Supplementary material

Addendum A

World Heart Federation criteria for echocardiographic diagnosis of rheumatic heart disease

A: Pathological MR and ≥ 2 morphological features of RHD of the MV B: MS (mean gradient ≥ 4mmHg) C: Pathological AR and ≥ 2 morphological features of RHD of the AV D: Borderline disease of both the MV and AV For borderline RHD (either A, B or C) A: ≥2 morphological features of RHD of the MV without pathological MR or MS B: Pathological AR C: Pathological AR Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion	For definite RI	HD (either A,B,C or D)
A: ≥2 morphological features of RHD of the MV without pathological MR or MS B: Pathological MR C: Pathological AR Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect		
D: Borderline disease of both the MV and AV For borderline RHD (either A, B or C) A: ≥2 morphological features of RHD of the MV without pathological MR or MS B: Pathological MR C: Pathological AR Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Irregular or focal thickening • Irregular or focal thickening	B: MS (mean g	radient ≥ 4mmHg)
For borderline RHD (either A, B or C) A: ≥2 morphological features of RHD of the MV without pathological MR or MS B: Pathological MR C: Pathological AR Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope Doppler echocardiographic criteria for AR (all four must be met) 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Irregular or focal thickening • Irregular or focal thickening	C: Pathologica	AR and ≥2 morphological features of RHD of the AV
Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	D: Borderline o	disease of both the MV and AV
B: Pathological MR C: Pathological AR Echocardiographic criteria for pathological regurgitation Doppler echocardiographic criteria for MR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for AR (all four must be met) 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	For borderline	RHD (either A, B or C)
2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	A: ≥2 morphol	ogical features of RHD of the MV without pathological MR or MS
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1. Seen in two views 2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	Echocardiogra	phic criteria for pathological regurgitation
2. In at least one view, jet length ≥ 2cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	Doppler echoo	ardiographic criteria for MR (all four must be met)
3. Velocity ≥3m/s for one complete envelope 4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	1. Se	en in two views
4. Pan-systolic jet in at least one envelope Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	2. In	at least one view, jet length ≥ 2cm
Doppler echocardiographic criteria for AR (all four must be met) 1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	3. Ve	locity ≥3m/s for one complete envelope
1. Seen in two views 2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	4. Pa	n-systolic jet in at least one envelope
2. In at least one view, jet length ≥ 1cm 3. Velocity ≥3m/s for one complete envelope 4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	Doppler echoo	ardiographic criteria for AR (all four must be met)
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4. Pan-diastolic jet in at least one envelope Echocardiographic criteria for morphological features of RHD Features in the MV • AMVL thickening ≥ 3mm • Chordal thickening • Restricted leaflet motion • Excessive leaflet tip motion during systole Features in the AV • Irregular or focal thickening • Coaptation defect	2. In	at least one view, jet length ≥ 1cm
Echocardiographic criteria for morphological features of RHD Features in the MV AMVL thickening ≥ 3mm Chordal thickening Restricted leaflet motion Excessive leaflet tip motion during systole Features in the AV Irregular or focal thickening Coaptation defect	3. Ve	locity ≥3m/s for one complete envelope
Features in the MV AMVL thickening ≥ 3mm Chordal thickening Restricted leaflet motion Excessive leaflet tip motion during systole Features in the AV Irregular or focal thickening Coaptation defect	4. Pa	n-diastolic jet in at least one envelope
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Chordal thickening Restricted leaflet motion Excessive leaflet tip motion during systole Features in the AV Irregular or focal thickening Coaptation defect	Features in the	e MV
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Excessive leaflet tip motion during systole Features in the AV Irregular or focal thickening Coaptation defect	• Ch	ordal thickening
Features in the AV Irregular or focal thickening Coaptation defect	• Re	stricted leaflet motion
 Irregular or focal thickening Coaptation defect 	• Ex	cessive leaflet tip motion during systole
Coaptation defect	Features in the	e AV
	• Irr	egular or focal thickening
Restricted leaflet motion	• Co	aptation defect
	• Re	stricted leaflet motion
Prolapse	• Pro	plapse

MR, mitral regurgitation; MV, mitral valve; MS, mitral stenosis; AR, aortic regurgitation; AV, aortic valve; RHD, rheumatic heart disease