2016 Annual Scientific Meeting
FIT Research Symposium

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Title: Physostigmine is an effective antidote for the anticholinergic toxidrome

Background: Physostigmine is an effective antidote for the anticholinergic toxidrome. Largely as a result of a case series published 35 years ago, it has become one of the most maligned medications in the toxicologist's toolkit and, arguably, one of the most underused. Over the past decade, a few studies have demonstrated the safety and efficacy of the antidote in selected patients - and as a result the antidote has seen a resurgence in use at a relatively small number of institutions. Physostigmine is an effective antidote for the anticholinergic toxidrome. Largely as a result of a case series published 35 years ago, it has become one of the most maligned medications in the toxicologist's toolkit and, arguably, one of the most underused. Over the past decade, a few studies have demonstrated the safety and efficacy of the antidote in selected patients - and as a result the antidote has seen a resurgence in use at a relatively small number of institutions.

Aims: This study aims to investigate the use of physostigmine at one such institution versus standard therapy in those presenting with anticholinergic toxicity. This study aims to investigate the use of physostigmine at one such institution versus standard therapy in those presenting with anticholinergic toxicity.

Methods: We will complete a retrospective chart review of patients who presented with anticholinergic toxicity at Regions Hospital over the last two years. Patients with anticholinergic toxicity will be separated into two groups: those treated with physostigmine and those treated with standard care (e.g. supportive care, benzodiazepines). Along with whether the treatment controlled delirium, charts will be abstracted for adverse events - specifically bradycardia, vomiting, seizures, arrhythmias, need for restraints, and intubation during the course of treatment. Rates of delirium control, adverse events, and complications will be reported using descriptive statistics. Differences between the two groups will be compared using chi-square testing. We will complete a retrospective chart review of patients who presented with anticholinergic toxicity at Regions Hospital over the last two years. Patients with anticholinergic toxicity will be separated into two groups: those treated with physostigmine and those treated with standard care (e.g. supportive care, benzodiazepines). Along with whether the treatment controlled delirium, charts will be abstracted for adverse events - specifically bradycardia, vomiting, seizures, arrhythmias, need for restraints, and intubation during the course of treatment. Rates of delirium control, adverse events, and complications will be reported using descriptive statistics. Differences between the two groups will be compared using chi-square testing.

Major Limitations/Questions: Our study will undoubtedly suffer from the limitations inherent in retrospective chart reviews such as missing data and poor documentation. Beyond this, it may be difficult to determine whether an adverse event or complication was precipitated or avoided by any particular intervention. Bias will further be introduced when determining how to define

which patients suffered from anticholinergic toxicity. This will be especially true in those patients with mixed ingestions and mixed toxidromes, or in those for which physostigmine was used in a diagnostic fashion. Finally, we may find that there is significant selection bias in terms of who received physostigmine - such as the more seriously intoxicated and/or those without coingestions. Our study will undoubtedly suffer from the limitations inherent in retrospective chart reviews such as missing data and poor documentation. Beyond this, it may be difficult to determine whether an adverse event or complication was precipitated or avoided by any particular intervention. Bias will further be introduced when determining how to define which patients suffered from anticholinergic toxicity. This will be especially true in those patients with mixed ingestions and mixed toxidromes, or in those for which physostigmine was used in a diagnostic fashion. Finally, we may find that there is significant selection bias in terms of who received physostigmine - such as the more seriously intoxicated and/or those without coingestions.