Efficacy of defibrillation of different bifasic waveform in high impedance porcine model

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Introduction: Intermittent compensation methods and waveforms differ among manufacturers and can play an important role in defibrillation success. Aim of study is to compare efficacy of bifasic quasi-sinusoidal pulse (BQSP) with two truncated exponential pulses (BTEP) on high impedance porcine model.

Methods: We evaluated the threshold of defibrillation energy (TDE) in 7 anesthetized pigs (35–62 kg). TDE was defined as the lowest delivered energy that would terminate electrically induced 20 sec VF. MSIEE experimental defibrillator delivered BQSP, BTEP-1 – defibrillator Philips HeartStart MRx and BTEP-2 – Lifepak-12. MSIEE defibrillator compensates high impedance by controlling current with fixed pulse duration (from 9 to 18 ms). The pulses shape and duration corresponded to load resistance 100 ohms regardless of pig chest impedance (41–52 ohms).

Results: TDE of BQSP (77.6±15.1 J) was significantly lower, than in BTP-1 by 25% (104.1±14.5 J); and in BTP-2 – by 29% (109.7±12.1 J); p<0.02.

Conclusions: The results demonstrate that for transthoracic impedance about 100 ohms the current-based compensation method was more effective than the duration-based compensation technique. The BQSP (named the Gurvich-Venin pulse) has been employed in Russia for about 40 years (clinical efficacy 90–115 J) = 80–90%.

The first Russian AEDs will generate the optimizing Gurvich-Venin pulse.

Therapeutic hypothermia after cardiac arrest: The role of neuron-specific enolase

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Background: Therapeutic Hypothermia (TH) has been shown to improve neurologic outcome after cardiac arrest (CA). Biochemical markers such as neuron-specific enolase (NSE) seem to be promising to predict neurological outcome.

The aim of our study was to investigate the significance of serum NSE in patient after CA treated by TH.

Materials and Methods: From Jan. 1 2005 to Dec. 31 2009, total of 547,218 EMS systems, Graduate school, Kokushikan University, Tama City, Tokyo, Japan

Aim: Of this study was to investigate whether public AED installation promote sorely improvement of neurologic outcome on OHCA patients or not.

Materials and Methods: From Jan. 1 2005 to Dec. 31 2009, total of 547,218 adults OHCA patients corrected from Japan Utstein registry record were used. Among them, 1222 patients received public-access AED (0.7% of total OHCA patients). To completely negligible a patients background, 1222 PAD(+) and 1222 PAD(–) patients were extracted and matched on a 1 to 1 basis using propensity score with nearest matching method. Matching criteria included cardiac etiology, witnessed, gender, age difference ≤ 2, and propensity score difference less than 0.01. Each pair was analyzed with conditional logistic regression to identify relative risk for those outcomes. The primary outcome measure was 1 month survival rate with favorable neurological outcome (CPC 1 or 2) secondary outcome measure was return of spontaneous circulation (ROSC) before arriving at hospital.

Results: There are no significant difference between the groups in age, gender (83), witness ratio (83), bystander CPR (83), response time and hospital arrival time. IV% advanced airway (%)and ALS procedure, also identical in the both groups. In the PAD group, shows significantly higher CPC 1 or 2 (26.2%) than that of non PAD group (23.6%). Again, in the PAD group, shows significantly higher CPC 1 or 2 (26.2%) than that of non PAD group (13.6%), respectively.

Conclusions: Nationwide public AED installation resulted in earlier administration of shocks results in an increase in the 1-month rate of survival with minimal neurologic impairment after an out-of-hospital cardiac arrest.