

TRANSTHORACIC VENTRICULAR DEFIBRILLATION OF HUMANS: EFFICIENCY OF BIPHASIC WAVEFORM

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BACKGROUND: At present is known very little about the efficacy of biphasic pulses (Bi) for transthoracic defibrillation of man (2).

OBJECTIVE: We have begun a prospective clinical evaluation of efficacy of quasisinusoidal asymmetrical pulses in defibrillation of humans.

METHODS: The waveforms of current had second phases = 40-60% of the first ones (P1). 32 patients (pts) received 66 shocks for ventricular fibrillation (VF). 26 pts received these shocks for spontaneous VF. 6 other pts had induced VF. The operator selected an initial shock energy setting of 10-65 Joule (J). Maximum stored energy was 190 J. Diameters of hand-held electrode paddles were 11.5/11.5 cm and 8/8 (5 pts). The actual transthoracic impedance (TTI, Ohms), delivered energy (DE, J) and peak current (I_1 , A) were measured for each shock.

RESULTS (mean \pm SD): The defibrillation was successful in all the patients. Rescue shocks = 42, $I_1 = 18.6 \pm 6.1$ (7.5-34) A, $DE = 73 \pm 39$ (12-185) J, $TTI = 62 \pm 22$ (22-117) Ohms.

DISCUSSION:

Peak current (A)	Successful/total shocks		Success, %	
	Mono	Bi	Mono	Bi
≤ 17	0/10	17/26	0	65
18-21	2/15	11/18	13	61

Table. Comparison of efficacy of biphasic pulses with monophasic pulses (Mono) in transthoracic defibrillation. Low peak currents versus shock success/total shocks. Mono-damped sinusoid pulse (1).

CONCLUSION: Our preliminary investigations demonstrate much larger efficiency of biphasic pulses applied for transthoracic defibrillation, than monophasic pulses.

REFERENCE:

1. Kerber R. et al. Circulation. 1988; 77 (5): 1038-46.
2. Vostrikov V. et al. Amer. Heart J. 1994; 128 (3): 638.