Red Hot Chilli Consumption Is Harmful in Patients Operated for Anal Fissure – A Randomized, Double-Blind, Controlled Study

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Introduction

Chillies are generally believed to be harmful to patients with anal pathologies [1] like anal fissures and hemorrhoidal disease [2]. Consequently, these patients are advised to take a relatively bland diet containing little or no spices and chillies. However, very few studies are available which demonstrate a direct relationship between consumption of chillies and development or deterioration of anorectal diseases [3].

Sun-dried chillies, which contain capsaicin and dihydrocapsaicin, contain nitrophenols, which by producing nitrosation of foodstuff, often believed to be gastric stimulant, are known to cause toxicity in the gastrointestinal tract [4]. Capsaicin is known to affect visceral sensory perception and chillies have been shown to accelerate gut transit increasing the bowel frequency [5].

In an experimental study, it was found that consumption of red chillies produced exfoliation of intestinal epithelium in the lumen in rats [6]. Chillies have been blamed as being an ulcerogenic food substance [7].

For the reasons mentioned above, we set a trial to evaluate any cause-effect relationship between the ingestion of dried chillies and postoperative symptoms after a closed anal sphincterotomy in patients with chronic anal fissure, through a prospective, randomized, placebo-controlled and double-blind trial.
Materials and Methods

Patients were recruited from Fine Morning Hospital and Research Center between January and August 2006. All patients with chronic idiopathic fissure in ano (defined as anal fissure with >8 weeks’ symptom duration) in whom conservative treatment had failed and who were suitable for lateral sphincterotomy were considered for inclusion in this study. Exclusion criteria were previous sphincterotomy or anal dilatation, fissure associated with inflammatory bowel disease, suspicion of malignant fissure or ulcer, concomitant procedure to be performed at the time of sphincterotomy (excision of skin tag was permitted). Further exclusion criteria were an inability to understand the end points of the study and to complete the forms for data recording.

The study was conducted by following a randomized, control design. 56 patients (21 women and 35 men) with an average age of 32 (range 18–44) years were recruited. The study population was then randomly assigned by computer-based sequential method, whether post-sphincterotomy analgesic therapy plus placebo (as described below) (control patients, n = 28) or identical analgesic therapy plus chillies (chilli patients, n = 28).

Preparation of Capsules of Chillies and Placebo

After analyzing cookery books from five different expert cooks and the medical literature [1], it was estimated that about 1.5 g of dried chilli powder is required to add to a normal dish to make it spicy enough. So this amount of chilli was confectioned in a capsule. The capsules were prepared by an independent pharmacy not attached with the hospital. Capsules were numbered consecutively, but the sequence of placebo and chilli powder was randomized. The chilli powder was obtained through a commercially available pack of chilli powder approved by the Food and Drug Administration in India and containing ground sun-dried red chillies. The active capsule contained 1.5 g of chilli powder and 0.5 g lactose-free microcrystalline cellulose. Placebo capsules contained 2 g of microcrystalline cellulose alone. Both the capsules were colored black to prevent identification of the contents.

Surgery

A single surgeon performed all the procedures, with the patient in the lithotomy position. Closed lateral sphincterotomy was performed by the technique described by Hoffmann and Goligher [8], using a short stab incision and blind division of the internal sphincter guided by the surgeon’s finger. The Ethics Committee of Fine Morning Hospital and Research Center, Nagpur, approved the protocol of this study.

Drug Treatment

In the immediate postoperative period, 50 mg of diclofenac was administered by intramuscular route. Patients were routinely discharged on the evening of the procedure unless otherwise clinically indicated. All patients were supplied with tablets containing diclofenac sodium 50 mg, 2 tablets orally a day or more as needed but not more than 4 tablets. They were also prescribed with a fiber supplement Fybogel (manufactured by Nicholas Piramal India Ltd) 10 g daily and were instructed to maintain a high fluid intake.

Each patient was given a pack containing 14 capsules (containing placebo or chilli powder) numbered consecutively and to be taken after lunch and dinner every day for the following 7 days. Both the patients and the doctors associated with this study were unaware of the contents of the capsules.

During the study period, patients were instructed to avoid any other food potentially related to gastrointestinal and hemorrhoidal symptoms such as spices, alcohol, tobacco, tea and coffee.

Assessment and Evaluation of Symptoms

After hospital discharge, patients were asked to report after 7 days. They were asked to self-assess specific symptoms, which included pain, anal burning (described as burning sensation in the anus after defecation), and pruritus. Each symptom was allocated a score from 0 to 3 (0 = no symptoms, 1 = mild, 2 = moderate, 3 = severe intensity). Patients were also asked to note the amount of analgesic tablets consumed and the number of stools passed in 24 h from day 1 to day 7 in the post-discharge period.

Statistical Analysis

A sample size calculation estimated that a minimum of 25 patients in each arm would be required to demonstrate an increase in the postoperative symptoms at the 5% significance level with a power of 95%.

In our analysis, we used Friedman’s test for categorical variables as mean scores for each symptom analyzed (pain, anal burning and pruritus) and the Mann-Whitney U test for continuous variables (for global scores (GS)).

The Friedman’s test does not allow for a comparison between two treatments. Therefore a GS was constructed to compare increase in symptoms in the chilli group with those in the control (placebo) group. For each symptom the GS was calculated by adding up mean scores throughout the study period of 7 days. This was done for each group (control and chilli). The Mann-Whitney U test was used to compare aggravation of GS for each symptom in both groups over the study period.

The mean frequency of stool passed and the amount of analgesic tablets consumed during these 7 days was also assessed.

Results

Comparison of Patient Groups

Patients were assessed at baseline for demographic characteristics. There was no significant difference in these variables between the two groups (table 1). No intra- or postoperative complications were recorded.

Evaluation of Symptoms

Pain. The daily mean pain score was significantly lower in the placebo group throughout the study period (GS = 7.60 in chilli group and 2.95 in control group, p < 0.001) (fig. 1). With regard to the mean analgesic requirement in the study period of 7 days, patients used an average of 11 tablets (range 6–14) in the placebo group in the first 7 days after surgery compared with 16 tablets (range 11–21 tablets) in the chilli group.
Anal Burning. There was a significant burning sensation experienced by the patients in the chilli group (GS = 8.85 for the chilli group vs. 4.21 for the control group, \( p < 0.0001 \)) (fig. 2). The GS for pruritus (4.45 in the control group and 5.75 in chilli group, \( p < 0.69 \)) was higher in the chilli group when compared with the control group; however, it did not reach statistically significant level. The mean frequency of stool passed over the study period in patients from the chilli group was 17, while it was 13 in the control group.

**Discussion**

Anal fissure is a split extending from the anal verge towards the dentate line. The pathogenesis is thought to be related to severe constipation or to straining at stool, since the hard fecal bolus may crack the anal canal [9]. Risk factors frequently mentioned include constipation, pregnancy and diet [10]. A diet rich in fats, alcohol, spices and pepper as well low fluid intake have been implicated [11]. In women, certain obstetric events have been reported to favor symptom development [12].

As regards relationship of chillies and anal fissure, the literature is very scanty with very few papers describing the effect of pepper or chillies on anal fissure and its symptoms [13]. The exact mechanism by which chillies influence the colonic and rectal physiology is not well understood. Capsaicin, the pungent principle of hot pepper, has the ability to excite and later defunctionalize a subset of primary afferent neurons [14]. Chillies are known to cause rectal hyperalgesia in patients with irritable bowel syndrome [15]. A significant increase in the number of mucosal inflammatory cells and an increase in BrdU-immunoreactive nuclei were detected following mucosal exposure to capsaicin in the colon [16]. One study in rats showed that chilli supplementation promotes colon carcinogenesis [17]. A case of small bowel obstruction and localized ileal perforation caused by an undigested green chilli has been reported [18].

The most important study was of Altomare et al. [19], where in a randomized and controlled study they found
that there is no relationship between consumption of red chillies and aggravation of hemorrhoidal symptoms. However, we feel that the amount of capsicum used for this study was much less (10 mg) than what is actually used in Indian diet [20]. Secondly, the conclusion was made after a very short period of ingestion of chilli (48 h), which we feel to be too brief to reach to any significant conclusion. There are few studies which have shown that chillies have an adverse effect in the gastrointestinal tract causing duodenal ulcer [7], esophageal and gastric cancer [21], ileal perforation, pruritus ani [22], incisor tooth wear [23] and cancer of the abdomen [24].

Few other studies have found that spics do have an adverse effect on hemorrhoid and anal fissure symptomatology, though they have not mentioned chillies in specific [25].

Chillies are known to cause accelerated gut transit increasing frequency of stool [26], which itself could be a factor aggravating symptoms of anal fissure. In our study there was a definite increase in the stool frequency in patients consuming chillies when compared to the placebo group causing increased frequency of anal burning and pain.

Our study has clearly demonstrated that consumption of red chilli powder increases the postoperative symptoms after sphincterotomy showing a direct relationship between chilli consumption and symptoms of anal fissure. This was more significant with regard to pain and anal burning.

Conclusion

This study shows that consumption of 3 g of red chillies per day in the postoperative period after sphincterotomy for anal fissure increases the extent and duration of typical postoperative symptoms, which include pain, anal burning, and anal itch.

References