

The Efficacy and Safety of External Biphasic Defibrillator in Small Breed Dogs

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Defibrillator is a device generating an electrical shock to the heart and resuming normal sinus rhythm. In veterinary fields, monophasic defibrillators are more commonly used for converting fatal cardiac arrhythmias despite the risk of high intensity shock generated by unidirectional monophasic defibrillator. Therefore biphasic defibrillators are rapidly replacing in practice. Unfortunately, the efficacy and safety of biphasic defibrillator has not been studied in small breed dogs to date. Therefore we evaluated the efficacy and safety of biphasic defibrillator in the dogs less than 5 kg. In this study high intensity shocks from biphasic defibrillator were applied to 5 dogs (under 5kg) after the initiation of ventricular fibrillation with the application of AC current. We estimated the defibrillation threshold (DFT) and evaluated changes in the electrocardiogram (ECG) and cardiac biomarkers before and after the shock delivered. The DFT on these animals was 3.04 ± 0.929 J/kg. The elevation in level of cardiac biomarkers and the prolongation of QTc interval, implying cardiac cell damages were detected in the test performed immediately after shocks delivered. However in the test performed 1 week after shocks delivered, all parameters in biomarkers and ECG were returned to normal. In this study we found that the biphasic defibrillation is efficacious and safe for defibrillation for small breed dogs (under 5 kg).

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