

ADVANTAGES OF REMOTE MONITORING FOR PERMANENT HIS BUNDLE PACING FOLLOW UP

Ulhas M Pandurangi- Chief of Dept' of Electrophysiology & Pacing

Aparna B, Aishwarya S, Kotti K, Ramkumar S R, Mahima P, Nithin G, Muthu Seenivasan



The Arrhythmia Heart Failure Academy

Department of Cardiac Electrophysiology & Pacing,
The Madras Medical Mission Hospital, Chennai, India
Email: arrhythmiaheartfailureacademy@gmail.com



INTRODUCTION

- His bundle pacing (HBP) has gained a lot of interest in the recent times. However, His bundle lead is more prone to undersensing, oversensing and higher capture thresholds compared to the conventional apical lead. This calls for a standard monitoring protocol to optimize battery and device performance, especially in those patients without a backup ventricular lead.
- There are published guidelines for in-clinic follow up of these patients.
- The data is scarce regarding follow up through remote monitoring (RM) and the influence of RM on conservation of battery and optimizing device performance.

METHODS AND RESULTS

We followed up 18 patients prospectively during the period from June 2018 to February 2019 who underwent HBP using the Medtronic SelectSecure™ MRI SureScan™ 3830 (4.1Fr) lumen less lead driven by the Medtronic C315 HIS (7Fr) delivery catheter. Out of these, 11 (61%) patients are under RM. As a standard practice, the His output for these patients was set at 5V @ 1ms and the His sensitivity at 0.90 mV for the first month. These patients were advised to do the first transmission 15 days post implant, the next at 1 month and every 3 months there on.

Transmission details are shown in the table:

Time Period	No. of transmissions received out of 11
15 Days	10 (91%)
1 st Month	09 (81%)
3 rd Month	08 (73%)

At the 1 month remote follow up, 8 patients (88%) had a His threshold less than 2V at 1ms with a mean of 1V ± 0.75V. These patients were called to the clinic and the His output was optimized from 5V @ 1ms to a value 1.5V more than the measured threshold at 0.4ms. We confirmed HB capture from the ventricular capture management (VCM) algorithm and the current EGM. None of our patients had 'High threshold' from VCM, ruling out false non capture in cases where HV is prolonged and the evoked response goes undetected. One patient was found to have intermittent loss of capture.

REMOTE MONITORING GUIDED TROUBLESHOOTING

Troubles	No of patients	Time of detection	Measures taken
Oversensing	2 (18%)	1 patient at 15 th day and another on 1 st month	His sensitivity was reduced
Undersensing	1 (9%)	15 th day	His sensitivity was increased
Intermittent loss of capture	1 (9%)	3 rd month	Output was increased

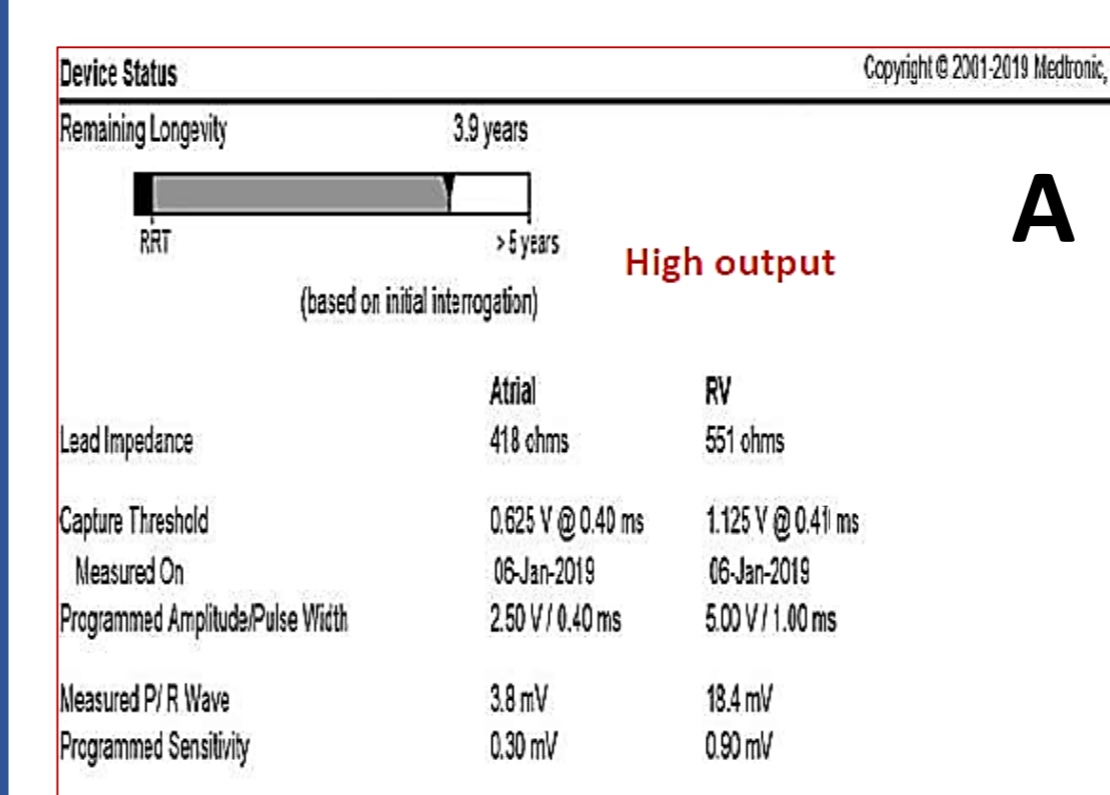


Figure A: Low threshold- High output: Patient called for optimizing battery

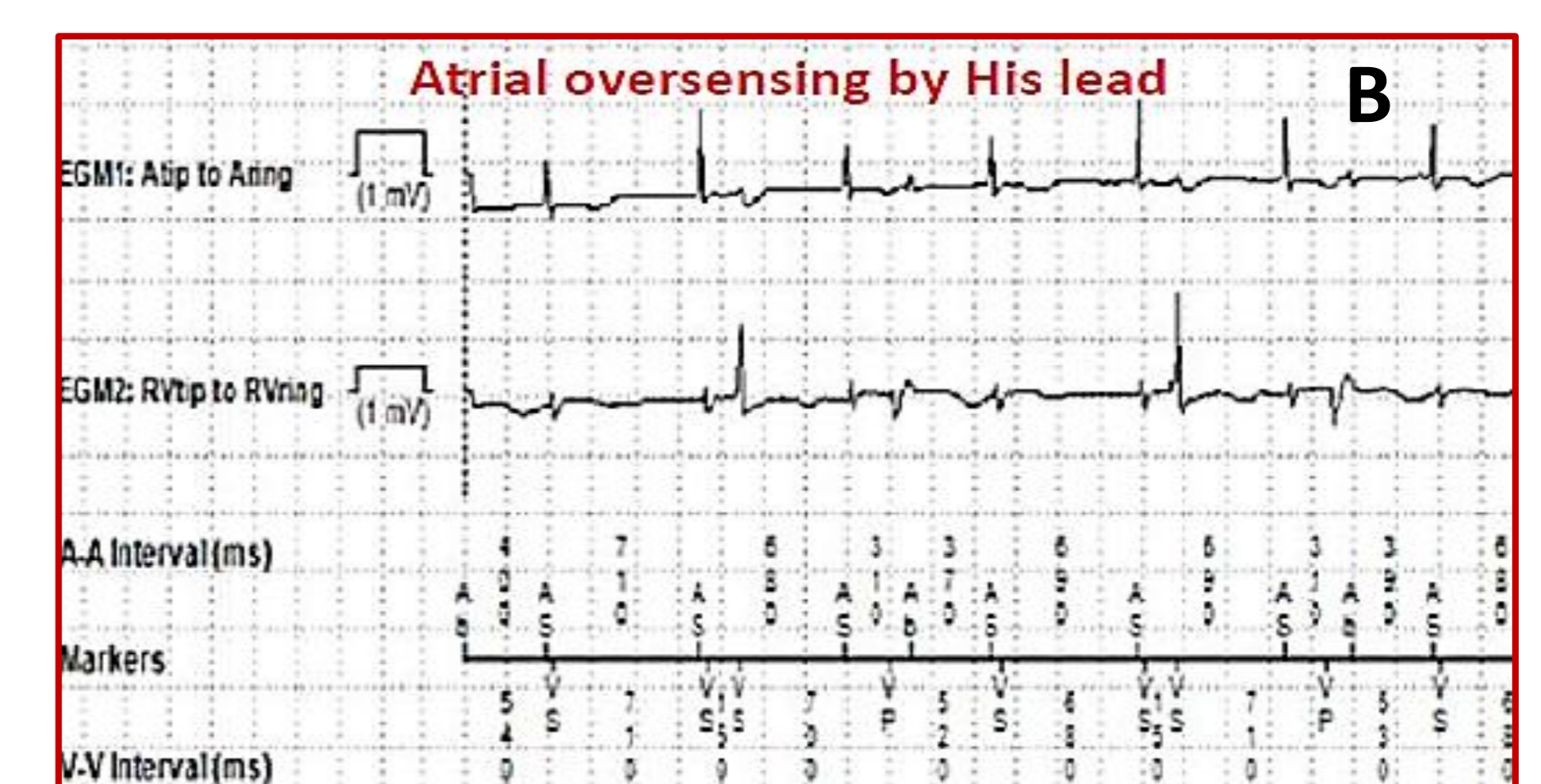


Figure B: Patient called for optimizing sensitivity

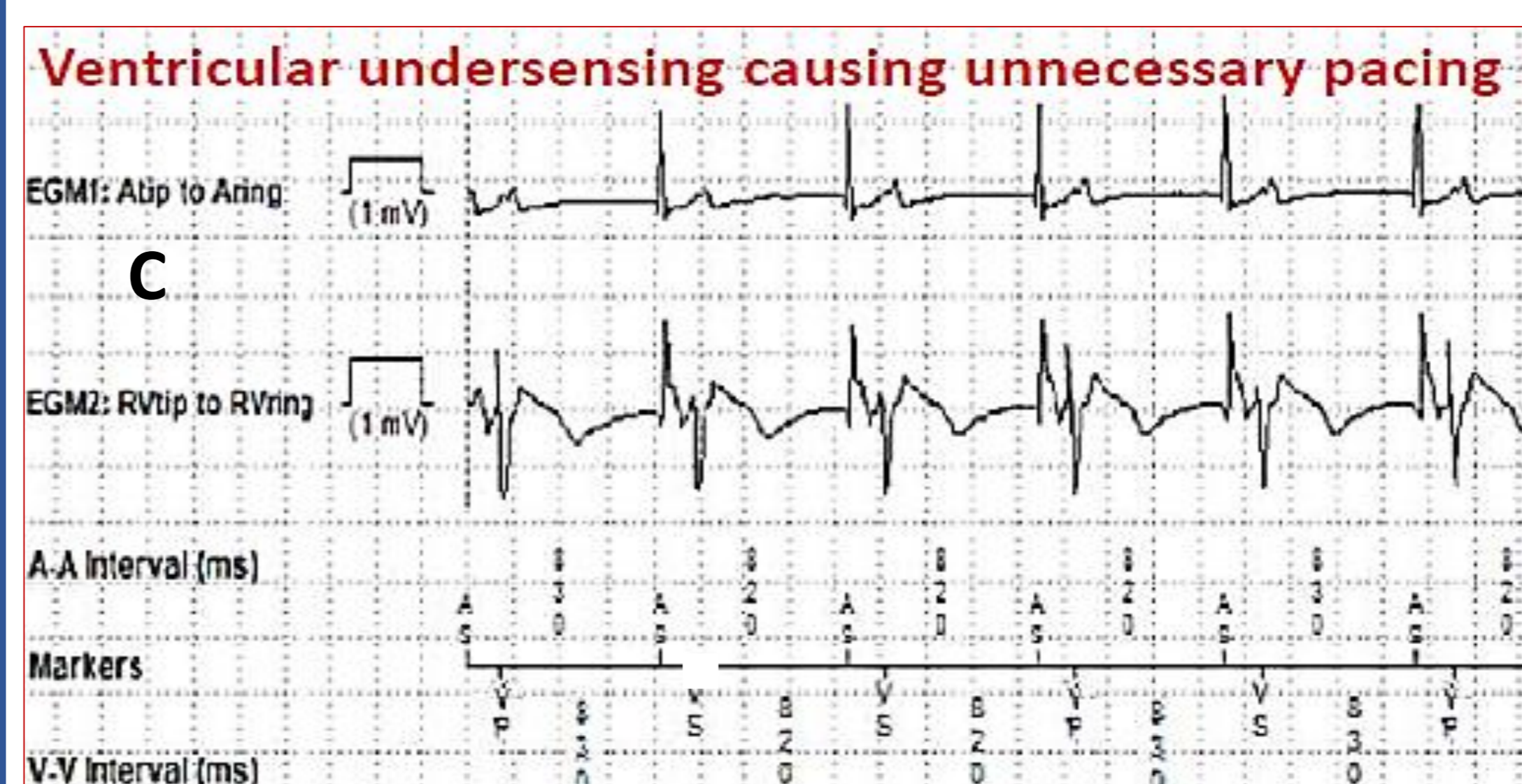


Figure C: Patient called for optimizing sensitivity



Figure D: Asymptomatic patient called for optimizing output

CONCLUSION

VCM is of immense importance even in HBP except when high threshold alert is noted which can be misleading. Permanent His bundle pacing follow up needs to be more frequent and detailed as compared to conventional permanent pacing. With the help of RM follow up, early proactive intervention is possible to optimize HBP parameters, thereby providing a standard of care and better quality of life.