Cardiology in the Young

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Strain before the storm: looking beyond ejection fraction in severe rheumatic carditis

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Letter to the Editor

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To the Editor,

I read with great interest the prospective cohort study by Kasturi et al. describing the clinical profile and outcomes of 100 children with acute rheumatic fever and severe carditis.[1] The authors deserve credit for a rigorous, single centre effort spanning seven years and for stratifying patients by haemodynamic severity using the Society of Cardiovascular Angiography and Imaging shock classification, a framework rarely applied to paediatric rheumatic carditis.

One observation from the paper merits further comment. While Group A carried the expected burden of mortality and emergency surgery, a striking proportion of Groups B and C children with "preserved" ventricular function on conventional echocardiography ultimately required surgery during one year follow-up (62% and 36%, respectively). This suggests that ejection fraction and fractional shortening, though reassuringly normal at presentation, may be poor discriminators of subclinical myocardial involvement and disease trajectory.

Speckle tracking derived global longitudinal strain has repeatedly shown reduced myocardial deformation in children with acute rheumatic fever despite preserved ejection fraction, even without overt valvular carditis.[2] A recent twelve-month prospective study similarly found that global longitudinal strain remained impaired at one year in children with moderate mitral regurgitation, tracking with valve severity and paralleling NT-proBNP trends.[3] Incorporating global longitudinal strain into the initial evaluation of clinically "compensated" children in future cohorts could identify those genuinely at risk of progression, prompting earlier escalation of anti-inflammatory therapy or closer surveillance rather than false reassurance from a normal looking echocardiogram.

Serum NT-proBNP offers a complementary, more widely accessible tool. It has shown high sensitivity and specificity for distinguishing active carditis from quiescent rheumatic heart disease, falling with clinical resolution.[4] In centres without ready access to strain-imaging expertise, this simple biomarker could still add meaningfully to risk stratification alongside routine echocardiography.

The authors rightly flag that only half of their cohort adhered to penicillin prophylaxis, a figure consistent with the wider literature; a recent meta-analysis confirmed that good adherence lowers the odds of recurrence or disease progression by up to 71%.[5] Since recurrent, often unrecognised carditis appears to underlie the multivalvular, biventricular disease seen in Group A, prophylaxis adherence may well be the single most modifiable determinant of outcome in this population. Structured reminder systems, decentralised injection sites and task-shifting to trained community health workers deserve urgent evaluation in the Indian setting.

This well conducted study reinforces that severe rheumatic carditis remains a formidable paediatric cardiology emergency in India. Multicentre registries incorporating strain imaging and biomarker profiling, coupled with strengthened secondary prophylaxis delivery, could help refine risk prediction and prevent the silent progression from "compensated" to decompensated disease so clearly documented in this cohort.

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