

Efficacy and Safety of an External Transcutaneous Pacemaker in dogs

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Purpose: This study was performed to evaluate the efficacy and safety of an external transcutaneous pacemaker (TCP) in dogs.

Materials and Methods: After inducing cardiac arrest by injecting diltiazem, 10 Beagle dogs underwent cardiac pacing with a transcutaneous pacemaker. The optimal location and size of pacing and pacing current were evaluated, respectively. Furthermore all detrimental effects from short duration (1 hr) and long duration (3 hrs) TCP were evaluated by using electrocardiography, echocardiography, invasive blood pressure measurement and cardiac biomarker assay.

Results: The optimal location and size of the pacing electrode were the modified left apex-right apex chest attachment and 20 cm², respectively. The optimal pacing current for dogs was 4-5 mA/kg. Blood pressure and arterial oxygen saturation were maintained properly. There were no electrocardiographic abnormalities after the detachment of TCP in the short and long duration TCP dogs. The level of cardiac biomarkers was marked increased after cardiac pacing with TCP in dogs, although this change was transient and no further complication was observed.

Conclusion: In the present study, it was first found that the optimal attachment location and size of the electrode and optimal pacing current for TCP in dogs. Furthermore this study found application of TCP in dogs is efficacious, safe and good alternative method for temporary transjugular pacing.

Key words: cardiac pacing, external transcutaneous pacemaker, cardiac arrest, bradycardia, dog

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