

VAL 69 – Preliminary results for use of Illness Marker in heart failure patients.

OBJECTIVE: Heart failure is characterized by fluid disturbances. Changes in volume in the clinical practice are evaluated with fluid balance and weight measurements, but these do not reflect compartmental changes. Integrity of the cells can be characterized by the ratio of **measured** impedance values at 200 kHz and 5 kHz **Illness Marker (IM)**. Tracking IM over time can be used as **fluid distribution indicator**. Multifrequency bioimpedance analysis may provide insight into the compartmental changes. Multifrequency bioimpedance can be used in altered fluid distribution.

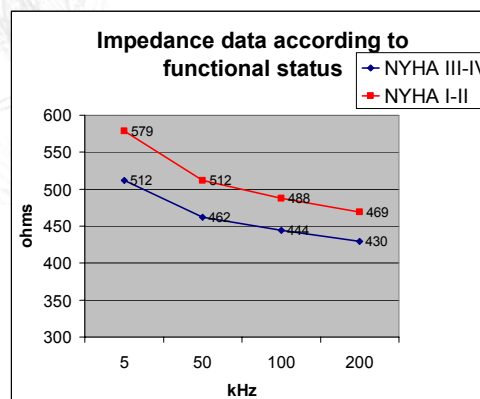
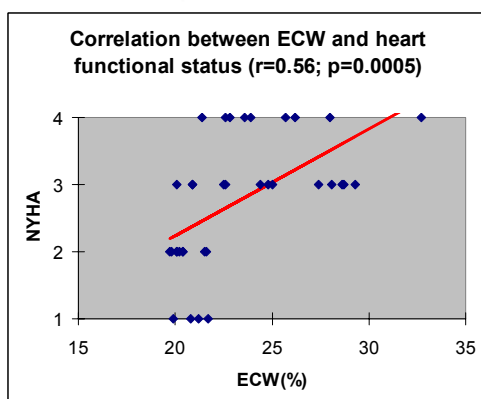
AIMS: To describe the body composition of heart failure patients to explore the potential clinical role of IM in heart failure.

SUBJECTS /METHODS: Randomly selected in-patients, who gave informed consent. Body weight and height measured. Heart echocardiography done by experts. Bioimpedance measurements done with Bodystat Quadscan 4000.

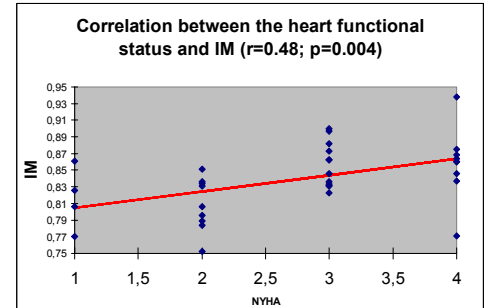
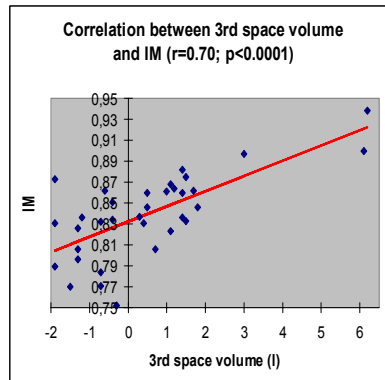
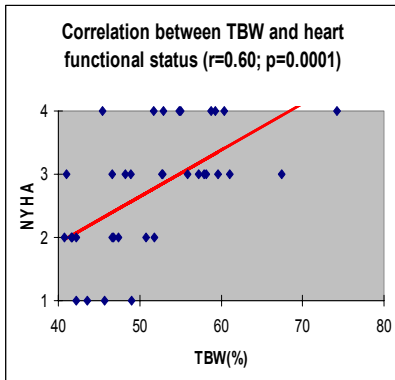
Characteristics of patient population:

	Whole population (n=35)	NYHA I.-II. (n=21)	NYHA III.-IV. (n=14)	significance
Age (years)	63.8±12.1	65.0±8.5	63.2 ±14.3	NS
Weight (kg)	87.1±20.1	94.7±18.4	82.0 ±20.6	p<0.07
BMI	30.2±5.1	32.8±3.7	28.0±5.3	p<0.01
Fat (kg)	29.3±10.6 [33.6±10.1]	37.0±4.4 [40.0±6.5]	24.1±10.4 [29.3±9.9]	p<0.0001
[%]				p<0.001
TBW (%)	51.7±7.9	46.1±3.9	56.1±7.3	p<0.0001
ECW (%)	23.4±3.4	20.7±0.9	25.1 ±3.3	p<0.0001
ICW (%)	27.7±2.9	26.1±2.4	28.8 ±2.7	p<0.006
ECW/ICW	0.84±0.09	0.80±0.06	0.87±0.09	p<0.01
3rd space volume (l)	0.5±1.9	-0.63±0.99	1.37±1.96	p=0.0003
IM	0.839±0.04	0.813±0.033	0.857±0.034	p=0.001
BMR (kcal/kg)	20.1±2.8	18.2±1.0	21.4±2.9	p=0.0002

RESULTS: 35 patients were studied. Gender distribution: 57.1% men, 42.9% women, no significant difference according to functional status. Presence of **Diabetes mellitus: 31.4%**, hypertension 57.1%. **No significant difference** according to functional status (NYHA). Mean systolic function (EF) of the heart: 37%±13%. Strong, significant correlation (**r=0.51**; p=0.002) between **ECW/ICW and IM**. Strong, significant correlation (r=0.56; p=0.0005) between ECW and heart functional status. Strong, significant correlation (r=0.56; p<0.001) between ICW and functional status. **Alterations in ECW and ICW** compared to the normal values correlate **strongly, negatively with functional status** (r=0.55; p<0.005 and r=0.53; p<0.001, respectively). Strong and significant correlation (r=0.59; p<0.001) between BMR and heart functional status. Significant difference (p=0.02) in the difference between 5 and 200 kHz impedances between the NYHA I-II and NYHA III-IV functional classes. Significant correlation (r=0.49; p=0.003) between 3rd space volume and heart functional status.



CONCLUSION: Patient population is obese. Bioimpedance measurements can distinguish between high fat content of the body and/or fluid overload. Significant differences are present according to the functional status in body water spaces and Illness Marker. There is a trend in the measured impedance data towards lower values in more severe cases. The significant difference detected in the difference between the measured impedance values reflects the clinical situation. **Illness Marker** and BIA can be used to track changes occurring during the course of the disease. The correlations between the body water spaces and IM and functional class show the **potential clinical role** of IM.



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