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Title: **TRANSTHORACIC DEFIBRILLATION: EFFICACY AND SAFETY DAMPED SINUSOID MONOPHASIC AND BIPHASIC WAVEFORMS**  
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Abstract (1½ spaced, no more than 10 cpl or less than 12 pt; no address)

OBJECTIVE: To compare efficacy and safety critically damped sinusoid (monophasic Edmark) (M) with quasisinusoidal(biphasic, Gurvich) (B) waveform.

METHODS: We evaluated the threshold of defibrillation (DFT) in 18 dogs (14-39 kg, 1st group). DFT was defined as the lowest pulse amplitude, that would terminate electrically induced 30 sec ventricular fibrillation (VF). 21 dogs with nonfibrillation heart underwent QRS-nonsynchronised impulses. Diameters of paddle electrodes (DPE) were 10 cm (n=12; 6-13 kg; 2nd group) and 4,5 cm (n=9; 4-8 kg; 3d group). Criteria of functional damage (FD) were duration of the reversible ventricular asystole (VA, sec) and time required to return to sinus rhythm (RSR, sec). 100 dogs (7-25 kg, 4st) underwent evaluation for probability of development of VF after repeated discharges by M and B pulses. Voltage, current (I, amps), transthoracic resistance (TTR, Ohms) and delivered energy (DE, joules) were measured for each pulse. The half-cycle durations of impulse B were 4,7/4,7-5,8 ms;  $I_1=0,5-0,6$ ; TTR=70±2,4.

RESULTS (mean ±SE):

	DFT		FD (DPE=10cm)					FD (DPE=4,5cm)				
	I	DE	I	DE	TTR	VA	RSR	I	DE	TTR	VA	RSR
M	18±1,6	56±8	29±2	103±10	51±3	6±0,7	14±3	17,2±2	87±12	104±6	14±4,6	32±8
B	11±0,7	27±3	30±2	147±11	52±3	1±0,2	8±1	17,8±2	95±14	102±9	2,9±1	9±3
P	< ,001	<,001		<,05		<,001	<,05				<,02	<,01

In 13 dogs of the 4th group M impulse (10,5-21 amps) caused VF in 15 cases, while B impulse (9,5-30 amps) caused VF only in 4 cases in 3 dogs.

CLINICAL DATA: We studied 23 patients, who received 39 shocks for VF. Shocks were administered from 3 defibrillators. Hand-held PE placed apex-anterior were used.

RESULTS: (rescue shocks, n=25) successful DF=100%,  $I_1=20,6±1,2$  (11-34); DE=83±7 (36-185); TTR=61±5 (22-117).

CONCLUSIONS: The results demonstrate much larger efficacy and safety of biphasic impulse applied for transthoracic defibrillation, than monophasic impulse.