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Case Reports

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A Rare Case of Sotalol-Induced Respiratory Failure

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Background

- Beta-blockers (BB) is a class II antiarrhythmic
- Usually associated with respiratory adverse event such as exacerbations of obstructive lung disease, hypersensitivity pneumonitis etc.
- Sotalol, a BB that has both class II and III antiarrhythmic activities, is commonly used in the treatment and maintenance of atrial fibrillation or atrial flutter.
- It is generally thought to associate with significantly lower pulmonary side effects.
- The lower respiratory side effect profile does not eliminate its potential risk, especially in patients who have a history of reactive airway disease.
- In this case, we will depict a rare case sotalol induced acute respiratory failure

Case Description

- 71-year-old Caucasian female**
- Past medical history:**
 - Atrial fibrillation due to severe mitral regurgitation
 - Chronic obstructive pulmonary disease
 - Coronary artery disease
 - Breast cancer status post resection and radiation and amiodarone-induced hypothyroidism
- Home medications:** Albuterol MDI, Apixaban, Atorvastatin, Symbicort, Lopressor, Spriva, Magnesium oxide, Senokot-S
- Chief complaint:**
 - Shortness of breath, productive cough, and palpitations for 2-day duration that progressively worsened.
- Physical exam** significant for
 - Atrial flutter with RVR, other vital signs are stable
 - No fever, chills, sore throat, wheezes, abdominal pain, nausea, vomiting, diarrhea or constipation
- Hospital course:**
 - Cardizem infusion and continued her home Apixaban.
 - Electrophysiology (EP) was consulted and she was started on Sotalol 80mg.
 - A few hours after receiving the first dose of Sotalol, she was found to have agonal respirations with diminished breath sounds, quickly requiring intubation for respiratory distress.
 - Sotalol was promptly discontinued. Approximately 12hrs after intubation, she was successfully extubated to BiPAP and eventually weaned to 2-3L of supplemental oxygen without any intervention such as diuresis, cardioversion or COPD treatment.
 - The patient remained in atrial flutter and thus discussions with EP and Pulmonology decision was made to start on amiodarone but was unsuccessful in achieving rate control.
 - Underwent 200J direct-current cardioversion with success.
 - Remained in sinus rhythm throughout the rest of her hospitalization and was discharged shortly after

Labs

| ROUTINE CHEMISTRY | |
|-----------------------|--------|
| Sodium | 131 |
| Potassium | 4.2 |
| Chloride | 90 |
| CO2 | 30 |
| Anion Gap | 11 |
| Blood Urea Nitrogen | 24 |
| CREATININE | 1.38 * |
| Calcium | 8.5 |
| Calcium, Ionized | |
| Corrected Calcium | |
| ALT/SGPT | 12 |
| AST/SGOT | 30 |
| Albumin | 3.9 |
| PROTEIN TOTAL | 6.6 |
| Bilirubin, Total | 0.4 |
| Bilirubin, Direct | 0.1 |
| Alkaline Phosphatase | 59 |
| Globulin | |
| A/G Ratio | |
| GFR African American | 44 * |
| GFR NonAfrican Ame... | 38 |
| Magnesium | 2.2 |
| Phosphorus | 6.6 |
| Lactate, whole blood | 1.0 |

| | |
|-----------------------|------|
| BNP Result | 511 |
| High Sensitivity T... | 31 * |

Imaging

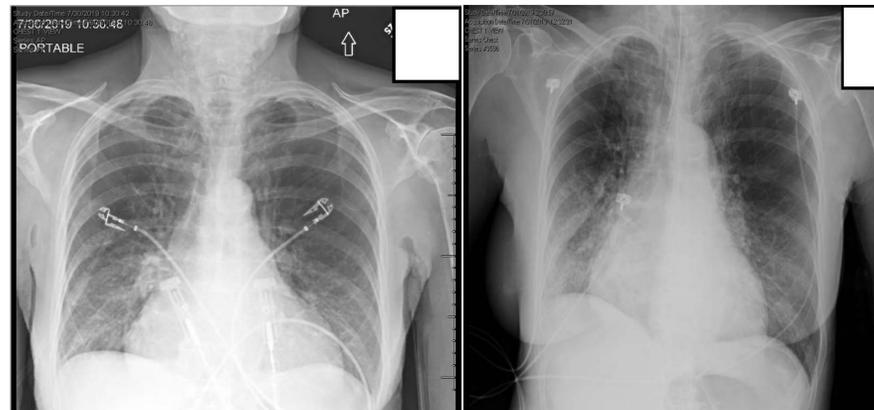


Figure 1: Chest Xray before and after intubation

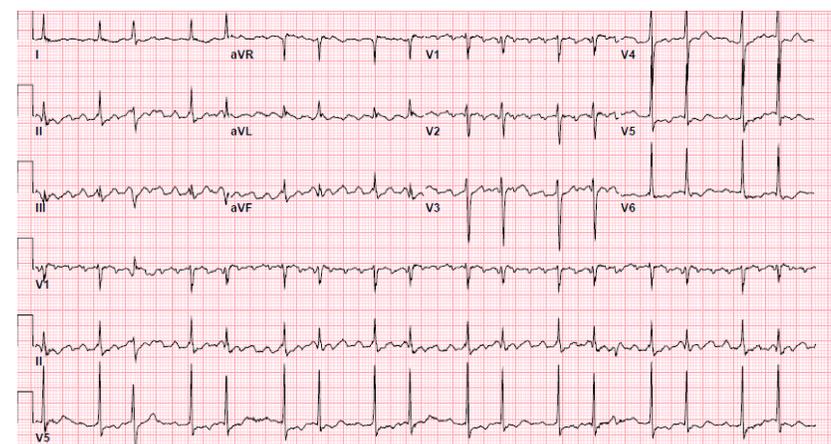


Figure 2: Patient's ECG indicating atrial flutter before initiating Sotalol

Discussion

- The case illustrated that the potential risk of acute respiratory failure with use of sotalol is a real concern.
- Pharmacokinetic profile of Sotalol
 - Rapid onset of action (1-2 hours)
 - Relatively short half-life (12 hours in adult).
- Most common side effects (> 10%)
 - Cardiovascular: Bradycardia (dose related; 8% to 16%), chest pain (3% to 16%), palpitations (3% to 14%)
 - Central nervous system: Fatigue (dose related; 5% to 20%), dizziness (3% to 20%), headache (2% to 12%)
 - Neuromuscular & skeletal: Weakness (4% to 13%)
 - Respiratory: Shortness of breath (dose related; 5% to 21%)
- Less common respiratory adverse event: Upper respiratory complaint (1% to 8%), pulmonary disease (3% to 5%), tracheobronchitis (1% to 3%), asthma (<1% to 2%)
- Bronchial asthma or related bronchospastic conditions have been listed as contraindication for the use of Sotalol
- No difference in adverse reaction profile between oral and IV Sotalol

Conclusion

- Acute respiratory failure is infrequently seen but it is a predictable side effect of sotalol use that physicians should be aware of, especially in patients with a history of reactive airway disease
- Early recognition is crucial to the prompt cessation of Sotalol and prevention of future adverse event. In the meantime, supportive treatment including intubation could be enough to help the patient until the medication went through its duration of action.
- Physician should consider patient's past medical history when prescribing medications like Sotalol

References

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