The Use of Butyl Bromide Medication amid Colonoscopy

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ABSTRACT

Objective: the hyoscine-n-butylbromide (Buscopan) is ought to be avoided during colonoscopy in patients with a history of angle-closure glaucoma. Angle-closure glaucoma, nonetheless, is not very common, is asymptomatic before onset and is treated definitively by a single laser treatment (if spotted early). Open-angle glaucoma is not affected by hyoscine.

Purpose: the purpose of this study was to evaluate the use of hyoscine amid colonoscopists, with certain reference to glaucoma. Materials and Methods: a short questionnaire was electronically managed to members of the Saudi Society of Gastroenterology and the Association of Coloproctology of KSA. The use of Hyoscine among colonoscopists and the effect of glaucoma history upon the prescribing practice.

Results: sixty-three colonoscopists responded to some or all of the questions. 41/61 (67.2%) of respondents claimed they were aware of the guidelines. 53/62 (85.5%) sometimes or always use hyoscine, while 9/62 (14.5%) never do. 45/59 (76.3%) always enquire about glaucoma history prior to administration, even though 48/58 (82.8%) make no differentiation between open-angle or angle-closure forms. 42/59 (71.2%) would withhold hyoscine if the patient declares a history of any form of glaucoma. 46/59 (78.2%) do not substitute glucagon as an antispasmodic. 2/60 (3.3%) had encountered ophthalmic complications post-administration. Conclusions: current guidelines pertaining to hyoscine use and glaucoma are inappropriate. Patients undergoing colonoscopy who have received hyoscine should, instead, be advised to seek urgent medical advice if they develop ophthalmic symptoms.

Keywords: butyil bromide, Colonoscopy.
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Saudi colonoscopists. In specific, we meant to examine what effect any history of glaucoma may have on prescribing practice.

MATERIALS AND METHODS

A nine-point questionnaire was developed following consultation between colleagues from the departments of endoscopy and ophthalmology within our trust. A short questionnaire was electronically managed to members of the Saudi Society of Gastroenterology and the Association of Coloproctology of KSA. Hyoscine use among colonoscopists, and effect of glaucoma history upon prescribing practice. The survey was advertised through the endoscopy section. Association of Coloproctology of KSA consultant members was also sent an email requesting that they complete the survey. The survey was live from November 2016 until April 2017. The Mann–Whitney U test was utilized to specify significance (at the 95% level) where comparisons between groups of responses were made. The study was done according to the ethical board of King Abdulaziz university.

RESULTS

Sixty-three colonoscopists responded to some or all of the questions. 41/61 (67.2%) of respondents claimed they were aware of the guidelines. 53/62 (85.5%) sometimes or always use hyoscine, while 9/62 (14.5%) never do. 45/59 (76.3%) always enquire about glaucoma history prior to administration, even though 48/58 (82.8%) make no differentiation between open-angle or angle-closure forms. 42/59 (71.2%) would (incorrectly) withhold hyoscine if the patient declares a history of any form of glaucoma. 46/59 (78.2%) do not substitute glucagon as an antispasmodic. 2/60 (3.3%) had encountered ophthalmic complications post-administration.

Table 1. Questionnaire with subsequent responses

<table>
<thead>
<tr>
<th>Question number</th>
<th>Question</th>
<th>Respondents</th>
<th>Answer options</th>
<th>Response count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you give patients Buscopan during gastrointestinal endoscopy?</td>
<td>62</td>
<td>Always</td>
<td>7</td>
<td>11.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sometimes</td>
<td>46</td>
<td>74.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Never</td>
<td>9</td>
<td>14.5%</td>
</tr>
<tr>
<td>2</td>
<td>Before administrating Buscopan, do you routinely enquire about the patient's past medical history and drug history?</td>
<td>60</td>
<td>Always</td>
<td>50</td>
<td>83.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sometimes</td>
<td>6</td>
<td>10.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Never</td>
<td>4</td>
<td>6.7%</td>
</tr>
<tr>
<td>3</td>
<td>Are you aware of the British Society of Gastroenterology guidelines concerning the use of anti-cholinergic agents in endoscopy?</td>
<td>61</td>
<td>Yes</td>
<td>41</td>
<td>67.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>20</td>
<td>32.8%</td>
</tr>
<tr>
<td>4</td>
<td>Have you ever had a patient develop cardiovascular complications following the administration of Buscopan?</td>
<td>60</td>
<td>Yes</td>
<td>5</td>
<td>8.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>55</td>
<td>91.7%</td>
</tr>
<tr>
<td>5</td>
<td>Have you ever had a patient develop an acutely painful red eye requiring intervention post-Buscopan administration?</td>
<td>60</td>
<td>Yes</td>
<td>2</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>58</td>
<td>96.7%</td>
</tr>
<tr>
<td>6</td>
<td>Do you routinely enquire about any history of glaucoma before administering Buscopan?</td>
<td>59</td>
<td>Yes</td>
<td>45</td>
<td>76.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>14</td>
<td>23.7%</td>
</tr>
<tr>
<td>7</td>
<td>When enquiring about glaucoma history, do you routinely differentiate between open- and closed-angle glaucoma?</td>
<td>58</td>
<td>Yes</td>
<td>10</td>
<td>17.2%</td>
</tr>
<tr>
<td>8</td>
<td>If the patient gives a positive history for glaucoma do you still give Buscopan?</td>
<td>59</td>
<td>No</td>
<td>48</td>
<td>82.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>3</td>
<td>5.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Never</td>
<td>42</td>
<td>71.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Depends on which form</td>
<td>14</td>
<td>23.7%</td>
</tr>
<tr>
<td>9</td>
<td>Do you routinely substitute glucagon for Buscopan® if the patient has contraindications to its use?</td>
<td>59</td>
<td>Yes</td>
<td>13</td>
<td>22.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>46</td>
<td>78.0%</td>
</tr>
</tbody>
</table>
Of those respondents who stated that they were aware of the guidelines, 80.5% stated that they routinely enquire about a history of glaucoma prior to administering the drug. This compared with 68.5% of those who stated they were not aware of the guidelines (p=0.079). In spite of being aware of the guidelines, only 19% of respondents routinely differentiate between open- and closed-angle forms of glaucoma, and 70% (incorrectly) withhold hyoscine if the patient declares a history of any form of glaucoma. This compared with 13.8% and 71.7%, respectively, in the group who stated they were unaware of the guidelines (p=0.368 and p=0.795, respectively, relative to aware group). Seventy-eight per cent of respondents who were aware of the guidelines do not substitute glucagon as an antispasmodic if they feel hyoscine is contraindicated. Only 2 of 60 total respondents (3.3%) had encountered ophthalmic complications post-administration.

**Discussion**

Hyoscine-n-butylbromide is an ammonium derived of hyoscine, an alkaloid created by the Solanaceae family of plants [8]. It competes with acetylcholine producing an antagonist effect on the muscarinic receptors of the parasympathetic system [9, 10]. It is non-selective and thus produces a number of autonomic responses depending on the dose administered. At lower doses, depression of salivary and bronchial secretions, tachycardia and pupillary dilatation are seen. Urinary retention and decreased intestinal tone and motility are precipitated by higher doses [11].

Hyoscine has a number of potential side effects affecting to its anticholinergic action. One such effect is pupillary dilatation with the consistent danger of precipitating an attack of angle-closure glaucoma in anfunctionally susceptible individual. There are two leading subtypes of glaucoma: open-angle and angle-closure. Open-angle glaucoma accounts for over 90% of all glaucoma and is similar to necessary hypertension affecting the eye. The condition evomlements slowly over months to years and naturally affect patients over 60 years of age [7]. Symptoms first become apparent through mid-peripheral visual field loss; nonetheless, few patients progress to total blindness. Treatment is usually with long-term medication (eye-drops) aimed at reducing the intraocular pressure [7]. Open-angle glaucoma is not affected by hyoscine [11].

Angle-closure glaucoma occurs in an eye with pre-existing anatomical irregularity (the eye is relatively small and/or the lens is comparatively large) which consequences in crowding of the anterior part of the eye with consequent susceptibility to compromise in the drainage of aqueous fluid. Sudden dilatation of the pupil (e.g., with anti-cholinergic agents such as hyoscine) may cause interruption to fluid drainage, with a consequent acute rise in the intraocular pressure; this can precipitate an attack of angle-closure glaucoma [3]. The elevation in intraocular pressure initially causes ocular or brow ache, halos in the vision and a red eye. Nausea and vomiting occur later followed by severely reduced vision. The cornea becomes hazy, and typically, the pupil is fixed in mid-dilatation. Prompt action is needed to decrease the intraocular pressure in order to avoid permanent loss of vision. Intravenous and topical medications lower the pressure, and eventually, laser iridotomy is necessary to avoid recurrence. The contralateral eye might similarly be at increased hazard of future angle-closure attacks, and accordingly, definitive laser management is given to both eyes at the first presentation [11]. Guidelines presently advocate that hyoscine is used with carefullness or avoided completely in individuals with a prior history of angle-closure glaucoma [5]. As discussed above, conversely, neither the patient with chronic open-angle glaucoma nor the patient with the history of angle-closure glaucoma are at danger of acute glaucoma from hyoscine management.

Similar irregularity in advice around management of hyoscine has earlier been recognized by radiologists [11]. In 1995, Fink and Aylward [12] reported that >80% of fellows of the Royal College of Radiologists would withhold hyoscine if the patient gave a positive history of glaucoma (either form) [12]. In that survey, approximately 90% of radiologists reported substituting glucagon for hyoscine; in the present study, 78% of colonoscopists who were aware of the guidelines reported that they do not routinely offer a substitute antispasmodic if they feel hyoscine is contra-indicated. A total benefit of hyoscine utilization in colonoscopy has not been decisively determined. In a trial setting, management of hyoscine throughout colonoscopy has been found to result in less colonic spasm, with quicker insertion and increased ease of the procedure [4]. Hyoscine management has likewise been found to increase ease of ileal intubation and length of ileum visualized, and reduce the pain related with colonoscopy. Hyoscine decreases colonic muscle spasm and, in a randomised controlled trial, a trend towards an increased colonic polyp detection rate was found amid subjects suffering marked colonic spasm upon colonoscope insertion, but consequently displaying a good response to hyoscine management [12]. As adenoma detection rate is a key marker of

CONCLUSIONS The majority of colonoscopists responding to this survey use hyoscine in their practice, but do not distinguish between forms of glaucoma before determining to withhold it. In our judgment, present guidelines relating to hyoscine utilization and a history of angle-closure glaucoma are unsuitable. Patients who may develop acute glaucoma after hyoscine management are correspondingly not currently getting suitable advice regarding the action to take if they do develop ophthalmic symptoms. We propose that the guidelines should be revised. Further study is needed to elucidate the role of hyoscine throughout intestinal endoscopy.

REFERENCES