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**Literature search results**

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**Search details**

All adults with known glaucoma undergoing endoscopy/ERCP/colonoscopy. Hyoscine-n-butylbromide (Buscopan) administered during procedure as a smooth muscle relaxant—a recognised alternative is Glucagon.

Risks of Hyoscine-n-butylbromide (Buscopan) administration during endoscopy inducing acute closed angle glaucoma—the BNF says it happens rarely How rarely? How often is Glucagon used instead? Is Glucagon as effective? Is Glucagon better than Buscopan in these cases?

Are there any current guidelines or recommendations on the use of Buscopan in Glaucoma patients undergoing endoscopic procedures?

**Resources searched**

NHS Evidence; National Library for Health; TRIP Database; Cochrane Library; EMBASE; MEDLINE; Google Scholar; Google Advanced Search

**Database search terms**: glaucoma; exp GLAUCOMA; glaucoma*; "closed angle glaucoma"; "closed-angle glaucoma"; "acute closed angle glaucoma"; CLOSED ANGLE GLAUCOMA; “acute closed-angle glaucoma”; ocular; ocular; “ocular disorder”; buscopan; SCOPOLAMINE BUTYL BROMIDE; hyoscine-n-butylbromide; hyoscine n butylbromide; “hyoscine butylbromide”; glaucon; GLUCAGON; “anticholinergic agent”; HBB; spasmolytic agent”; “smooth muscle relaxant”; SPASMOLYTIC AGENT; “scopolamine butylbromide”; butylscopolamine; n-butylscopolamine; PARASYMPATHOLYTICS; parasympatholytics; endoscopy; endoscopy*; colonoscopy; colonoscopy*; exp ENDOSCOPY; ERCP; exp COLONOSCOPY; exp ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY; “endoscopic retrograde cholangiopancreatography”; incidence; INCIDENCE; prevalence; PREVALENCE

**Google search string**: glaucoma (endoscopy OR ERCP OR “endoscopic retrograde cholangiopancreatography” OR colonoscopy) (buscopan OR “Hyoscine butylbromide” OR “Hyoscine-n-butylbromide” OR HBB OR “anticholinergic agent” OR “spasmolytic agent” OR “scopolamine butyl bromide” OR glucagon)
Summary

There is very limited research on the ocular effects of administering buscopan or glucagon to patients with a history of glaucoma for endoscopic or colonoscopic procedures. The only research of relevance is a 1991 paper: The ocular effects of hyoscine-n-butylbromide ("Buscopan") in radiological practice and a 1994 paper: The use of antispasmodic drugs during barium enemas.

Further analysis of the reference lists may reveal further data, but I have done this with the most relevant included papers, and have not found any additional data to answer your query. However there are some papers included that I was not able to access full-text, which may include the data you require – please request these articles using our journal article requesting service.

The only guideline I could find was the British Society of Gastroenterologists’ Guidelines on complications of gastrointestinal endoscopy, published in 2006.

Guidelines

NHS Cancer Screening Programmes

NHS BCSP 5: Guidelines for the use of imaging in the NHS Bowel Cancer Screening Programme 2010

Hyoscine butylbromide improves colonic distension during CT colonography and should be actively considered unless contraindicated. Glucagon is not recommended as an alternative –– patients should be advised to seek medical attention if they develop painful blurred vision (possible acute glaucoma) following injection.

British National Formulary

Antimuscarinics 2010

Side-effects that occur occasionally include confusion (particularly in the elderly), nausea, vomiting, and giddiness; very rarely, angle-closure glaucoma may occur.

Electronic Medicines Compendium (eMC)

Buscopan Ampoules 2009

Buscopan Ampoules should not be administered to patients with myasthenia gravis, megacolon, narrow angle glaucoma, tachycardia, prostatic enlargement with urinary retention, mechanical stenoses in the region of the gastrointestinal tract or paralytic ileus.

British Society of Gastroenterologists

Guidelines on complications of gastrointestinal endoscopy 2006

Buscopan should therefore be used cautiously at the lowest possible dose or avoided in: elderly male patients with prostatic symptoms; patients with a history of closed angle glaucoma [Evidence Grade I Recommendation Grade A]. In such patients IV glucagon can be used if an antispasmodic is required.

Evidence-based reviews

None found.

Published research

1. Risk management for gastrointestinal endoscopy in elderly patients: questionnaire for patients undergoing gastrointestinal endoscopy.
More elderly patients now undergo gastrointestinal endoscopy following recent advances in endoscopic techniques. In this study, we conducted a high-risk survey of endoscopies in Japan, using a questionnaire administered prior to upper gastrointestinal tract endoscopy (UGITE), and identified anticholinergic agents and glucagon preparations as high-risk premedication. We also evaluated the cardiovascular effects of anticholinergic agents and glucagon through measurements of plasma levels of human atrial natriuretic peptide (hANP) and human brain natriuretic peptide (hBNP). The subjects were 1480 patients who underwent UGITE. Nurses administered a pre-endoscopy questionnaire, questioning subjects regarding heart disease, hypertension, glaucoma, and urinary difficulties as risk factors for anticholinergic agents, and Diabetes mellitus as a risk factor for glucagon preparations. Evaluation of subjects divided into under 65 and over 65 age groups revealed that in subjects aged 65 and over, risk factors for anticholinergic agents were significantly more high than those for glucagon. Analysis of the cardiovascular effects of anticholinergic agents and glucagon, in the elderly patients showed that hANP levels were significantly higher following administration of anticholinergic agents, but the change was not significant for glucagon premedication. Taking a detailed history before UGITE with the aid of a questionnaire at the same time as informed consent is obtained, is extremely useful in terms of risk management and selection of the appropriate premedication.

Source: MEDLINE

Full Text:
Available in fulltext at National Library of Medicine

2. Assessment of diminished peristalsis using shakuyakukanzoto (TJ-68) as premedication for endoscopic retrograde cholangiopancreatography (ERCP): A randomized, placebo-controlled trial

Author(s): Fujinami H., Kudo T., Nakayama Y., Sugiyama T.
Citation: Gastrointestinal Endoscopy, April 2010, vol./is. 71/5(AB227), 0016-5107 (April 2010)
Publication Date: April 2010

Abstract: Background & Aims: Anticholinergic agents are usually used as endoscopic premedication to diminish peristalsis. However, it is contraindicated in many cases such as ischemic heart disease, prostatic hypertrophy, and glaucoma. Shakuyakukanzoto (TJ-68) is a Kampo medicine, which is a part of traditionally practiced Japanese-based ancient Chinese medicine, and has no contraindications and reduces muscle and abdominal pain quickly. Furthermore, orally administered TJ-68 decreases peristalsis and is reportedly a safe premedication for esophagogastroduodenoscopy and colonoscopy. However, not many studies have reported its use as premedication for endoscopic retrograde cholangiopancreatography (ERCP). Our aim was to examine the inhibitory effect of TJ-68 on duodenal peristalsis and its usefulness as premedication for ERCP.
Methods: Thirty patients (20 males and 10 females, average age 66.5 years), who were scheduled for ERCP were enrolled in this study and divided randomly into three groups: 10 patients were administered a TJ-68 solution (TJ-68 group), 10 an anticholinergic agent (AC group), and the remaining 10 warm water as a placebo (WW group). The TJ-68 solution contained 5.0 g of TJ-68 extract dissolved in 50 ml of warm water. The TJ-68 solution and warm water as a placebo were administered by spraying directly in the duodenum through endoscopy. The anticholinergic agent was administered by intravenous injection. To assess the effect of each premedication, we measured required time (RT) from administering premedication to diminished peristalsis and peristalsis stop duration time (DT) from the recorded DVD-video. The statistical analysis was performed using Mann-Whitney's U-test. This study was
approved by the ethics committee, and informed written consent was obtained from all patients. Results: Peristalsis was inhibited in 8 of the 10 patients (80%) in the TJ-68 group, in all 10 patients (100%) in the AC group, and none (0%) in the WW group. No statistical differences were observed between TJ-68 and AC groups (P = 0.15). The RT (mean +/- SD) for TJ-68 and AC groups was 76.0 +/- 23.9 and 42.4 +/- 6.1 s, respectively (P < 0.01), while the DT was 11.3 +/- 4.2 and 14.9 +/- 5.3 min, respectively (P = 0.29). Conclusions: Peristalsis was inhibited by directly spraying TJ-68 solution in the duodenum, suggesting that TJ-68 was as effective as an anticholinergic agent. This may be a substitute for anticholinergic agents as premedication not only for ERCP but also for other endoscopic examinations.

Source: EMBASE

Full Text:

Available in print at Lincoln County Hospital Professional Library

3. High-Risk Chief Complaints II: Disorders of the Head and Neck

Author(s): Nentwich L., Ulrich A.S.

Citation: Emergency Medicine Clinics of North America, November 2009, vol./is. 27/4(713-746), 0733-8627 (November 2009)

Publication Date: November 2009

Abstract: Of the many different complaints of patients presenting to the emergency department, some of the most difficult to diagnose and manage involve pathology of the head and neck. Often diagnoses of conditions affecting this part of the body are elusive, and occasionally, even once the diagnosis has been made, the management of these disorders remains challenging. This article addresses some of the high-risk chief complaints of the head and neck regarding diagnosis and management. These complaints include headache, seizure, acute focal neurologic deficits, throat and neck pain, ocular emergencies, and the difficult airway. 2009 Elsevier Inc. All rights reserved.

4. Source: EMBASE

Precautions to be taken by radiologists and radiographers when prescribing hyoscine-N-butylbromide

Author(s): Dyde R., Chapman A.H., Gale R., Mackintosh A., Tolan D.J.M.

Citation: Clinical Radiology, July 2008, vol./is. 63/7(739-743), 0009-9260 (Jul 2008)

Publication Date: July 2008

Abstract: Hyoscine-N-butylbromide (Buscopan, Boehringer Ingelheim) is a widely used antispasmodic in radiological practice. There seems to be no consensus as to best practice within radiology regarding the precautions that need to be taken when prescribing Buscopan. We have performed a thorough review of the available literature and make the following recommendations to those administering Buscopan: (1) enquire whether there is an allergic history; (2) ensure patient literature warns that "in the rare event that following the examination you develop painful, blurred vision in one or both eyes, you must attend hospital immediately for assessment"; (3) warn patients to expect blurred vision and not to drive until this has worn off; (4) remind clinicians that special consideration needs to be given as to the method of investigating patients with cardiac instability, such as those recently admitted with acute coronary syndrome, recurrent cardiac pain at rest, uncontrolled left ventricular failure and recent ventricular arrhythmias. 2008 The Royal College of Radiologists.

Source: EMBASE

5. Drug-induced ocular disorders

Author(s): Li J., Tripathi R.C., Tripathi B.J.

Citation: Drug Safety, 2008, vol./is. 31/2(127-141), 0114-5916 (2008)

Publication Date: 2008
Abstract: While beneficial therapeutically, almost all medications have untoward effects on various body tissues and functions, including the eye in which organ toxic reactions are readily detectable. Every part of the eye and all ocular functions could be affected adversely. In this review, we describe the most commonly recognized drug-induced ocular disorders, their specific clinical features, the medications that can cause the problem, the differential diagnosis and possible mechanisms of action, as well as guidelines for the management of the adverse reactions. The eyelids are most frequently involved in drug toxicity that commonly manifests as inflammation, hypersensitivity reaction or dermatitis. Drug-induced keratoconjunctival disorders present mainly as conjunctival hyperaemia (red eye), with or without superficial corneal involvement. Frequently, drug preservatives in topical ocular medications induce these adverse effects. Treatment of blepharospasm with Botox may lead to drooping of the eyelids and corneal exposure. Intraoperative floppy iris syndrome is a drug-induced reaction in patients treated with tamsulosin and who undergo cataract surgery. Certain sulfa-based drugs can cause swelling of the ciliary body and lead to the development of angle-closure glaucoma. In addition, adrenergic agents, certain beta2-adrenergic agonists and anticholinergic agents may induce pupillary dilation and precipitate angle-closure glaucoma in susceptible patients. Glucocorticoids administered systemically, topically or intravitreally are known to increase intraocular pressure, which can lead to the development of open-angle glaucoma in susceptible patients. This painless form of glaucoma has also been associated with the use of the anticancer agents docetaxel and paclitaxel. The toxic effects of systemic and topically applied drugs may manifest as cloudiness of the lens. Long-term use of glucocorticoids produces a characteristic posterior subcapsular cataract and, although the opacities may remain stationary or progress, they rarely regress upon drug withdrawal. Systemic administration of phenothiazines or busulfan induce cataractous changes in the anterior or posterior cortex, respectively. Many systemic drugs reach the retina through the vascular supply. Aminoquinolines induce a characteristic bull’s eye maculopathy. Phenothiazines bind to melanin granules and can cause a severe phototoxic retinopathy. Typical tamoxifen retinopathy manifests as crystalline deposits in the inner retina. Some patients treated with retinoids have decreased night vision and abnormal dark-adaptation. Patients on long-term treatment with linezolid may develop an optic neuropathy (swollen or pale optic disc), symmetric painless decrease of visual acuity and colour vision, and bilateral visual field defects. A probable link exists between amiodarone and a bilateral optic neuropathy that is very similar to nonarteritic ischaemic optic neuropathy (NAION). The most common adverse effects of cGMP-specific phosphodiesterase type 5 inhibitors (erectile dysfunction drugs) are changes in colour perception, blurry vision and increased light sensitivity; recently these drugs have been also implicated in the development of NAION. A bilateral, retrobulbar optic neuropathy that manifests as loss of visual acuity or colour vision and visual field defect is associated with the use of ethambutol. Many different kinds of medications can cause similar ocular adverse reactions. Conversely, a single medication may affect more than one ocular structure and cause multiple, clinically recognizable disorders. Clinicians should be mindful of drug-induced ocular disorders, whether or not listed in product package inserts and, if in doubt, consult with an ophthalmologist. 2008 Adis Data Information BV. All rights reserved.

Source: EMBASE

Contraindication for use of certain systemic drugs in glaucoma: Is it justifiable?
Author(s): Orekondy S.
Citation: Clinical and Experimental Ophthalmology, 2004, vol./is. 32/PROC.(23-24), 1442-6404 (2004)
Publication Date: 2004
Source: EMBASE

Author(s): Fink A.M., Aylward G.W.
Citation: Clinical Radiology, 1995, vol./is. 50/3(160-164), 0009-9260 (1995)
Publication Date: 1995
Abstract: Hyoscine butylbromide (Buscopan) is commonly used by radiologists in the UK as a hypotonic agent in double-contrast gastrointestinal studies. A history of glaucoma is still taught to be the prime contraindication to its use, although the only individuals at risk are those with undiagnosed and therefore untreated angle closure glaucoma (ACG), who will not give a positive history. We conducted a postal survey of all members and fellows of the Royal College of Radiologists in the UK to establish current practice. Results: Of the 1045 respondents who use Buscopan, 724 (81.6%) withhold it if the patient gives a history of glaucoma, and 631 (87.2%) of this group substitute glucagon. Of the 51 respondents who state that they understand that the patient who gives the positive history is not the one at risk, 22 continue to withhold Buscopan because of the established teaching. Only 429 (52.4%) substitute glucagon for Buscopan if the patient gives a history of heart disease. Eight respondents (0.8%) have seen an attack of glaucoma thought to have been precipitated by Buscopan, and 20 (1.9%) have seen cardiac complications. Conclusion: There are still widespread misconceptions about the contraindications to the use of Buscopan among radiologists in the UK. We recommend abandoning the practice of enquiring about a history of glaucoma, and substituting advice to seek urgent medical advice should eye pain and visual loss develop. Caution in the patient with heart disease appears to be of greater importance.

Source: EMBASE

7. The ocular effects of hyoscine-n-butylbromide ("Buscopan") in radiological practice.

Author(s): Sissons GR, McQueenie A, Mantle M

Citation: British Journal of Radiology, July 1991, vol./is. 64/763(584-6), 0007-1285;0007-1285 (1991 Jul)

Publication Date: July 1991

Abstract: "Buscopan" (hyoscine-n-butylbromide, HBB) is a smooth muscle relaxant regularly used in radiological and endoscopic procedures. One unwanted effect is temporary impairment of visual accommodation. Near and distance vision were assessed in 100 patients undergoing barium meal and barium enema studies. Visual testing was performed prior to the examination and repeated immediately before leaving the radiology department. Completed data was obtained in 90 patients. Of these, 37 were given a conventional 20 mg intravenous dose of HBB, 37 were given glucagon and 16 received no drug. No patient showed any impairment of distance vision. Minor abnormalities of near vision were observed in five patients. All had been given HBB. They were aged 50 years or less and had been retested 12-21 min after administration of the drug. It is suggested that the degree of visual impairment observed is not sufficient to impair driving ability. Routine questioning concerning history of glaucoma is unlikely to be of value; more appropriate would be a warning to seek urgent medical advice if eye pain or visual loss is experienced.

Source: MEDLINE

8. Buscopan and glaucoma.

Author(s): Doran RM, Gray R, Virjee JP

Citation: British Journal of Radiology, April 1987, vol./is. 60/712(417), 0007-1285;0007-1285 (1987 Apr)

Publication Date: April 1987

Source: MEDLINE


Author(s): Stelzer R, Wohlzogen FX

Citation: Klinische Monatsblatter fur Augenheilkunde, September 1978, vol./is. 173/3(439), 0023-2165;0023-2165 (1978 Sep)

Publication Date: September 1978
The use of antispasmodic drugs during barium enemas


In general, a history of glaucoma is a contraindication to these agents, because the increased intraocular pressure can precipitate an acute attack of glaucoma. Unfortunately, most patients with a history of glaucoma have chronic glaucoma. A patient may have acute closed-angle glaucoma and not be aware of it [14]. Acute glaucoma should be suspected if any eye pain or loss of vision occurs after administration of an anticholinergic agent.

Some of the complications encountered with anticholinergic agents can occur hours later, and delayed questioning of the patient is necessary to detect these side effects. The half-life for hyoscyamine sulfate is 3.5 hr, whereas the half-life for glucagon is 3-6 mm. The patient in whom acute urinary retention or glaucoma develops after use of an anticholinergic agent might not note any symptoms for several hours. In some countries, such as Japan, where Buscopan is used commonly, a number of elderly patients are given glucagon because of the complications associated with anticholinergic agents [15]. In one center, anticholinergic agents were not used in 7% of patients undergoing endoscopy because of contraindications [16]. In the elderly, this number increased to 20%.

Safety and efficacy of glucagon as a premedication for upper gastrointestinal endoscopy—a comparative study with butyl scopolamine bromide

T Hashimoto, K Adachi, N Ishimura, K ... - Alimentary ..., 2002 - Wiley Online Library

... 21 with prostate hyperplasia, eight with glaucoma and three with both heart disease and glaucoma. ... Anticholinergic agents increase heart rate and systolic blood pressure during endoscopy ... Prospective audit of upper gastrointestinal endoscopy in two regimens of England: safety ...

Complications of Gastrointestinal Endoscopy

J Green - British Society of Gastroenterology: London. Available ... - 2006 - ... by stimulating the vestibular receptors eg when turning a patient undergoing ERCP or a ... male patients with prostatic symptoms • patients with a history of closed angle glaucoma [Evidence Grade I ... Sedation for upper gastrointestinal endoscopy: results of a nationwide survey. ...

Hyoscine butylbromide—a review on its parenteral use in acute abdominal spasm and as an aid in abdominal diagnostic and therapeutic procedures

GN Tytgat - 2008 - informahealthcare.com

Objectives and scope: This review focuses on the therapeutic efficacy and safety of the parenteral administration of HBB for treating biliary and renal colic and acute spasm in the genito-urinary tract. In addition, its value for diagnostic or therapeutic procedures in the abdomen, as ...

Comparison of glucagon and scopolamine butylbromide as premedication for colonoscopy in unsedated patients

I Yoshikawa, M Yamasaki, M Taguchi, K Kanda, ... - Diseases of the Colon ..., 2006 - PURPOSE: Premedication with glucagon or hyoscyamine is reported to be effective in reducing colonic spasm. How- ever, these drugs can be associated with unfavorable events. This prospective study was designed to compare the effects of premedication with glucagon with those of ...

Precautions to be taken by radiologists and radiographers when prescribing hyoscine-N-butylbromide.

radiologists and radiographers when prescribing hyoscine-N-butylbromide. Dyde R, Chapman AH, Gale R, Mackintosh A, Tolan DJ. Department ...

16. Comparison of glucagon, atropine, and placebo as premedication for endoscopy of the upper gastrointestinal tract

T Qvigstad, S Larsen, J Myren - Scandinavian Journal of ..., 1979 - informahealthcare.com

... The influence of glucagon (G), atropine (A), and placebo (P) on factors considered important for the success of upper gastrointestinal endoscopy ... In patients with prostatic hyperplasia, glaucoma, tachycardiac arrythmias. ... and the cost of glucagon and Buscopan is then similar. ...

Google Advanced Search

From the first 50 results...

17. Drotaverine Hydrochloride Versus Hyoscine-N-butylbromide for ...

31 Aug 2010 ... Intravenous hyoscine-N-butylbromide is often used during ERCP to inhibit ... Glaucoma; Obstructive uropathy; Impaired renal function (serum ... clinicaltrials.gov/ct2/show/NCT00731198 - Cached - Similar

18. Routine use of hyoscine N butylbromide (Buscopan) in double contrast barium enema examinations 1982

A retrospective analysis of the effect of oral and intravenous hyoscine N butylbromide (Buscopan) on the dimensions of the large bowel during double contrast barium enema (DCBE) examination was made and compared with corresponding measurements without Buscopan. It was found that 20 mg oral Buscopan did not alter colonic dimensions but 20 mg Buscopan intravenously allowed significantly greater distension of the large bowel. The colonic length was greater after intravenous Buscopan but not to a highly significant degree. It is concluded that Buscopan is not effective when given orally. No side effects have been observed with intravenous Buscopan, even in elderly patients. Buscopan given intravenously seems to be a safe and effective drug for use during DCBE examinations.


The number of reports of this symptom were almost double as the dose increased from 1 to 2 mg. However, the duration of hypotonicity associated with doses of 1 and 2 mg was 23.7 versus 26.7 minutes (intramuscular) and 18.7 and 23.7 minutes (intravenous). Therefore, in giving an additional milligram, one gains 3-5 minutes at the expense of almost twice the number of side effects.