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107. Current Treatment Recommendations and Clinical Outcomes of Sodium Bicarbonate Therapy on Sodium Channel Blocking Agents through the ToxIC Registry

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Background: In April 2015, a ToxIC subregistry was initiated to study the use of sodium bicarbonate by toxicologists as an antidote for sodium channel blockade as evidenced by QRS widening on the ECG.

Hypothesis: Treatment recommendations and clinical outcomes regarding sodium bicarbonate use are variable.

Methods: Using the ToxIC Registry, a prospective observational study of sodium bicarbonate use was performed using a 21-question survey.

Results: Nine completed cases were collected from April until November 2015 encompassing four sites. Six patients were male and three were female; mean age was 29 years. Five cases were attempts at self-harm. First agents listed were amitriptyline, nortriptyline, carbamazepine, bupropion, and an unknown agent. Sodium bicarbonate was initiated for a QRS of 105–151 ms. Services recommended sodium bicarbonate for a range of 100–120 ms. Eight patients received sodium bicarbonate boluses and infusions; one case received boluses only (primary agent was bupropion). All services used 150 mEq/L as the concentration of sodium bicarbonate infusion. Duration of infusion was unknown in one case; the remaining durations ranged from 8 to 48 h. The average change from maximal QRS to minimal QRS on sodium bicarbonate was 26.4 ms (± 19.9 ms). One patient had ventricular tachycardia prior to the administration of sodium bicarbonate treated successfully with defibrillation. No other therapies were given and no other dysrhythmias were reported while on sodium bicarbonate. The QRS range was 86–116 ms when sodium bicarbonate was stopped. Two cases had rewidening of the QRS (106 and 130 ms at 8 and 24 h, respectively) and sodium bicarbonate was reinitiated only for the case of rewidening to 130 ms. The sole reported complication reported was one case of QTc widening > 500 ms.

Discussion: Although there were a small number of cases, sodium bicarbonate was used for multiple agents with an average reduction in QRS of 26.4 ms and there were no dysrhythmias reported.

Conclusions: Sodium bicarbonate was frequently used in combination of bolus and infusion administration with a wide range in duration of infusion with a low rate of complications.