

# Quantitative tools to detect early manifestation of Rheumatic heart disease among indigenous communities

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## Introduction

Among Indigenous Australians, rates of Acute Rheumatic Fever (ARF) continue to be among the highest in the world. Diagnosis remains a clinical decision based on identification of major and minor manifestations of the illness. Treatment involves lengthy prophylaxis that can continue for a minimum of 10 years.

We therefore utilised echocardiography as a diagnostic tool for analysis of early diagnosis of RHD.

## Methods

Data from patients with suspected RHD, based on previous ARF history and clinical manifestation (n=8), and age matched controls (n=10) underwent LV functional analysis via 2D longitudinal strain and indices of myocardial work were derived.

Furthermore, LA strain was assessed with GE analysis package for functional reservoir, conduit and contraction indices.

Fig 3

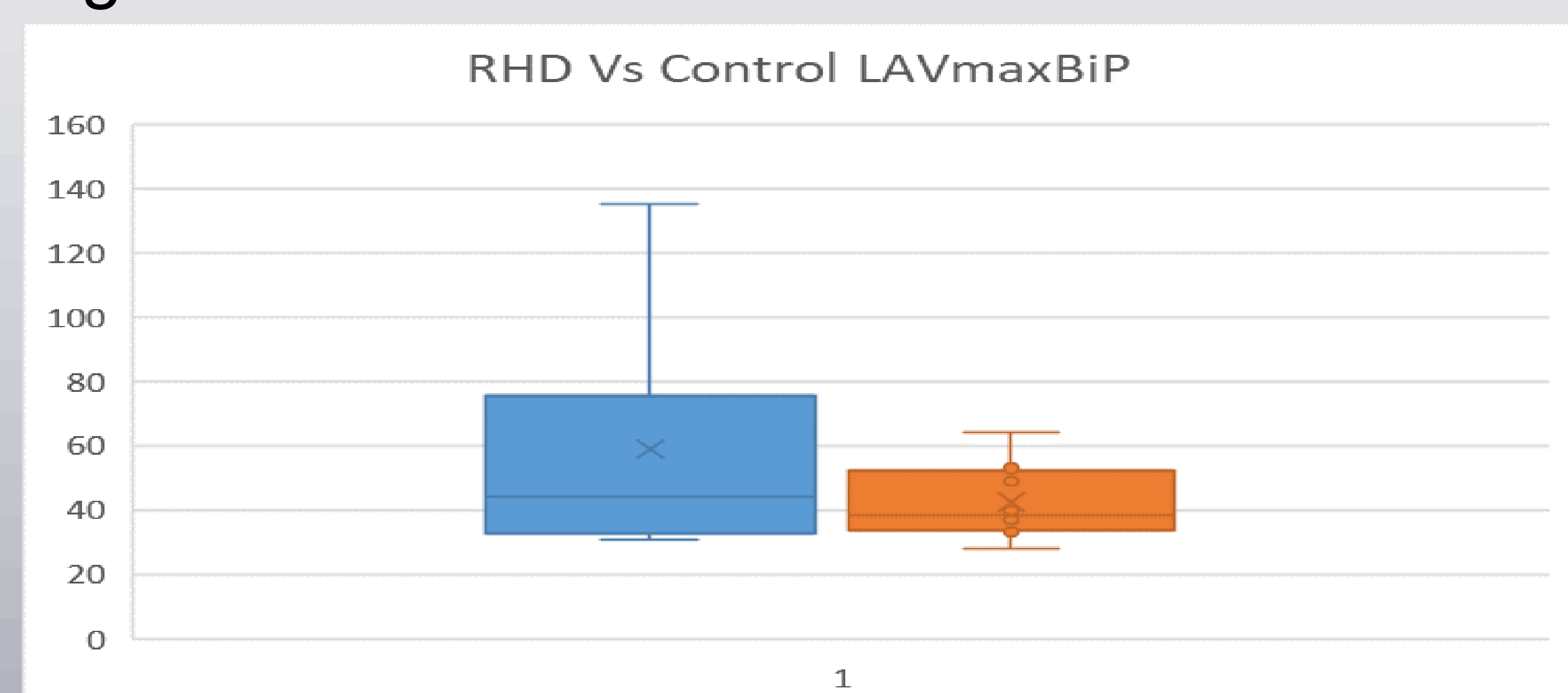


Fig 4

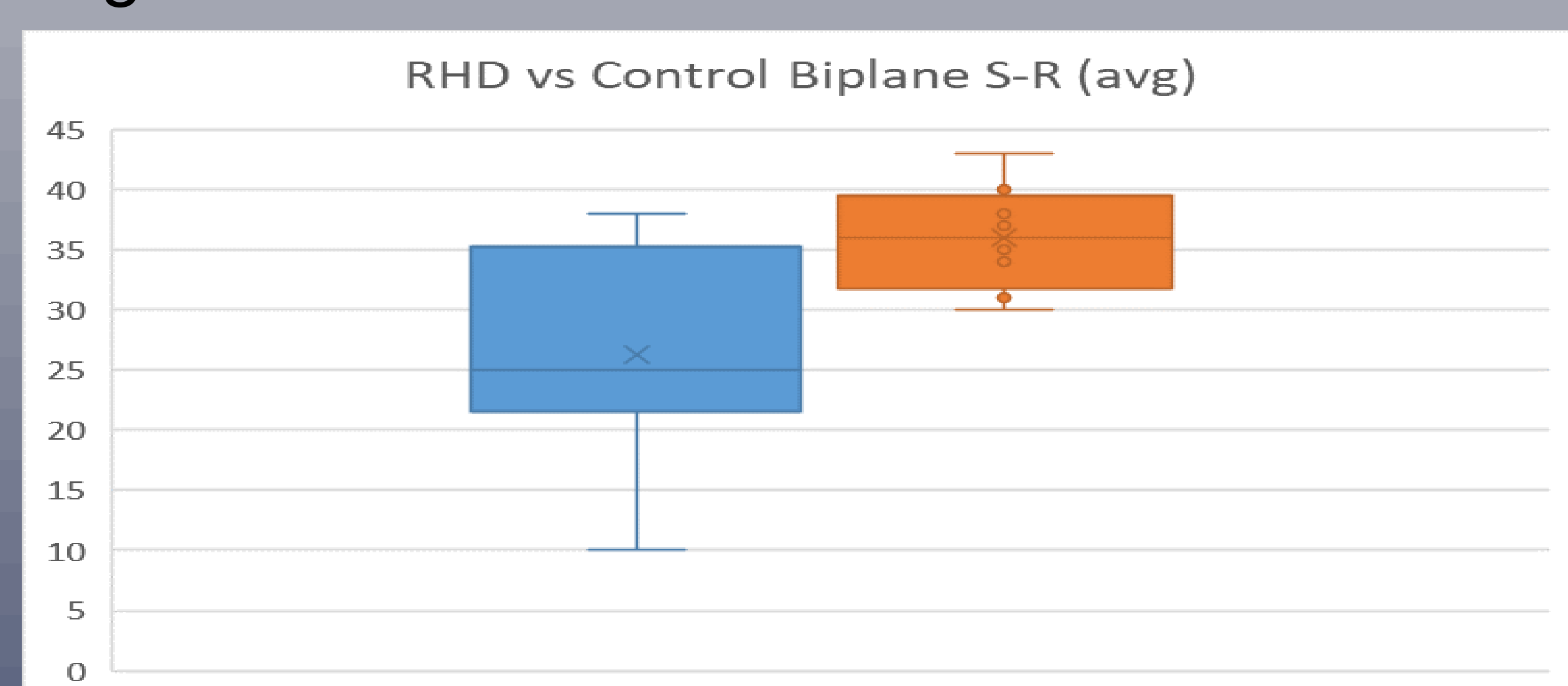
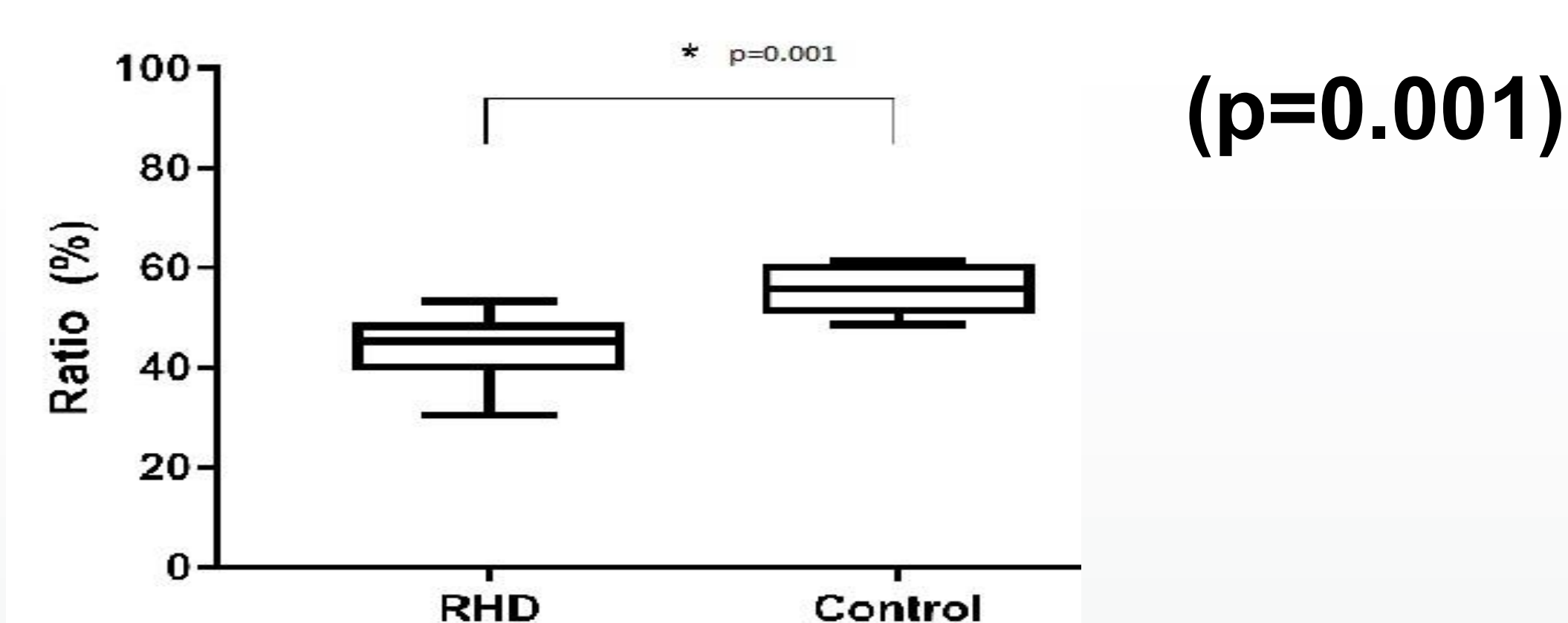
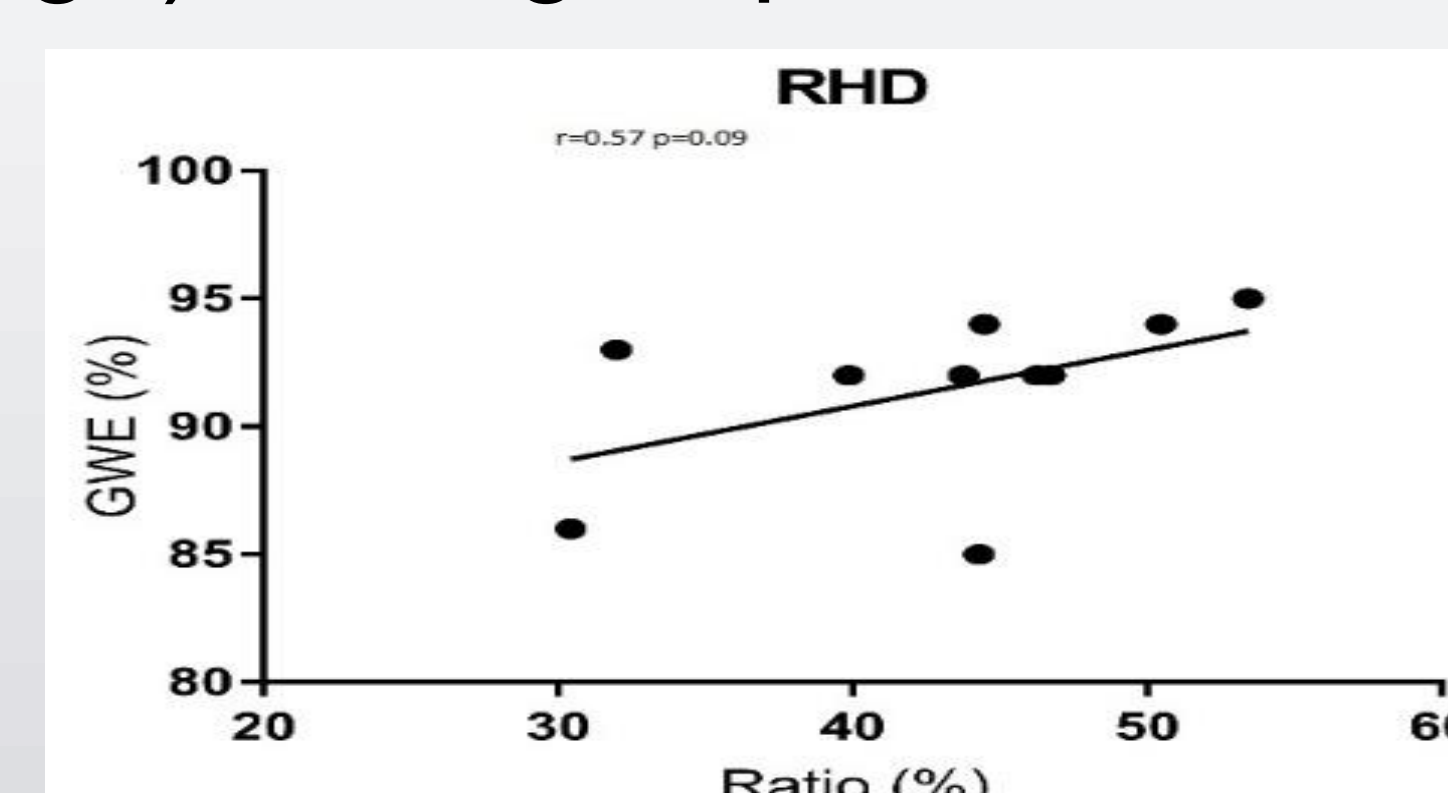


Fig 3

(fig 1) MVBS ratio % comparison control / RHD



(fig2) RHD group the ratio vs GWE (r= 0.57, p=0.09 )



## Results

Correlates of LV function and LA strain included Global work Index (GWI), Global longitudinal Strain (GLS) and Global work efficiency (GWE). Of the above correlates, the RHD group: GLS and GWI were significantly correlated with LA strain (correlation of -0.77,  $p < 0.05$ ).

MVBS: comparison with controls reached statistical significance ( $p=0.001$ ) Fig 1, within the RHD group the ratio vs GWE ( $r= 0.57$ ,  $p=0.09$ ) Fig 2 showed a trend to significance.

Of the LA strain in comparison to controls: Reservoir and conduit were statistically significant ( $p < 0.01$ ), ( $p < 0.05$ ) respectively. (fig 3, fig 4.)

## Conclusions

Previously we showed that calibrated MVBS ratio % may be a promising quantitative tool to detect early manifestation of RHD potentially aiding an early treatment plan and thus reducing the clinical burden of monthly penicillin injections for a ten-year period. Moreover, the determinants of myocardial work and LA strain may further add to the diagnosis and potential early treatment plan.

## References

Further Information  
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