Abstract

Two hundred patients presenting at the Emergency Department (ED) with signs and symptoms of acute asthma and requiring emergency management were studied to determine their response to repeated nebulization with B-2 agonist. This was effective in 83% while a further 14% needed the addition of intravenous hydrocortisone. The remaining 3% did not improve and were admitted.

We concluded that the assessment of the severity of asthma is easy for a primary care doctor and that B-2 agonist nebulization is an effective, safe and easily applied method of treatment.

Introduction

Acute exacerbation of bronchial asthma is one of the conditions which causes stress to patients, families and emergency department physicians. It is generally accepted that B2-agonists (salbutamol nebulizer) are effective and safe, with a rapid effect that reduces the severity of an acute attack and lowers the rate of hospital admission. Bolus nebulization of B2-agonist is easily applied and well tolerated by patients.

We thought to study the safety and efficiency of the B2-agonists by bolus nebulization (BN) in the initial management of acute asthma cases in an emergency department.

Materials and Methods

This prospective study involved 200 patients presenting to the Emergency Department with acute exacerbation of bronchial asthma. The protocol used in the evaluation and management consisted of repeated bolus nebulization (BN) at intervals of 0,30,60 minutes with intravenous hydrocortisone being administered if indicated. For each patient this protocol was evaluated over a period of two hours.

The patient was assessed by a detailed history, physical examination, basic diagnostic laboratory tests and an immediate measurement of Peak Flow Expiratory Rate (PEFR). The severity of the bronchial asthma attack was classified according to the PEFR with >75% being mild, 50-75% moderate and <33% being severe.

Patients with complications such as pneumonia, diabetes mellitus, ischaemic heart disease and life threatening conditions needing intensive care were excluded from the study.

Results

The 200 patients included 114 males and 86 females, (Male to Female ratio of 1.3:1) all at least 15 years of age (Figure 1) and all having been diagnosed previously with bronchial asthma according to the criteria of the American Thoracic Society\(^1\). Further demographic information is in (Table 1).

Demographic Distribution

Figure 1: Male to Female Ratio: 1.3 : 1

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
<th>Total No. Pt's</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-35</td>
<td>25</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>35-55</td>
<td>30</td>
<td>23</td>
<td>53</td>
</tr>
<tr>
<td>55-75</td>
<td>49</td>
<td>34</td>
<td>83</td>
</tr>
<tr>
<td>75-95</td>
<td>10</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Total No.</td>
<td>114</td>
<td>86</td>
<td>200</td>
</tr>
</tbody>
</table>

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Of the 200 patients, 115 (57.5%) responded to the first nebulization, 69 (34.5%) improved after the second dose and 10 (5%) improved after three doses. Six (3%) did not improve and were admitted to hospital. (Table 2).

### Table 2: Response to Bolus Nebulization with B2-agonist

<table>
<thead>
<tr>
<th>Dose frequency</th>
<th>No. of Patients</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>First dose</td>
<td>115</td>
<td>57.5</td>
</tr>
<tr>
<td>Second dose</td>
<td>69</td>
<td>34.5</td>
</tr>
<tr>
<td>Third dose</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

**Discussion**

The use of a B2-agonist nebulizer is a standard method for the management of an acute attack of bronchial asthma. In this study we used the schedule of bolus nebulization in use at the King Hussein Medical Center E.D. and we found that the use of a B2-agonist nebulizer is effective, safe and easily applied. Most of the patients (97%) showed a good response and improved with BN (plus intravenous hydrocortisone when indicated). Only 3% of patients did not respond and needed admission to hospital.

In similar studies Antoinette Colacone et. al.(1) compared the continuous B2-agonist infusion and bolus nebulization in the initial management of bronchial asthma and concluded that both methods were effective in their bronchodilation activity but bolus nebulization achieved a more rapid response. Win Castle et al (3) suggested that B2-agonist inhalers are accepted as the most effective bronchodilators in current clinical use and that, in patients requiring stabilization of their asthma with appropriate doses of B2-agonists, nebulization and intravenous steroid administration are the principal therapy in an emergency department.

**Conclusion**

Assessment of the severity of asthma is easy for a primary care doctor. A B2-agonist nebulizer is effective, safe and easily applied. Most patients will show a good response although a few will need intravenous hydrocortisone in addition. Only a small number will require hospital admission.

**References:**


