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 (I1, A) were measured for each shock.

RESULTS (mean ± SD): The defibrillation was successful in all the patients. Rescue shocks = 42, I1 = 18.6 ± 6.1 (7.5-34) A, DE = 73 ± 39 (12-185) J, TTI = 62 ± 22 (22-117) Ohms.

DISCUSSION:

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<thead>
<tr>
<th>Peak current (A)</th>
<th>Successful/total shocks</th>
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<tbody>
<tr>
<td></td>
<td>Mono</td>
<td>Bi</td>
<td>Mono</td>
</tr>
<tr>
<td>≤17</td>
<td>0/10</td>
<td>17/26</td>
<td>0</td>
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<tr>
<td>18-21</td>
<td>2/15</td>
<td>11/18</td>
<td>13</td>
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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: