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Electrical or pharmacologic cardioversion for atrial fibrillation in the ED?

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Article Type: Therapy

Ratings: *Methods*—4/5, *Usefulness*—4/5

Introduction

Background

Practice variation remains regarding electrical vs. pharmacological cardioversion for acute atrial fibrillation. Additionally, little is known about anteroposterior vs. anterolateral pad placement for electrical cardioversion.

Objectives

1. Compare drug-first cardioversion, with subsequent electricity if needed, to electrical-first cardioversion.
2. Anteroposterior vs. anterolateral pad positioning for electrical cardioversion.

Structured methods

Design: Partial factorial trial of two protocols.

Setting: 11 hospitals.

Subjects:

Included	Excluded
Symptomatic atrial fibrillation > 3 h Stable Onset within: 48 h of ED arrival 7 days of arrival if anticoagulated × 4 weeks or no left atrial thrombus	Permanent atrial fibrillation Unstable

Intervention:

Protocol 1	Protocol 2
Intervention 1: procainamide infusion OR placebo infusion Intervention 2: if persistent atrial fibrillation, electrical cardioversion	Intervention: anterolateral vs. anteroposterior electrical cardioversion

Outcomes:

- Primary outcome: conversion to normal sinus rhythm for 30 min using chemical-first vs. electrical cardioversion.
- Secondary protocol: anterolateral vs. anteroposterior pad placement.

Main results

There was no significant difference in the rate of conversion to normal sinus rhythm in the drug-shock group (96%, $n = 204$) compared to the shock-only group (92%, $n = 192$)

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Table 1 Outline of protocols 1 and 2

	Comparison	Primary outcome achieved
Protocol 1	Drug-shock vs. shock-only	Drug-shock: 96% Procainamide only: 52% Shock-only: 92%
Protocol 2	Anteroposterior vs. anterolateral	Anteroposterior: 92% Anterolateral: 94%

(95% CI 0–9; $p=0.07$). 106 patients (52%) in the drug-shock group converted with procainamide alone. Additionally, there was no significant difference in the rate of conversion to normal sinus rhythm with anteroposterior (92%, $n=117$) vs. anterolateral (94%, $n=127$) pad placement ($p=0.68$) (Table 1).

No patients had serious adverse events in follow-up.

Appraisal

Strengths

- Relevant, clinically important questions for emergency medicine providers.
- Well-designed, partial factorial trial of two protocols.
- Multicentre, nationwide study.
- Results support general Canadian practice (early rhythm control).

Limitations

- Primary outcome is not directly patient centred.
- Could not measure length of stay in the ED.

Context

A recent Canadian study compared electrical vs. chemical cardioversion for the management of atrial fibrillation in the ED [1]. In the chemical group, 32% of patients were discharged from the ED within 4 h vs. 67% in the electrical group. In the chemical group, 54% of patients converted with procainamide alone, compared to the electrical group, where 88% of patients were converted with electricity alone.

The RAFF2 trial's approach to cardioversion reflected the 2018 CAEP best practice guidelines for acute atrial fibrillation in the ED. These guidelines aid in the decision of rate vs. rhythm control and describe a safe approach to cardioversion [2].

Bottom line

This study demonstrates that immediate rhythm control is highly effective and safe, which has worldwide implications as ED cardioversion is not a standard practice in most countries.

In stable patients, neither cardioversion strategy was shown to be superior and as a function of design, this study was not able to compare the length of stay between groups. Thus, the potential side effects and resources required for each strategy must be carefully considered as these factors will influence ED efficiency and length of stay [3]. Ultimately, the method of cardioversion should be chosen based on patient preference, provider comfort and available resources.

Compliance with ethical standards

Conflict of interest The authors declare no conflict of interest.

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