

Effect of Pleurodesis with 2% Povidone-Iodine in a Tertiary Care Centre, Mahabubnagar, Telangana

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Abstract

Background: Tetracycline, talc, and bleomycin have been proved to be effective in recurrent spontaneous pneumothorax and malignant pleural effusion. Recent studies have shown the efficacy of 2% betadine in pleurodesis.

Objective: The objective of this study was to find out the success rate of 2% betadine in pleurodesis in patients with recurrent spontaneous pneumothorax and malignant pleural effusions.

Materials and Methods: The study was conducted in SVS Medical College, Mahabubnagar Dist., Telangana, during the period of May 2016 - Feb 2019. Patients with malignant pleural effusion and recurrent spontaneous pneumothorax were taken into consideration. About 2% betadine with xylocaine was used in this study.

Results: A total of 26 patients underwent pleurodesis. Eighteen patients had malignant pleural effusion and eight patients had recurrent spontaneous pneumothorax. Of 26 patients, 23 (88.5%) patients had successful pleurodesis. Among 23 patients who had underwent successful pleurodesis, 16 had malignant pleural effusion and seven had recurrent spontaneous pneumothorax.

Conclusion: In our observation, we have seen that pleurodesis with 2% betadine is very effective and inexpensive in pleurodesis without many complications.

Key words: Pleurodesis, 2% povidone iodine, Pneumothorax, Malignant effusion

INTRODUCTION

Pleurodesis is a procedure to achieve symphysis between the two layers of pleura aimed at preventing accumulation of either air or fluid in the pleural space.^[1] It is usually done in recurrent malignant effusions and recurrent pneumothorax cases. Pleurodesis can be achieved by either a chemical agent or by physical abrasion of the pleural surfaces during thoracotomy or thoracoscopy.

Various agents are used, but no agent till now is considered to be an ideal agent for pleurodesis. Talc till now is considered to be the most effective agent for chemical pleurodesis in both spontaneous pneumothorax and malignant effusion.^[2,3] Tetracycline and bleomycin are also used in pleurodesis.

Betadine is being used for pleurodesis from the year 1991^[4] and various studies are going onto prove efficacy of 2% betadine.^[5-8]

Aim

The study was conducted to know the efficacy of pleurodesis with 2% betadine for recurrent malignant pleural effusions and recurrent pneumothorax cases.

METHODOLOGY

The study was conducted in SVS Medical College, Mahabubnagar Dist., Telangana, during the period of

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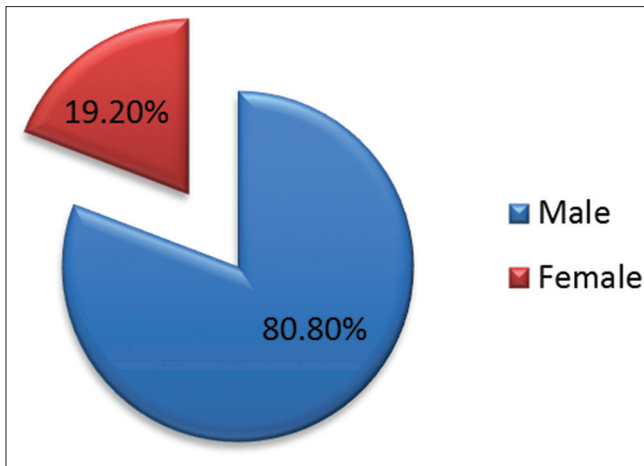


Figure 1: Gender distribution

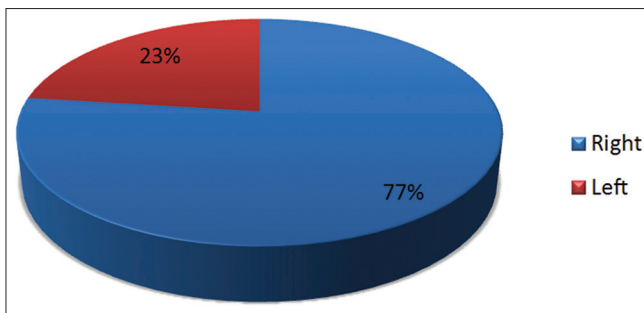


Figure 2: Lung involvement

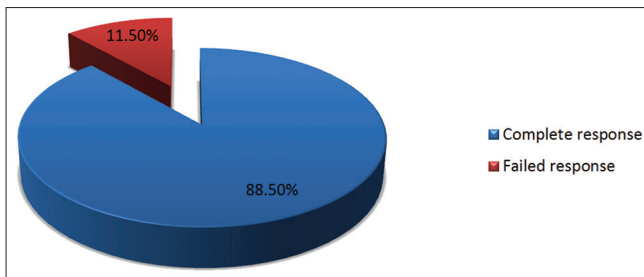


Figure 3: Response after the procedure (success rate)

March 2016–February 2019. A total of 26 patients were included in the study, of which 18 were suffering from malignant pleural effusions and eight had recurrent pneumothorax. An informed consent was taken after explaining the complete procedure with side effects.

Procedure

The use of nonsteroidal anti-inflammatory drugs and other anti-inflammatory drugs should be stopped 24 h before pleurodesis till 12 h after the procedure. An inter costal drain (ICD) was inserted in the patients. Pleurodesis was done in patients with drain <100 ml and in the absence of air leak, and chest X-ray showing complete expansion of lung. Distal end of tube was clamped and 20 ml of 2% xylocaine was injected into the pleural cavity through ICD, percussion was

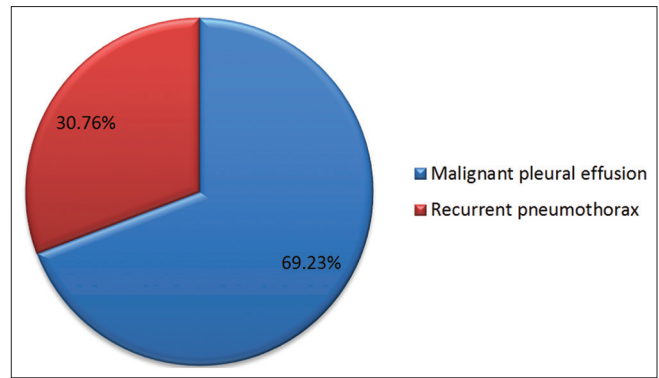


Figure 4: Diagnosed condition among patients

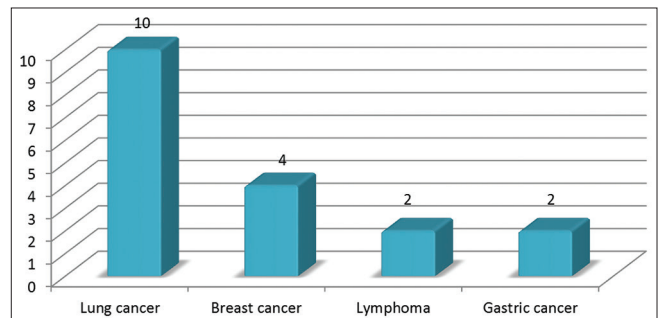


Figure 5: Primary sites in malignant pleural effusion (16 cases)

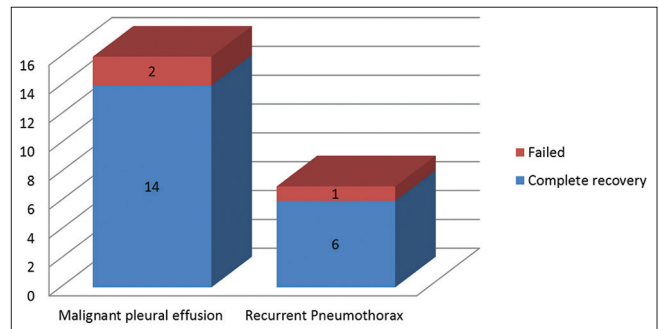


Figure 6: Complete recovery according to the diagnosis

done while changing patient to different positions. Then, 70 ml of 2% betadine mixed with 10–20 ml of normal saline was injected. Then, percussion was done changing patient to different positions. Then, ICD was kept clamped for 6 h following an ultrasonography chest and X-ray was done after releasing the clamp and repeated after 7 days. The response to this procedure, treatment failure, and the complaints of the patients were evaluated.

Inclusion Criteria

The patients who were diagnosed to have the following conditions and those who were willing to participate in the study by giving a written informed consent were enrolled for the study.

1. Diagnosed with primary malignancy
2. Recurrent symptomatic malignant effusion

3. Recurrent spontaneous pneumothorax
4. Evidence of complete expansion of lung after drainage of air/fluid
5. Absence of bronchial obstruction.

Exclusion Criteria

The patients who had the following conditions and those who were not willing to participate in the study were excluded from the study.

1. Cardiac disease
2. Trapped lung
3. Loculated effusions.

RESULTS

A total of 26 patients were studied. The mean age of patients was 63.6 ± 5 (45–80) years. Out of the total 26 patients, 21 (80.8%) patients were men and 5 (19.2%) were women. The right lung was involved in 20 (77%) patients and the left lung in 6 (23%) patients.

Out of the total 26 patients, 18 (69.23%) had malignant pleural effusion. The most common primary diseases associated with malignant pleural effusion were lung cancer ($n = 10$, 55%) followed by breast cancer ($n = 4$, 22%), lymphoma ($n = 2$, 11%), and gastric cancer ($n = 2$, 11%). Rest 7 (30.76%) patients had recurrent pneumothorax.

Of 26 patients, 23 patients (88.5%) achieved confirmed complete response. In three patients (11.5%), pleurodesis failed to achieve complete response.

Among 18 patients who had malignant pleural effusion, pleurodesis was successful in 16 (88.9%) patients and was unsuccessful in 2 cases (11.1%). Among eight patients suffering with recurrent pneumothorax, 7 (87.5%) were successful and 1 ($n = 1$, 12.5%) failed.

There were no complications reported by the patients except for one case of recurrent pneumothorax which reported pain. Injection tramadol was given and pain subsided. No other mortality and morbidity were reported in this study.

DISCUSSION

Chemical pleurodesis is the procedure of choice in the management of recurrent pleural effusions^[9] and a recognized treatment option in the management of patients with primary or secondary spontaneous pneumothorax.^[10] The question is the choice of the sclerosing agent, which is determined by the efficacy of the agent, its cost,

accessibility, safety, ease of administration, and the number of administrations needed to achieve a complete response.

The precise mode of action of iodopovidone remains unclear.^[11] It may be related to the low pH (pH 2.97) of the sclerosing solution, or to the strong oxidative and cytotoxic properties of iodine, which can induce a potent inflammatory response.

Agarwal *et al.*^[7] obtained complete response rate of 86.5% in pleural effusion group and 92.6% in pneumothorax group with povidone-iodine in a study including 37 patients with pleural effusion and 27 patients with pneumothorax.

In a review of six studies, 265 patients underwent chemical pleurodesis with povidone-iodine, and the mean success rate was 90.6%. In this meta-analysis, pleurodesis with povidone-iodine was performed for recurrent pleural effusion in 157 patients and pneumothorax in 108 patients.^[8]

Agarwal *et al.*^[8] reported that all the patients in their study experienced chest pain and noted that the only clinically important side effect of povidone-iodine was pain and chemical pleurodesis did not cause death in these patients. The other side effects reported were fever in seven patients and empyema in one patient.

The results of the present study affirm that 2% betadine pleurodesis is associated with high success rates, with efficacy rate of 87.5% and 85.5% in malignant pleural effusions and recurrent pneumothorax, respectively.

There were no serious adverse events including acute respiratory distress syndrome or deaths associated with the procedure.

CONCLUSION

This study supports iodopovidone as an effective, inexpensive, safe, and feasible agent for chemical pleurodesis in patients with pleural effusions and recurrent pneumothorax.

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