



Introduction: The pathophysiology of neurally mediated syncope (NMS) remains controversial. Age related cardiac autonomic function in patients with NMS has not been systematically assessed.

Objective: To determine the characteristics of age related non-invasive cardiac autonomic function in patients with NMS

Methods: 1336 subjects with clinical diagnosis of NMS were assessed in the autonomic physiology laboratory at Fundacion Cardiovascular de Colombia. 815 patients had positive response to 70° head-up tilt test (HUT) standard to either a nitroglycerine or low-dose isoproterenol protocols. Patients were divided in three study groups for comparison according to age: A = < 30 years (mean age 17±5); B = 31 to 65 years (48±9) and C = >66 years old (74±5). Non-invasive beat-to-beat (Finapres monitoring) heart rate (HR, bpm) and mean arterial blood pressure (MAP, mmHg) as well as short-term heart rate variability (HRV) and baroreflex gain (BRS, mmHg/msec) were measured using power spectral analysis and coherence and phase techniques respectively during supine 5 minutes (min) rest and during 5 min of 70°orthostatic stress (OS). HRV indexes, low-frequency (LF, normalized units: nu) and high-frequency (HF, nu) bands were obtained, and the LF/HF ratio was also calculated. In addition, cardiovagal function was assessed using 6 cycles per minute deep breathing test protocol (deep breathing difference DBD, bpm). One-way ANOVA and Student's t test were applied (significance test: p<0.05)

Results: Variables are shown as means ± SD. Significantly higher DBD was found in group A compared to groups B and C (20±8 vs. 14±8 and 20±8 vs. 15±11 respectively). HRV and BRS results are presented in the table above:

	A (n=358)		B (n=303)		C (n=154)	
	Supine	OS	Supine	OS	Supine	OS
HR	71±12	92±17	68±12*	83±15*	69±12†	76±13†
MAP	73±15	80±17	81±16*	86±18*	84±19†	87±19†
LF	47±28	44±18	41±17*	39±20*	37±22†	33±22†
HF	46±28	32±23	32±20*	29±24	31±22†	31±22
LF/HF	1.5±3.0	4.0±5.1	2.9±4.7*	4.2±5.1	3.0±4.9†	3.0±4.†
BRS	21±43	11±12	10±48*	7±5	7±21†	5±4

* = Group A vs. Group B, p<0.05; † = Group A vs. Group C, p<0.05; ‡ = Group A vs. Group C, p=0.06

Conclusion: Patients with NMS have characteristic age-related cardiac autonomic responses. Younger NMS patients have an increased chronotropic activity at rest and OS and a decreased vascular reactivity. Higher sympathovagal balance and progressive decrease in cardiovagal BRS were documented in older patients with NMS. Age related autonomic compensatory mechanisms during OS may trigger different vasovagal responses.

P.2.5 RELATIONSHIP BETWEEN CAROTIDS SINUS MASSAGE, TEST WITH ADENOSINE AND HEAD-UP TILT TEST IN PATIENTS WITH SYNCOPE

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The aim of study was comparison of results of carotids sinus massage (CSM) and adenosine test (AT) in patients with syncope diagnosed by head-up tilt test (HUTT).

We observed 169 pts (81 men, 88 women) aged 18-58 yrs (x38,2 yrs) with syncope referred to HUTT.

All pts underwent standard HUTT (HUTT-s) acc. To Westminster protocol. Additional tilt with isoproterenol infusion (HUTT-I) was performed in pts with negative HUTT-s. HUTT was assessed as positive if reproduced symptoms referred by patients.

Carotid sinus massage and rapid IV injection of 12 mg of adenosine were done in all pts. RR pauses > 6s induced by adenosine injection or RR pause > 3 s and/or blood pressure fall induced by CSM were assumed as positive tests results.

Results: 16 pts (9,5%) had positive AT and 18 pts (10,6%) had positive CSM.

Positive AT was observed in 10% pts with negative HUTT-s; in no pts with positive HUTT-s, in 23,1 % of pts with negative HUTT-I and in 8% of positive HUTT-I

Positive CSM was observed in 20% pts with negative HUTT-s; in 13,3% pts with positive HUTT-s, in no pts with negative HUTT-I and in 8% of positive HUTT-I

Carotid sinus hypersensitivity was no more frequently observed in patients with positive HUTT-I than in positive HUTT-s.

Positive AT results were more frequent in pts with negative results of HUTT (both HUTT-s and HUTT-I)

Conclusions: Carotid sinus hypersensitivity as a kind of neurocardiogenic syncope seems to have different mechanism than vaso-vagal syncope.

HUTT-I rather do not induce syncope by carotid hypersensitivity mechanism. Adenosine may be useful in the diagnosis of syncope in patients with negative results of head-up tilt test.

P.2.6 WIPI+PLUS: DESIGN AND IN-VITRO TESTS RESULTS

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WIPI stands for "World wide Identification system for Pacemakers & ICD's".

And WIPI+PLUS for WIPI and all electronic & non-electronic implantates as previously described. This system takes care of an easy way of providing all pacemaker & ICD & and other as named, data in patients. This identification is possible through a digital micro chip. This chip works as a stand alone and is mounted in the header of the implanted device. Data can be read and write by a separate device-programmer, which is a small hand held model. The is housed in a micro-transponder. The external apparatus is taking care of the power supply of the device. The chip is separate from the pacemaker or ICD electronics. The reason for that is that WIPI can be used by all manufacturers and therefore be used a common and standard method between manufacturers. Today, programmers from company A cannot retrieve data from company B and v.v.. Therefore, most hospitals have several programmers available, sometimes 10 different models. With WIPI, only one programmer can be used for all models and all manufacturers. On top of that the unit does not consume energy in the implantate.

WIPI+plus is the name for a identification system that can be used also for Neurostimulators, Stomic/ Colon stimulator, Oesophagus stimulator, anal stimulators, orthopedic implantates, ear apparatus.

In vitro tests of 5 pacemakers and 5 ICD's show normal interrogation and programming of data into the microchip after mounting into the header.

It is concluded that the use of limited data through a microchip as mounted into the PM or ICD header works and shows promising advantages for future pacemaker or ICD design.

P.2.7 PACEMAKER REGISTRY IN SAITAMA PREFECTURE, JAPAN

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Objective: Pacemaker Registry has been started since 2004 to establish a reliable source of pacemaker use in Saitama-prefecture having the fifth largest population in Japan.

Method: Patient demographics, pacemaker system characteristics, and implant procedure were registered.

Result: 960cases (462Males, mean age 73.2 years, first implant 650cases) from 65institutions were registered. Number of implantations was <30cases in 56institutions, (86.2%), ≥30cases at 9 (13.8%). Cardiologists performed 674 (81.5%) implantations in catheter lab whereas Surgeons performed 103 (79.8%) procedures in surgery. Physiological pacing mode was chosen in 67% of Sick Sinus Syndrome and 81.2% of Heart Block. Screw-in lead was most widely used in atrium (52.7%) whereas tined-lead was the most in ventricle (71.6%). Subclavian puncture was most widely used in 80.8% of atrial and 73.2% of ventricular lead. Pacing sites were RA appendage (55.8%), atrial septum (35.6%), and others (8.6%) in the atrium, and RV apex (93.2%), and others (6.8%).

Conclusions: The data from Saitama Pacemaker registry gives a good account of patient demographics and pacemaker practice in Saitama in the first year which will be useful as a future source of reference.

P.2.8 EFFECTS OF ATRIAL SYNCHRONOUS VENTRICULAR (VDD) PACING ON HEART RATE VARIABILITY IN COMPLETE ATRIOVENTRICULAR BLOCK

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It is known that sympathetic nervous cardiac control is enhanced in the setting of complete atrioventricular block (CAVB). However, effects of different pacing modes on cardiac nervous control are not yet clarified. We aimed to evaluate autonomic modulation of the sinus node using spectral analysis of heart rate variability (HRV) in patients with CAVB and implanted pacemakers during