healthy subjects recruited locally and 149 genotype-positive HCM patients were used to validate the model. Sensitivity and specificity were calculated.

**Results** The model $r^2$ for MWT was 0.39 – ie 40% of all MWT variation is explained by age, sex and body size (rather than individual variation/disease). The upper limit MWT is calculated as males: $1.299*(3.90*\text{BSA}+0.03*\text{Age}+2.06)$ and females: $1.249*(3.20*\text{BSA}+0.07*\text{Age}-0.34)$. Over a representative population (UK Biobank healthy volunteers), the 15mm threshold was >1mm too high in 58% and >1mm too low in 19% and appropriate in just 23% of cases.

For overt HCM patients (mean MWT 21.3+/-5.1) using the new individualised MWT cut-off value, sensitivity is preserved (91%, 136/149). For UK Biobank subjects, 4% (162/4118) are classified as abnormal with 4%(10/258) of a second hold-out healthy volunteer set giving a sensitivity of 91% and specificity of 96%.

**Conclusion** The current “one size fits all” 15mm cut point for abnormal LVH is only appropriate in one in four of the population and biased. Using superhuman AI for wall thickness, we propose an age, sex and BSA adjusted MWT to overcome these that overrides this whilst preserving sensitivity and specificity. Further refinement may include athleticism, comorbidity and ethnicity.

accelerated adenosine stress first-pass contrast enhanced CMR perfusion imaging at 1.5T MRI. Absolute stress MBF was derived. Visual analysis of the dynamic perfusion series was undertaken by two expert CMR readers. Diagnostic accuracy was determined on presence of significant CAD as defined by ICA and FFR ≤ 0.80 using Area under the Curve (AUC) from receiver operator characteristic curves.

Results At the patient level, there was significantly lower MBF in patients with CAD compared to those without CAD (2.03 [1.82 – 2.37] vs 2.68 [2.31 – 2.93] ml/g/min, p<0.001). There was a high diagnostic accuracy for the detection of CAD for quantitative stress MBF with AUC 0.84 (95% confidence interval [CI] 0.68–0.94, p<0.001), and for visual analysis with AUC 0.89 (95% CI: 0.75 – 0.97), p<0.0001). These were not significantly different (p=0.52). The optimal threshold for MBF detection of CAD was ≤2.50 ml/g/min, with sensitivity of 100% (95% CI: 77%-100%) and specificity of 71% (95% CI: 49%-87%).

Conclusion High-resolution quantitative near whole-heart myocardial perfusion imaging shows good diagnostic accuracy for detection of significant CAD, with comparable accuracy compared to expert visual analysis. This technique could be considered for automated widespread clinical use without the need for expert analysis of visual dynamic perfusion images.

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5 CORRELATIONS BETWEEN CARDIAC MAGNETIC RESONANCE AND MYOCARDIAL HISTOLOGIC FINDINGS IN FABRY DISEASE

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Discussion This study compared CMR with myocardial histology in FD patients focusing on storage (vacuolization), LVH and native T1 values. Main findings were:

1. Histological changes preceded imaging changes: myocyte hypertrophy pre detectable LVH, storage pre detectable T1 lowering and fibrosis LGE.
2. Myocyte size increased with storage and clinical LVH.
3. Significant storage was necessary for both clinical LVH and T1 lowering.
4. The relationships between storage and clinical LVH was non-linear.
5. Native T1 values fell with storage until the presence of overt LVH (i.e. increased LVMi), when the relationship trend was lost.

Conclusion In FD, histological changes precede imaging changes. LVH correlated with myocyte storage with 45% vacuolization (10% VMD) needed for detectable LVH. T1 lowering strongly correlates with myocyte vacuolization in early disease but not in advanced disease.

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6 CMR SERVICE IMPROVEMENT VIA DEPLOYED SERVICE-LEVEL RAPID CMR PROTOCOLS WITH INTEGRATED AI

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Background Demand for CMR has been increasing year on year, and has been exacerbated by the pandemic. The need