Sleep Parameters in patients (Pt) using cardiac pacing (Integrity DR) with sleep rate function On/Off

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The REM (Rapid Eyes Movement) sleep, the most quantity of rapid ocular movements is concentrated. The sleep respiratory disorders are associated to a cardiac rhythm disorder such as brady-tachycardia, atrial fibrillation and ventricular arrhythmias. Treatment with (PM) showed an abnormal respiratory event reduction during the sleep. A new algorithm was incorporated in PM, which permits a reduction of the basic rate if.

Purpose: comparison with Pt sleep parameters using PM with rate adjust based on absence of activity (Integrity DR, S.Jude Medical Inc:USA) on and off sleep rate function.

Methods:

1. Here we report our preliminary findings.

2. We evaluated 22 Pt (14 women) with indications were: SSS, Complete AV Block and AF, in a double blind study(polynomialography).

3. Sleep efficiency improvement (total sleeping time) was showed by 12 Pt (54%) with on. These Pt had had the worst sleep efficiency with off in comparison to those whose parameters have not been changed (72 + 12 X 81 + 7%, p=0,01 respectively). This first group had lower latency for REM sleep that the last one (89 + 55 X 174 + 107 min, p=0,01, respectively).

4. The microawakening(mw) number per hour was reduced by 12 Pt (54%) with on. These Pt had had the worst sleep efficiency with off in comparison to those whose parameters have not been changed (72 + 12 X 81 + 7%, p=0,01 respectively). This first group had lower latency for REM sleep that the last one (89 + 55 X 174 + 107 min, p=0,01, respectively).

5. The microawakening(mw) number per hour was reduced by 12 Pt (54%) with on. These Pt had had the worst sleep efficiency with off in comparison to those whose parameters have not been changed (72 + 12 X 81 + 7%, p=0,01 respectively). This first group had lower latency for REM sleep that the last one (89 + 55 X 174 + 107 min, p=0,01, respectively).

Conclusions: The PM use with the rest rate adjust “on” increased Pt sleep quality and time in Pt who presented injured sleep.

Optimization of intravascular vagal stimulation parameters

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Background: published studies have demonstrated successful intravascular vagal stimulation (VNS) using basket mapping catheters in canines and humans. They have reported the minimum voltage required for doubling the RR interval but have not optimized other factors that can directly influence this threshold. Our study is directed at optimizing these factors: pulse width, electrode arrangement, relative surface area, spacing, and polarity; and producing a complete strength-duration curve. Here we report our preliminary findings.

Methods: in 16 dogs, an EPT Constellation basket catheter with 8 electrodes on each of 8 splines was deployed passively in the SVC. Voltage (2.50V) was applied at 15-30Hz for 0.1-5 ms pulse width and various electrode combinations along a single spline during intrinsic and paced rhythms in a continuous or triggered fashion.

Results: successful stimulation was achieved in 13 dogs (1 died of VF during experiment and VNS did not cause rate slowing in 2). The minimum threshold for increasing RR intervals by 10% varied from dog to dog, but remained between 7-9V. The minima of the applied energy and strength-duration(SD) curves indicate that the optimal pulse width for inducing a 10-50% increase in RR interval ranges from 1.0 to 5.0ms depending on the magnitude of the effect. The SD curves suggest that the optimal stimulation frequency for inducing a 10-50% increase in RR interval ranges from 20-30 Hz, depending on the magnitude of the effect. When stimulating the Vagus at higher voltages, longer pulse widths led to a more abrupt change in RR interval; however, there were no significant differences in cumulative effect observed at lower stimulation voltages for different pulse widths. Based on the above, stimulation parameters should be optimized per subject. The results presented here are specific to the basket catheter used and no extra measures were taken to increase the electrode-tissue contact. A catheter with a more active deployment mechanism that maximizes the electrode-tissue contact could yield different results and possibly lower thresholds.

Conclusions: these results indicate that the minimum transvenous VNS parameter values depend on the minimal cardiac effect desired. For 10-20% increase in RR interval, a minimum of 7 V, at 15Hz with 2.0ms pulse width using a balanced tripolar with a central cathode is required.

Quality of life in patients with digital pacemakers

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Background: Today’s pacemakers offer an entire range of programming functions that enable physicians to individually tailor their patient’s cardiac treatment. In order to optimize pacemaker use in clinical practice, a reduction in the most essential programming and statistical functions can be considered for the generally present default functions. The new range of digital pacemakers monitors patient day and night and, during a follow up device check, shows doctors everything they need to know in just a few seconds. A digital pacemaker saves historical data from previous follow-ups. It keeps diary of arrhythmia episodes that monitors whole period in between follow-ups, capturing up to 400 episodes. The possibilities to classify the heart rhythm are much more extensive. Aim of study was to compare quality of life in patients with digital pacemakers.

Methods: We enrolled 26 patients (65% women, 35% man), The mean age of the study group was 69,7 years ± 12,0 years. Mean weight was 77±16 kg. We compared them with our group of patients with implanted analogue devices (DDD/DDDR - 62 patients, mean age 69,6±9,3, mean weight 78,6±12,3kg). We compared patient symptoms at standard conditions (at home, resting) using our own query sheet, afterwards at follow up patient had an exercise (on bicycle ergometer 1.5 W per kilogram for 10 minutes)

Results: Patients with digital devices felt significantly less symptoms (p<0.01) compared with analogue devices. At exercise 100% patients with digital pacemakers were able finish whole program compared with 87% patients with analogue devices (p<0.05).

Conclusion: Our results suggest that the multifaceted programming and statistics functions of a modern digital pacemaker differ considerably in their uses and benefits. A reduction in the most essential programming and statistical functions can be considered for the generally present default functions. And more time for cardiologist means better setting for patient, therapy advisor allow us early therapy changing due to special pacemaker functions.

Reflex bradycardia during rectal distension

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Background: Pts with irritable bowel syndrome (IBS) exhibit visceral hypersensitivity. Also, there is evidence for autonomic nervous system involvement in IBS. Here we address the question whether rectal balloon distension (a standard diagnostic procedure) elicits exaggerated autonomic responses in IBS pts.

Methods: We investigated 121 subjects (40 male, 81 female, mean±SD age 40.0±13.8 yrs): 85 were IBS pts and 36 were a matched control group (C). After rectal placement of the barostat visceral stimulator balloon, a slow, 1 mmHg/min, ramp distension till 30 mmHg was done while rating perception on a 10-point scale. After a resting period a continuous balloon pressure of 15 mmHg was applied during 6 min.

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