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Characterizing the role of haloperidol for analgesia in the Emergency Department

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Abstract

The purpose of this study was to characterize emergency department (ED) physicians' beliefs and current practices regarding the use of haloperidol for the management of acute and acute on chronic pain. Methods: A survey regarding haloperidol use was distributed by email to attending physicians, resident physicians, nurse practitioners, and physician assistants at emergency medicine departments in the Indiana University Health System and at St Joseph Mercy Ann Arbor. Results: Of the 129 responses received, the majority (89.1%) of providers had used haloperidol for control of pain in the ED. The most common reason that respondents used haloperidol to treat pain was that they did not want to use an opioid or other agent (91.3%). The majority of providers (73.9%) believed that haloperidol was effective because there is a psychiatric component to pain, while over half of respondents (58.3%) chose haloperidol as they believed it to have analgesic properties. When haloperidol was used as a first line medication, providers felt that it was effective in controlling pain about 69.0% of the time without the need for further medication. The most common presentations for use were for unspecified abdominal pain, headache, and gastroparesis. Conclusion: ED providers reported using haloperidol most often as a second line treatment to manage both acute and acute on chronic pain. When haloperidol was used as a first line agent, providers claimed that additional medicines were not usually required. Haloperidol may provide an effective alternative to opioids in treatment of acute pain and acute exacerbations of chronic pain in the ED.

Keywords

Pain; pain management; haloperidol; emergency department

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Ethical compliance

The authors have stated all possible conflicts of interest within this work. The authors have stated all sources of funding for this work. If this work involved human participants, informed consent was received from each individual. If this work involved human participants, it was conducted in accordance with the 1964 Declaration of Helsinki. If this work involved experiments with humans or animals, it was conducted in accordance with the related institutions' research ethics guidelines.

Introduction

Acute and acute on chronic pain are responsible for over half of the emergency room visits in the United States (1). Opioids are often used as first or second line agents in the emergency department (ED) to relieve patients' pain (2). It is in the ED that many patients have their first encounter with opioids. The overuse of these medications has played a significant role in the opioid addiction crisis (3). While many patients, after these first experiences, do not become dependent upon opioids, some continue to seek out these medications through legal or illegal means. There is concern regarding these first experiences being a gateway to opioid addiction (4). A need for finding alternative methods to relieve pain has become imperative in today's ED setting.

Haloperidol is a butyrophenone-type antipsychotic that has many therapeutic properties (5). While it has been traditionally used for the treatment of psychosis, haloperidol has also been used to treat nausea, vomiting, migraines, acute psychotic agitation, neuralgiform facial pain, post- and intra-operative pain, and cases of gastroparesis (6–16). EDs across the nation are seeking out alternative methods for treating patients with complaints of acute and acute on chronic pain (17). There are anecdotes of successful use of haloperidol amongst ED physicians in relieving various types of pain (10, 18); however, current literature is sparse concerning situations in which haloperidol can be used for mitigation of acute and acute on chronic pain. Therefore, it is important to characterize the role of haloperidol for analgesia in the ED setting, as it may provide a safe alternative to pain management and may aid in the resolution of the current opioid epidemic.

Our central hypothesis is that ED providers believe that haloperidol can provide effective analgesia for acute and acute on chronic pain and that this medication may provide a possible alternative to opioid use in the ED setting. The aim of our survey was to evaluate ED provider beliefs and current prescribing practices regarding the use of haloperidol for acute and acute on chronic pain and to use this information to help inform future studies.

Methods

A 14 question survey with a combination of multiple choice and fill in the blank question styles was created using the Research Electronic Data Capture (REDCap) system (Vanderbilt University, Nashville, TN, USA). The survey was created following the guidelines by Mello et al. (19). The survey was deemed to be exempt by the IRB (protocol #1802120866A001) for all data collection sites. This survey was distributed to several emergency medicine departments in the Indiana University Health System, as well as to St Joseph Mercy Ann Arbor. We chose these locations, as we sought data from both community and academic settings. The survey was circulated to attending physicians, resident physicians, nurse practitioners (NPs), and physician assistants (PAs). Survey questions were as follows:

- What type of setting do you practice in?
- Which state do you practice medicine in?
- Which of the following best describes your level of training?

- What is your gender?
- In the past year, have you used haloperidol specifically for the control of pain in the ED?
- If yes, do you use it for acute or chronic pain, or both?
- For which conditions do you use haloperidol to treat pain?
- Do you use haloperidol as a first line agent, second line agent (rescue agent), or both?
- What proportion of the time do you feel haloperidol is effective without the need for rescue medications?
- Have you ever used droperidol to treat pain?
- Do you routinely obtain an EKG prior to administering haloperidol for pain?

Prior to starting the survey, participants first viewed a message which provided a description of the survey, including its purpose. They could complete the survey using any electronic device enabled with internet access (personal computer, laptop, tablet). Data was collected and managed using REDCap electronic data capture tools hosted at Indiana University. Exported data was then compiled and analyzed within Microsoft Excel Version 2016 (Microsoft Corp., Redmond, WA, USA).

Results

In all, 129 individuals completed surveys across two states. Of these individuals, practical medical experience was highly varied. Descriptive statistics regarding providers in the survey are shown in Table 1.

The majority of respondents had used haloperidol in the ED (89.1%) for pain control. Of those who had used haloperidol, most providers (76.5%) used it as both a first and second line medication. For providers that used haloperidol in both contexts, they used it as a first line agent 34.0% of the time (see Table 2.). When it was used as a first line medication, providers felt that it was effective in controlling pain about 69.0% of the time without the need for further medication.

Providers that had used haloperidol for pain control in the ED had used it most often to treat both acute and acute on chronic pain (70.4%). A small portion of providers (13.0%) reported using haloperidol for only acute pain, while 16.5% of providers reported using it for only acute on chronic pain. The three most common conditions treated with haloperidol were unspecified abdominal pain (n = 104), headache (n = 88), and gastroparesis (n = 87). Less frequently treated conditions included fibromyalgia (n = 51), back pain (n = 5), sickle cell crisis (n = 2), pain associated with a psychiatric component (n = 1), myalgias secondary to viral illnesses (n = 1), cyclic vomiting syndrome (n = 1), and chest pain (n = 1).

The most common reason that respondents used haloperidol to treat pain was that they did not want to use an opioid or other agent (91.3%). A majority of providers (73.9%) believed that haloperidol was effective because of its effect on the psychiatric component of pain,

while many respondents (58.3%) chose haloperidol as they believed it to have analgesic properties. Others (8.7%) reported choosing haloperidol because of drug shortages, its effects on the serotonergic pathway involved in pain, the dissociative effect it can cause to reduce pain, and its potential to reset a patient's perception of pain.

Of the 10.9% of respondents that had not used haloperidol for pain, the most common reason was having never considered haloperidol as a treatment for pain control. Less commonly stated answers for not using haloperidol included believing there to be no evidence for its use, not being comfortable with its use, and one statement regarding FDA warnings. In addition, a majority of respondents were unfamiliar with the antipsychotic drug droperidol for pain control, with 57.4% having never prescribed it. Of note, only 14.8% of providers obtained an EKG prior to administering haloperidol.

Discussion

This study incorporated a diverse group of healthcare providers, ranging from well-established physicians to nurse practitioners. In our study, the majority of ED providers who responded were using haloperidol to treat both acute pain and acute on chronic pain in the emergency department. Of those that treated both types of pain, it appears that they prescribed haloperidol more commonly for acute on chronic pain. This may have been due to the attitude of the ED staff towards chronic pain patients, as they may have felt this patient population to be challenging to treat (20). Provider attitudes, the complexity of chronic pain, and the push to avoid opiates makes an anti-psychotic, such as haloperidol, a reasonable choice for treatment of pain.

The most common conditions treated amongst respondents were unspecified abdominal pain, headache, and gastroparesis, all commonly seen conditions in the emergency department. Abdominal pain has often been the most frequent condition seen in the ED, causing up to 6 million visits or more per year, while headache pain is also frequently seen in the ED, resulting in approximately 3 million visits yearly (21, 22). The complexity of these conditions can all be very difficult to treat from a provider's perspective. We can infer from our survey data that providers have noted improvement for such conditions through the use of haloperidol, as they often used this medication for treatment of the aforementioned and other conditions.

When using haloperidol to treat pain in the emergency department, most providers stated that they used this medicine as a second line of treatment. This may be due to the fact that haloperidol is not the standard of care for any pain condition at this point, and providers felt that standard treatments for conditions such as headache and non-specific abdominal pain should be exhausted first. However, as providers in our survey who did use haloperidol as a first line agent found no need for rescue medication 69.0% of the time, perhaps haloperidol could be looked at as a more common first line agent.

When asked why haloperidol was used to treat pain, the most common reason providers stated was their desire to avoid prescribing opiates. This is understandable, given the current opioid epidemic in the United States. Providers also believed that haloperidol treats both

the psychiatric component of pain, as well as the pain itself. This combination makes haloperidol a strong alternative for the treatment of pain in the emergency department.

Regarding side effects of haloperidol, providers may have been unaware of haloperidol's profile. Only a small number of providers who used haloperidol to treat pain in the ED obtained an EKG prior to treating with this medication. This may be due to providers being unaware of haloperidol's ability to prolong the QT interval. There should be continued physician education regarding the drug's ramifications relative to the QT interval, as well as to other possible side effects produced by this drug.

Several limitations in this study deserve discussion. The main limitation was that the selection of providers who participated in the study were self-selected by their willingness to participate. This may have caused a selection bias toward providers who were more familiar with haloperidol as an agent in the management of pain. Additionally, the survey was done within two Midwest hospital systems, which may limit external generalizability of this study to other geographical areas. Lastly, as this was a survey-driven study, we relied on physicians to be accurate and honest in their answers. Overall, we felt that due to the fairly large sample size of providers participating in this study (n = 129), some of these limitations were mitigated.

Conclusion

Although there is a lack of literature on the use of haloperidol for pain, our survey explores current provider practices regarding its use in the emergency department. Based on our results, ED providers are prescribing haloperidol to treat pain conditions such as unspecified abdominal pain, headache, and gastroparesis. Haloperidol is currently being used most frequently as a second line agent. However, when haloperidol is used as a first line agent, providers most often do not require the aid of a rescue medication. The main barrier to physicians choosing this medication appears to be the lack of knowledge regarding its effectiveness for treatment of pain. Overall, it appears that haloperidol may provide an effective alternative to opioids in the treatment of acute pain and acute on chronic pain in the ED. However, further research is needed to better understand the effects of haloperidol for pain control.

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Demographics and training of 129 providers participating in survey regarding haloperidol

Table 1.

	Male (n)	Female (n)	Total (n)
Level of training			
Physician (>10 years)	23	15	38 (29.5%)
Physician (5–10 years)	14	7	21 (16.3%)
Physician (<5 years)	15	6	21 (16.3%)
Resident Physician	24	18	42 (32.6%)
Advanced Practitioner (NP or PA)	2	5	7 (7.5%)
Practice location			
Indiana	68	41	109 (84.5%)
Michigan	10	10	20 (15.5%)
Practice environment			
Academic	59	38	97 (75.2%)
Community	19	13	32 (24.8%)
	78 (60.5%)	51 (39.5%)	

Table 2.

Providers' prescribing habits regarding haloperidol and pain control

	Academic providers (n)	Community providers (n)	Total (n)
Use of haloperidol for pain control			
Yes	85	30	115 (89.1%)
No	12	2	14 (10.9%)
Pain type prescribed for			
Acute	8	7	15 (13.0%)
Acute on chronic	18	1	19 (16.5%)
Both	59	22	81 (70.4%)
Timing of use			
First line only	6	0	6 (5.2%)
Second line only	14	7	21 (18.3%)
Both	65	23	88 (76.5%)
% Used first line if both	35.9%	27.7%	34.0%