Risk of Chronic Cardiomyopathy Development and its Determinants in Patients with the Acute Phase and Indeterminate Form of Chagas Disease: A Systematic Review and Meta-Analysis

Sindhu Chadalawada1, Stefan Sillau2, Leoland Shapiro1, Peter J. Hotez1, Lalita Woc-Colburn1, Kristen DeSanto1, Anis Rassi Jr.3, Carlos Franco-Paredes2, Andrés F. Henao-Martínez2

Background
• Chagas cardiomyopathy, a complication of Chagas disease occurs in 20-30% of untreated cases, causing substantial morbidity and mortality
• Presently, we lack precise annual estimates of the risk of cardiomyopathy development among patients with the acute and indeterminate forms of Chagas disease

Methods
• Design: Systematic review and meta-analysis
• Timeline: January 1945 to October 2018
• Population: Longitudinal observations of individuals with acute or indeterminate form until the development of cardiomyopathy
• Data Source: MEDLINE, Web of Science Core Collection, Embase, Cochrane Library, and LILACS
• Studies critical appraisals were performed utilizing the JBI Reviewer’s Manual checklists, and data was collected from published studies
• Events were defined as the composite of development of any new arrhythmias or ECG changes, echocardiographic changes including dilated cardiomyopathy or segmental wall motion abnormalities, and sudden cardiac death
• We used random-effects meta-analysis in STATA software to obtain pooled estimated annual rates.

Results
• 10,761 records were identified through database searches of which 5,005 studies were screened for eligibility
  - 298 full-text articles were reviewed, and 187 studies were included in the final synthesis for appraisal
• Twenty-three studies had longitudinal observation outcomes for the chronic indeterminate form of Chagas disease and nine for acute Chagas infection
• Pooled annual rate estimate of cardiomyopathy of 1∙9% per year (95% CI: 1∙3 - 3∙0%, I² = 98∙0%, τ² (ln scale) = 0∙9992) per year in chronic indeterminate Chagas patients
• Pooled annual rate estimate of cardiomyopathy of 4∙6% (95% CI: 2∙7 - 7∙9 %, I² =86∙6%, τ² (ln scale) = 0∙4946) per year in acute chagasic patients.

Conclusion
• People living with the indeterminate form of chronic Chagas disease have a significant annual risk of cardiomyopathy development
• This risk more than doubles for patients diagnosed with acute infection.

References
• Nunes et al, 2018. Illustration Of The Most Common Findings In Patients With Chagas Cardiomyopathy. 
  [image] Available at: <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000599> [Accessed 30 March 2020].