



Effect of peppermint on pediatrics' pain under endoscopic examination of the large bowel

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ABSTRACT

Introduction: Colonoscopy is a painful and invasive technique for patients especially for pediatrics. Peppermint has analgesic effect. Therefore, we wish to look at the effect of peppermint essence on the patients' satisfaction and pain after colonoscopy.

Methods: This clinical trial study was performed on 100 patient's candidate for colonoscopy. Patients were randomly divided into two groups. Control group received no drug. Case group was administrated supermint essence thirty minutes before colonoscopy. A valid questionnaire was filled during the colonoscopy for patient's satisfaction and pain evaluation.

Results: The mean value of abdominal pain was 0.527 ± 2.500 in control group and 1.625 ± 0.491 in case group after treatment ($p < 0.05$). Degree of satisfaction was 8 and 17.6 percent in control and case groups, respectively. Mean value of satisfaction in control group was 1.833 ± 0.389 that was significantly different from case group (2.607 ± 0.566) ($p < 0.05$). Duration of colonoscopy in control group was significantly higher than the one in case group ($p < 0.05$).

Conclusion: Our findings showed that peppermint essence causes an increasing in satisfaction as well as a reduction in pain in patients under the colonoscopy.

Implication for health policy/practice/research/medical education:

Peppermint reduces pain and increases satisfaction in patients under the colonoscopy and its consumption might be beneficial in these patients.

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Introduction

Nowadays, colonoscopy is a standard and valuable method that widely used in the early diagnosis of colorectal mucosal lesions (1). Colonoscopy is a procedure for examining the colon by a thin, flexible tube with a camera. Colonoscopy usually takes 20-30 minutes that the main concerns are fear and pain during colonoscopy of children. Considering that many anti-anxiety and pain killer drugs are unsuitable for to children; it is necessary to find out a way to reduce children's pain and anxiety during colonoscopy. Plant extracts are used for relieve of pain in traditional medicine. Several studies have

reported the positive effects of herbal medicines worldwide, especially. It consists the hopeful effects of medicinal plants in various ailments, including pain (2-4), addiction (5,6), diabetes (7-9), and cancer (10,11). These plants may also be used to remove toxicity of synthetic drugs (12-14). In spite of suitable climate of Iran for growing the plants, limited researches have been conducted about plants.

Peppermint is an aromatic herb, with a spicy and cooling taste that grows in different regions of Iran. Peppermint has analgesic, anti-bacterial, carminative and anti-inflammatory effect. Peppermint essence contains chemicals, including

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trpinolen, osmyl, terpinene and Mentyl (15,16). Oral drop of supermint oil is a new carminative drug that its essence is provided with the scientific name *Mentha spicata*. This product contains 5.9 caron per ml of extract (17). Several studies have shown that peppermint extract reduces pain in patients with irritable bowel syndrome (18-21). Kingham found that peppermint oil is effective in colonic spasm (22). This study was aimed to evaluation the effect of peppermint essence on patients' satisfaction and pain after colonoscopy in Children's Medical Center, Tehran.

Materials and Methods

This randomized clinical trial study was done on 100 children who referred to Children Medical Center in Tehran from May 2012 to September 2013. Children were randomly divided into two equal groups.

Inclusion criteria were the aged 7-14 years, suspected polyps, intestinal disease or unknown bleeding (23). Exclusion criteria were lack of mental health, consciousness, using anti-anxiety and pain killer drugs. Patients were randomly divided into two equal groups of control and case, thirty minutes before surgery. Control group did not receive any drugs. Colonoscopy was performed under Toronto protocols. Children in case group received 20 ml oral supermint oil drop (Baryj Essence Company, Iran) 30 minutes before colonoscopy.

After that, pain pediatric questionnaire was filled by an observer who was blinded to grouping of the patients. Scores were as follows: 0= no pain/1, 2= very weak pain/3, 4= weak pain/5, 6= mild pain/7, 8=severe pain/9, 10=very severe pain. Satisfaction Questionnaire consisted twelve questions (9 questions with five options of Likert scale (1= poor, 5= excellent), and the three questions were yes and no. Score 3 or higher was optimal for each question. Validity of questionnaires was approved by 10 members of the expert team and the reliability was calculated using alpha Cronbach method. The coefficient was calculated to be $r = 0.88$ for the questionnaire.

Data were analyzed using SPSS statistical software version 11.5 and descriptive and analytical tests (Man Whitney, T-test). Significant level was considered at $P < 0.05$.

Results

The statistical analysis showed no significant difference in age distribution of two groups [10.13 ± 2.85 (case group) versus 9.08 ± 2.55 (control group). $P > 0.05$].

Twenty-one patients in case group (41.17%) and 19 patients in the control group (38%) were female and data analysis showed no significant difference between the two groups ($P > 0.05$). Mean value of pain was 2.5 ± 0.52 out of 10 in control group and this value was 1.62 ± 0.49 out of 10 in case group after treatment. Comparison values of pain was not found difference between two groups after treatment ($P < 0.05$; Table 1).

As can be seen in Table 2, 17.6% (9 patients) in case group and 8% (4 patients) in control group had high degree of satisfaction. Mean degree of satisfaction in case group was 2.60 ± 0.56 . Statistical analysis showed significantly difference between case and control groups (2.60 ± 0.56 vs. 1.83 ± 0.38 , respectively).

Discussion

Our results showed that administration of oral Supermint oil drops (peppermint oil) increased patients' satisfaction after colonoscopy. Studies showed that peppermint causes relaxation of muscles (24). Vejdani and colleagues concluded that the use of peppermint extract reduced pain in patients with irritable bowel syndrome following eight weeks consumption (25). The results of the studies showed that peppermint affects on calcium channels in neurons for reducing calcium ions in neurons. It reduces pain via neuronal excitability and synaptic transmission (26). It has been reported that peppermint oil reduces contractions of smooth muscles during colonoscopy or barium enema (27).

In a study in Sheffield College reported that using mint reduces

Table 1. Abdominal pain scores in patients under colonoscopy in case and control groups

Groups	Duration of abdominal pain			
	Less than one minute	One to three minutes	3-5 Minutes	More than five minutes
Control group	12 (23.5%)	25 (49%)	10 (19.6%)	3 (5.8%)
Case group	32* (64%)	10 (20%)	7 (14%)	1 (2%)

* $P < 0.05$ significantly different compared with control group.

Table 2. Satisfaction scores in patients after colonoscopy in case and control groups

Groups	Moderate	Good	Very good	Excellent
Case group	2 (3.9%)	25 (49%)	15* (29.4%)	9* (17.6%)
Control group	12 (24%)	28 (56%)	6 (12%)	4 (8%)

* $P < 0.05$ significantly different compared with control group.

pain relief and increases patients satisfaction in patients with irritable bowel syndrome (28). In a randomized clinical trial study, administration of peppermint oil capsules to 65 adult patients reduced spasms during colonoscopy. In addition, satisfaction levels increased dramatically after colonoscopy (29).

In another study, mint oil was administered orally to 215 patients. Two hundred and fifteen patients were adopted as control group and administered no mint. The results showed that oral administration of peppermint reduced spasms in the esophagus, the lower part of the stomach, duodenal bulb compared to the control group. In addition, it improved the quality of diagnosis without the use of anti-spasmodic drugs (30). Similarly, in our study the administration of peppermint reduced colon spasms and increased satisfaction in patients as well as physician.

Another study compared the effects of antispasmodic drug hyoscine and glucagon and peppermint oil on upper gastrointestinal endoscopy. Results showed that peppermint oil relieved spasm during endoscopy of the esophagus, stomach and duodenum in elderly patients (31). In our study, administration of peppermint oil was effective in reducing pain and satisfaction of patients and physician and no adverse effect was observed in the current study.

Conclusion

Our findings demonstrated that peppermint essence had a positive effect on satisfaction and reduction of pain in pediatrics under colonoscopy. The mechanism effect of peppermint may be related to reduction in colon spasms during colonoscopy or it may affect calcium channels in neurons to reduce calcium ion entry to neurons.

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Authors' contributions

MAK, SAJ and AK carried out experiments and participated in design of the study. EK and HA participated in the coordination of the project, revised and approved the manuscript. MGM, SM and MS helped in draft the manuscript.

Conflict of interests

The authors declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, misconduct, data fabrication, falsification, double publication or submission, redundancy) have been completely observed by the authors.

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