

Electrical Versus Pharmacological Cardioversion for Acute Onset Atrial Fibrillation

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Background & Purpose

Atrial fibrillation is the most common cardiac arrhythmia, it impacts 1% of the worldwide population and 9% of individuals over the age of 75.¹ It can be managed in a variety of ways including rhythm control via electrical or pharmacological cardioversion. Rhythm control is important because it restores normal sinus rhythm (NSR), promotes better cardiac output, and decreases the risk of catastrophic events such as ischemic stroke.²

There is not a universal protocol available regarding rhythm control in acute onset of atrial fibrillation. This review will investigate which strategy is more effective at restoring NSR in hemodynamically stable patients presenting with acute onset atrial fibrillation.

PICOT

In hemodynamically stable adults with acute onset of atrial fibrillation, is pharmacological cardioversion or electrical cardioversion more effective at restoring normal sinus rhythm?

Design & Methods

Keywords: atrial fibrillation, electrical cardioversion, pharmacologic cardioversion, chemical cardioversion

Inclusion: atrial fibrillation in hemodynamically stable patients, >18 years old, acute onset < 48 hours, underwent a method of cardioversion, include rate of conversion to NSR, published within the last 10 years

Exclusion: patients with chronic atrial fibrillation or presenting with other comorbid conditions, sources > 10 years old, no rate of conversion to NSR

Summary of Evidence Search:

| Database | Yielded | Reviewed | Included in Analysis |
|----------------|---------|----------|----------------------|
| Google Scholar | 11,200 | 18 | 3 |
| Summons | 28 | 13 | 3 |
| Total: | 11,228 | 31 | 6 |

Synthesis of Evidence

After applying the criteria, six studies were carefully chosen for this review:

| Study type | Number included |
|----------------------------|-----------------|
| Meta-analysis | 1 |
| Randomized control trial | 2 |
| Retrospective cohort study | 2 |
| Randomized factorial study | 1 |

Primary endpoint:

- Rate of conversion to NSR

Secondary endpoints:

- Time to restore NSR
- Adverse events associated with method of cardioversion

Results

Conflicting results regarding efficacy:

- One study showed that electrical cardioversion is more effective,³ while another revealed no statistically significant difference between both methods.⁴
- Class 1c antiarrhythmics and amiodarone are effective at restoring NSR in healthy adults.⁵

Time commitment:

- Electrical cardioversion is associated with lower length of stay times.⁶

Adverse events:

- Both methods have a similar mild adverse effect profile.⁴
- Electrical cardioversion adverse events are most likely associated with sedation necessary for procedure.³
- Both methods are not regularly associated with catastrophic events including death or stroke.⁶

Best Practice

Discussion:

- Both methods of cardioversion are safe and effective at restoring NSR.
- Electrical cardioversion is associated with shorter length of stay times, but is resource/provider dependent

Limitations/Further study:

- Minimal direct comparison studies between the two methods
- Many studies conducted outside US, different protocols/resources
- Primarily included cases in the emergency department
- Further research:
 - Specific antiarrhythmics versus electrical cardioversion
 - Research in a variety of settings

Conclusion:

- This review did not determine a superior method of cardioversion but provided reassuring data for medical decision making.
- Medical practitioners should use their best judgement regarding patient history, clinical presentation, and available resources when deciding to pursue a method of cardioversion.

References:

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