Emergency Medical Services (EMS) Assist-Requiring Hypoglycemia and Diabetes Mellitus in Southwest Ontario

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Introduction

• Hypoglycemia is a common treatment consequence in diabetes mellitus (DM) and the second most common cause of Emergency Department (ED) visits for adverse drug events.

• Prior studies have examined the rates of ED visits and inpatient hospitalizations for hypoglycemia. These represent only a small proportion of severe hypoglycemic events, as many do not present to hospital.

• To date, there have been no Canadian population-based studies examining the rates of EMS assist-requiring hypoglycemia in DM patients in the pre-hospital setting.

Methods

• A population-based retrospective cohort study was conducted on all EMS calls for diabetic emergency from 2008-2014 in Southwestern Ontario, Canada.

• Data was extracted from the electronic ambulance call records for 11 EMS services in the region.

Results

• There were 9,265 EMS calls for a diabetic emergency (demographics are presented in Table 1).

• Parenteral treatment (intravenous dextrose or intramuscular glucagon) was given in 7,126 (77%) calls.

• Between 2008 and 2014, rates of calls increased by 7.4% (p<0.0001) with the total number of hypoglycemia calls increasing from 937 (11.2%) in 2008 to 1552 (18.6%) in 2013 (Figure 1)

• Prevalence of hypoglycemia calls during the study period was estimated at 189 per 10,000 diabetes patients per year.

• In 2,297 (24.8%) of instances, the patient refused transport to the ED.

Table 1: Patient demographics on presentation

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Value</th>
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<tbody>
<tr>
<td>Mean age (years)</td>
<td>59 ± 20</td>
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<tr>
<td>Male, n (%)</td>
<td>5281 (57)</td>
</tr>
<tr>
<td>Diabetes, n (%)</td>
<td>7598 (82)</td>
</tr>
<tr>
<td>Mean capillary blood glucose (mmol/L)</td>
<td>2.5 ± 1.0</td>
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<tr>
<td>Initial GCS &lt; 9, n (%)</td>
<td>2224 (24)</td>
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</table>

Objective

• To determine the prevalence and describe the EMS assist-requiring hypoglycemia in DM patients in Southwestern Ontario.

Conclusions

• The rates of EMS assist-requiring hypoglycemia are almost double the rates of hospitalization/ED visits for acute DM complications in our region.

• Many life threatening episodes of hypoglycemia may go unreported and subsequently not followed by the patient's primary health care provider.

• Further assessment and proper education following those episodes may help decrease the rate of severe hypoglycemia.