     | 4+    | Multiple areas of nodular thickening with possible vegetation                   |
| 1 (2%)     | 5+    | Discrete vegetation   |

24% had 2+ or greater abnormalities. 16 (76%) of the patients with notable echo findings received systemic antifungal treatment.

### Conclusion

Echocardiographic findings of myocardial and papillary muscle brightening or chordal brightening with nodular thickening – rather than the classically described dense heterogeneous vegetations – may occur in nearly ¼ of patients with systemic fungal infection. Significance of these findings and association with true fungal endocarditis requires further investigation. Findings may represent localized myocardial involvement or papillary ischemia and fibrosis.

