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Retrospective chart review of patients treated with ibutilide for pharmacological cardioversion

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Background

- Atrial fibrillation (AF) is the most common cardiac arrhythmia
- Ibutilide is a class III antiarrhythmic agent used to restore normal sinus rhythm (NSR) in patients with AF and atrial flutter (AFL)
- Compared to other antiarrhythmic agents, ibutilide has demonstrated similar or superior efficacy in clinical trials
- Its use in AF and AFL is supported by guidelines with a class 1A recommendation
- Risks associated with ibutilide include QT interval prolongation and torsades de pointes, especially in patients with electrolyte imbalances
- A protocol for pharmacologic cardioversion has been established to facilitate safety and efficacy of ibutilide within Baptist Health South Florida (BHSF) hospitals

Purpose

To assess the appropriateness of ibutilide use and to identify opportunities for optimal patient selection and monitoring per the FDA label and BHSF ibutilide protocol/orders

Methods

- **Study Design**
  - Multicenter, retrospective chart review
  - Per BHSF IRB, this review does not constitute human subjects research
- **Inclusion Criteria**
  - Age ≥ 18 years
  - Administration of ibutilide between June 1st, 2018 and May 24th, 2019
- **Exclusion Criteria:** None
- **Primary Endpoint**
  - Incidence of successful conversion to NSR
- **Secondary Endpoints**
  - Electrolyte monitoring and replacement
  - Incidence of QT interval prolongation (QT interval ≥ 450 milliseconds)
  - Anticoagulation therapy based on CHA_2DS_2-VASc score

Limitations

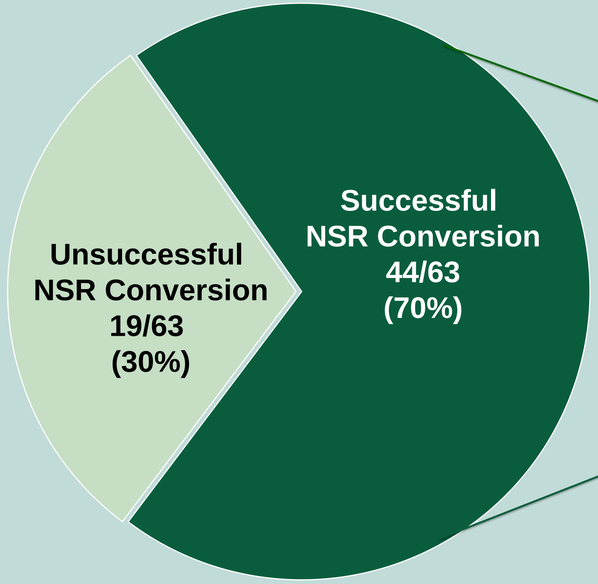
- Small sample size
- Inconsistent documentation of QT interval
- Unable to establish clear risk factors for QT prolongation

Results

Baseline Characteristics N = 63

Demographics		**Arrhythmia for > 48 hr, n (%)**	19 (30.2)
Mean age (range), years	7 (19 - 91)	**Treatment Setting, n (%)**	
Mean weight (range), kg	93 (48 - 142)	Emergency Department	14 (22.2)
Male, n (%)	45 (71.4)	Observation	26 (41.3)
		Inpatient	23 (36.5)
Arrhythmia, n (%)		**Ibutilide Doses Administered, n (%)**	
Paroxysmal Atrial Fibrillation	44 (69.8)	One	40 (46.5)
Persistent Atrial Fibrillation	10 (15.9)	Two	23 (26.7)
Atrial Flutter	8 (12.7)		
Persistent Atrial Tachycardia	1 (1.6)		

Primary Endpoint



Type of Arrhythmia	Conversion Rate n (%)
Paroxysmal AF	36/44 (82)
Persistent AF	2/10 (20)
AFL	6/8 (75)
Persistent Atrial Tachycardia	0/1 (0)

Secondary Endpoints

Electrolyte Management, n (%)	
• Electrolyte monitoring	56/63 (89)
• Required electrolyte replacement	13/56 (23.2)
• Received electrolyte replacement	10/13 (76.9)
QT Prolongation Post-Ibutilide, n (%)	10 (15.9)
Anticoagulation Therapy, n (%)	
• CHA_2DS_2-VASc score of ≥ 2	30 (47.6)
• Prescribed anticoagulation therapy upon discharge	30 (100)

Discussion

- Ibutilide use at BHSF is consistent with current guidelines
- Paroxysmal AF and AFL were more likely to convert to NSR with ibutilide
- Opportunities for improvement:
  - Baseline electrolyte monitoring and replacement prior to ibutilide administration
  - Documentation of QT intervals
  - Staff education to enhance compliance with the established pharmacologic cardioversion protocol may further improve effectiveness and ensure safety of ibutilide in AF patients

Conclusion

- Majority of patients (54/63) received ibutilide for cardioversion of AF
  - Forty-four (69.8%) with paroxysmal AF and 10 (15.9%) with persistent AF
- Overall, 70% of patients successfully converted to NSR, requiring an average of 1.6 doses per patient
  - 17/44 patients required two doses for conversion to NSR
- Baseline hypokalemia or hypomagnesemia was noted in 13/56 patients
  - Only 10/13 had electrolytes replenished
- Although all patient were on continuous telemetry monitor, not all had QT interval consistently documented
  - QT prolongation was noted in 10 patients post-ibutilide, with 2/10 patients missing a baseline magnesium level
- All patients (30/30) with CHA_2DS_2-VASc score of ≥ 2 were prescribed anticoagulation therapy upon discharge

Disclosures

All authors have nothing to disclose concerning possible financial or nonfinancial personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.

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