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FEASIBILITY AND SEPTAL PERFORATION RATES IN LEFT BUNDLE BRANCH AREA PACING

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ABSTRACT

Background

Left Bundle Branch area Pacing (LBBaP) is gaining prevalence as a more physiologic alternative to conventional right ventricular pacing. There is limited data on acute and mid-term feasibility and safety of LBBaP. This retrospective study assessed feasibility and septal perforation rates following LBBaP.

Methods

LBBaP procedure reports and electrophysiologic parameters including capture threshold, ventricular sensing and pacing impedance were reviewed of patients that underwent LBBaP since 2019. Partial septal perforation was defined as any two of: a) reduction of pacing impedance by 200 ohms b) increase in capture threshold by 50% and c) decrease in ventricular sensing by 50% during follow-up compared to approximately 1-week post pacemaker implant.

Results

Since 2019, LBBaP was attempted in 168 patients with all QRS duration and morphologies. LBBaP was acutely successful in 102 patients (60.7 %), partial successful in 55 patients (32.7%) defined as QRS reduction of >20ms and QRS duration of <140ms and unsuccessful in 11 patients (6.6%) of all cases. QRS duration shortened or remained short in patients after successful LBBaP compared to unsuccessful (113 ms vs 147 ms, $p < 0.001$). Left ventricular ejection fraction was not significantly different following successful LBBaP ($p = 0.92$). Five patients (3%) had potential septal perforation based on above criteria in whom LBBaP was attempted. Lead revisions were not arranged for these patients as their pacing requirements were not high and it was clinically appropriate to continue 3 monthly observations in clinic.

Conclusion

We report success rates of LBBaP recently adopted in a large tertiary center. In a medium-term follow-up, we show that changes in electrophysiologic parameters likely consistent with partial septal perforation may occur spontaneously in small number of patients (3% in our cohort) over time. Clinical significance of these changes and confirmation with imaging requires further study.

BIOGRAPHY

Muhtashim Mian competed his MD and MSc at University of Toronto in 2020. He has 4 publications in peer-reviewed journals with over 100 citations combined. He is an internal medicine resident at Western University.

Habib Khan is an Assistant Professor in the Division of Cardiology, Department of Medicine, Schulich School of Medicine and Dentistry, University of Western Ontario. He has published over 100 publications in peer reviewed journals. He is an Electrophysiologist and member of the Arrhythmia Service at the London Health Sciences Centre in London, Ontario.

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