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Title: Abnormal heart rate variability in patients with sarcoidosis

Dr. Elias 26801 Giallafos gialaf@yahoo.com MD ^{1,3}, Dr. Vasilios 26821 Kouranos kouranos@yahoo.com MD ⁴, Dr. Anastasios 26822 Kalianos kalianos@yahoo.com MD ^{2,4}, Dr. Georgios 26823 Kaltsakas kaltsakas@yahoo.com MD ¹, Dr. Ilias 26824 Peros Peros@yahoo.com MD ⁵, Dr. David 26825 Tsoukas tsoukas@yahoo.com MD ², Dr. George 26837 Dionelis dionelis@yahoo.com MD ¹, Dr. Charalampos 26839 Kostopoulos kostop@yahoo.com MD ⁴, Prof. Eleutherios 26846 Stamboulis stamb@yahoo.com MD ³, Prof. Nikos 26848 Koulouris koulouris@yahoo.com MD ¹ and Dr. Aggeliki 26850 Rapti rapti@yahoo.com MD ^{2,4}. ¹ 1st Department of Pulmunology, University of Athens, Greece ; ² 2nd Department of Pulmunology, Chest Disease Hospital "Sotiria", Athens, Greece ; ³ 1st Department of Neurology, University of Athens, Greece ; ⁴ Outpatient Clinic for Sarcoidosis, Chest Disease Hospital " Sotiria", Athens, Greece and ⁵ Department of Pulmunology, Geniko Kratiko Hospital -"Agios Panteleimonas", Nikaia, Greece .

Body: Background: Heart Rate Variability (HRV) can predict cardiovascular events, especially sudden cardiac death and ventricular arrhythmias. Aim of this study was the evaluation of HRV indices in sarcoidosis (Sarc). Methods: 180 biopsy proven Sarc patients who were not taking antiarrhythmic drugs were included in this study. They were compared with 72 sex and age matched healthy subjects. All participants had pulmonary function tests, cardiac ultrasound, 24-hour Holter monitoring and cardiac MRI and were classified to group A (healthy), group B (cardiac-free Sarc) or group C (cardiac Sarc). The average heart rate (mean HR), the maximum and minimum heart rate (maxHR and minHR), the root mean square of SD of RR (RMSSD) and the standard deviation of all normal to normal NN intervals (SDRR) were calculated during 24-hour Holter monitoring. Results:

Comparison among groups of different parameters

Parameters	Group A	Group B	Group C	p-Value
FVC	101,5860	95,6689	90,9276	0.01
FEV1	99,9327	92,7135	88,0293	0.001
FEV1/FVC	84,6356	92,4587	89,2151	0.001
TLC	88,2926	84,3371	81,6294	0.008
DLCO	85,27	79,79	71,90	0.0001
KCO	100,040	98,352	91,327	0.003
Mean Heart Rate	76,6806	78,6560	80,0594	0.115

MaxHR	140,2083	136,9322	136,1875	0.4
Min HR	45,0833	48,9365	50,3453	0.013
RMSSD	38,9453	28,7537	29,3037	0.013
SDRR	150,3010	127,2397	112,6206	0.0001

In bivariate analysis, SDRR is correlated with age ($p=0.001$, $r=-.397$), FVC($p=0.001$, $r=.242$), FEV1($p=0.001$, $r=.261$), TLC($p=0.001$, $r=.290$) and DLCO ($p=0.0001$, $r=.264$). Conclusion: HRV is decreased in patients with systemic sarcoidosis compared to the control group. SDRR is significantly decreased in patients with cardiac sarcoidosis and is correlated with lung function indices.