Dilatation of radiation-induced esophageal strictures under sublingual buprenorphine analgesia: a pilot study

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Background: Pain during dilatation of radiation strictures is a troublesome complaint. There is little information on sedation and analgesia during this procedure. We performed a pilot study to compare the analgesic efficacy of sublingual buprenorphine and intravenous pentazocine during dilatation of radiation-induced esophageal strictures. Methods: Thirty-one patients with esophageal cancer who had radiation-induced strictures were randomized to receive either buprenorphine 0.2 mg sublingually two hours before dilatation (n=17) or pentazocine 30 mg intravenously five minutes before dilatation (n=14). Dilatation was considered successful if it could be performed to 12 mm diameter or more. Pain experienced during dilatation was graded as mild, moderate or severe. Results: Sixteen patients in the buprenorphine group and 12 in the pentazocine group were dilated to >12 mm size (p=ns). Twelve and nine patients respectively in the two groups experienced mild or no pain; ten and six patients had minor side-effects (p=ns). Conclusion: Buprenorphine is useful for sedoanalgesia during dilatation of radiation-induced strictures of the esophagus. [Indian J Gastroenterol 1997; 16: 14-15]

Key words: Dysphagia, neoplasm, pentazocine

Radiation therapy for esophageal cancer results in development of esophageal strictures in 25% to 50% of patients. Troublesome pain during dilatation occurs in 25% of patients with radiation-induced strictures; it can be severe enough to limit the extent of dilatation. Intravenous pentazocine is one of the drugs used as a sedoanalgesic to suppress this pain. Buprenorphine is used extensively in the palliation of cancer pain. The advantages of buprenorphine include absence of psychotomimetic effects, longer duration of analgesia, and sublingual route of administration. Use of buprenorphine as a sedoanalgesic during dilatation has not been reported.

We undertook a pilot study to compare the usefulness of sublingual buprenorphine with that of intravenous pentazocine while dilating radiation-induced strictures of the esophagus.

Methods

This was a prospective pilot study in a tertiary cancer center. Informed consent was taken from all the patients. All the subjects were patients with esophageal cancer who had been previously treated with radiation therapy and had subsequently presented with stricture. Barium swallow was performed in all patients prior to dilatation; patients with esophagobronchial fistula, long tortuous strictures, ulcerated strictures and performance status WHO grade 4 were excluded. Thirty-one eligible patients with radiation strictures were randomized in two groups using random numbers.

All patients received 2% lignocaine topical pharyngeal spray prior to the procedure. One group (n=14) received pentazocine 30 mg intravenously five minutes before dilatation. The other group (n=17) received buprenorphine 0.2 mg sublingually two hours before dilatation. Additional increments of intravenous pentazocine (15 mg) were given to patients in both groups who experienced severe pain during dilatation.

Dilatation was performed with Savary-Gilliard bougies (Wilson-Cook, Winston-Salem, NC). Fluoroscopic assistance during dilatation was used for angular or long tortuous strictures. Once the guide wire was placed satisfactorily, dilators were passed serially in advancing sizes. The resistance experienced by the investigator during the dilatation was recorded subjectively as mild, moderate or severe. The rule of three was followed in all the patients. Technical success was defined as ability to dilate stricture to 12 mm or more.

Each patient was asked to grade the pain experienced during dilatation as mild, moderate or severe. All patients were observed for 3-4 hours after dilatation for side-effects. They were asked to follow up two days after dilatation to detect any delayed side-effects or complications.

Statistical significance was determined by chi-squared test with Yates' correction.

Results

Patients in the two groups were well matched with regard to age, sex, radiation dose received, duration of dysphagia, length of stricture, and luminal diameter (Table). Dilatation was technically successful in 16 of 17 patients (94%, 95% CI 71% to 100%) in the buprenorphine group and 12 of 14 patients (85.7%, 95% CI 57% to 98%) in the pentazocine group. One patient in the buprenorphine group needed two sessions of dilatation and two patients in the pentazocine group could not be dilated adequately due to severe resistance and pain during passage of dilators.

Five patients (29.4%, 95% CI 10.3% to 55.9%) in the buprenorphine group and five (35.7%, 95% CI 12.7% to
Analgesia for esophageal dilatation

| Table: Patient characteristics, stricture site, and radiation characteristics |
|---------------------------------|-----------------|-----------------|
| Parameters                      | Buprenorphine   | Pentazocine     |
| Median age (years) (n=17)       | 55              | 55              |
| Men: women                      | 11:6            | 9:5             |
| Median duration of symptoms (mo)| 2               | 2               |
| Total radiation dose received   |                 |                 |
| > 45 cGy                        | 16              | 12              |
| Intraluminal radiation          | 3               | 3               |
| Location of stricture           |                 |                 |
| Upper esophagus                 | 5               | 7               |
| Mid esophagus                   | 7               | 4               |
| Lower esophagus                 | 5               | 3               |
| Median length of stricture (cm) | 4               | 5               |

* No significant difference between groups

64.8% in the pentazocine group experienced moderate to severe grades of pain (p=ns). Three patients in each group required additional intravenous pentazocine (15 mg).

In the buprenorphine and pentazocine groups, 14 and 11 patients respectively had mild to moderate resistance and three patients each had severe resistance during dilatation. Among patients with severe resistance, one patient in the buprenorphine group and two in the pentazocine group could not undergo dilatation to 12 mm or more.

Ten patients in the buprenorphine group and six (p=ns) in the pentazocine group had side-effects. These were mild and did not require any intervention or hospitalization. Transient giddiness was common (7 and 4 cases, respectively) in both the groups. Two patients in the pentazocine group had vomiting after dilatation. One patient in the buprenorphine group had persistent mild pain, esophageal perforation was excluded by contrast study. No patient in the pentazocine group had late side-effects.

Discussion

Radiation strictures are tougher because of fibrosis. Patients with radiation strictures experience pain during dilatation. There is little information on sedoanalgesic medication during dilatation of esophageal radiation strictures. Use of analgesia during dilatation of benign esophageal strictures is optional. It has been suggested that some form of analgesia be given to patients with tough angulated esophageal strictures.

In our study the technical success of dilatation was equal in both the groups and substantial pain control was achieved in more than two-thirds of patients in both groups. The incidence of minor side-effects was similar in the two groups, as were the success and complication rates. Additional analgesia for pain was needed in 20% of patients in both the groups. However, the sample size in this study was small and the investigators and patients were not blinded; these could affect the validity of our observations. Furthermore, buprenorphine given sublingually cannot be repeated during dilatation, thus limiting its use.

In conclusion, buprenorphine is a potentially useful alternative drug for inducing sedoanalgesia during dilatation of radiation-induced esophageal strictures.

References


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