

**TRANSTHORACIC ELECTRICAL CARIOVERSION OF ATRIAL
FIBRILLATION:
EFFICIENCY OF BIPHASIC WAVEFORM**

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BACKGROUND: At present is known little about the efficacy of biphasic pulses for transthoracic cardioversion of atrial arrhythmias (3).

OBJECTIVE: We have begun a prospective clinical evaluation of efficiency of quasisinusoidal asymmetrical biphasic waveform in cardioversion of atrial fibrillation.

METHODS: 50 consecutive (emergent, urgent and elective) cardioversions were performed in 46 patients (pts), who were receiving antiarrhythmic drugs. Heart diseases were aetiology of the arrhythmia. Predicted transthoracic impedance (TTI) was measured in advance of the countershock (27-90 ohms), using a 30 kHz low amplitude AC current. Diameters of hand-held electrode paddles (antero-apical position) were 11/11 cm. Initial energy was 10-65 J, and reached maximum of 190 J in 2 pts. (delivered on 50 ohms load). Peak current (I, A), delivered energy (DE, J) and actual TTI were measured for each shock.

RESULTS (mean±SD): Cardioversion was successful in 44 of 46 (95,7%) pts; I = 17.0±5.3 (8-32) A, DE = 55±28 (11-135) J, Actual TTI = 60±17 (32-105) ohms. Low energy shocks (≤65 J) were successful in 31 of 46 pts (67,5%). In patients with TTI≤60 ohms shocks of ≤ 65 J were more successful (76,7%) than in patients with TTI >60 ohms (52%), p=0,04. Energy shocks ≤90 J were successful in 41 of 46 (89%) pts.

DISCUSSION: The cardioversion success rate of monophasic pulses (DE ≤200 J, TTI= ≤70 ohms) achieved only 66% (1).

Table. Comparison of efficacy of monophasic (Mono) pulse with biphasic (Bi) pulse in transthoracic cardioversion. Mono - damped sinusoid pulse (2).

| Peak current (A) | Successful/total shocks | | Success rate, % | | P |
|---------------------|-------------------------|-------|-----------------|------|--------|
| | Mono | Bi | Mono | Bi | |
| 15 -17 | 0/8 | 10/18 | 0 | 55,6 | <0,025 |

CONCLUSION: Our preliminary investigations demonstrate much larger efficacy of biphasic pulses applied for transthoracic cardioversion, than monophasic impulses.

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