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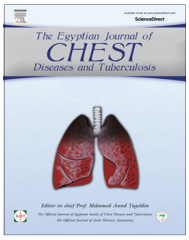

ORIGINAL ARTICLE

Outcome of pleurodesis using different agents in management of malignant pleural effusion

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KEYWORDS

Malignant effusion;
Pleurodesis;
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Abstract *Introduction:* Malignant pleural effusion is a serious problem for both patients and physicians. Pleurodesis is considered the good solution for this dilemma. Chemical pleurodesis was used to prevent fluid reaccumulation and decrease patient suffering. This study was designed to compare and evaluate the efficacy and safety of three different sclerosing agents for preventing recurrent malignant pleural effusion.

Materials and methods: Forty five patients with recurrent malignant pleural effusion were enrolled in three groups; 15 patients in each one, and were subjected to pleurodesis using three chemical agents.

Vincristine (2 mg), viscum (100 mg) and povidone–iodine (20 ml). All patients were subjected to the thoracotomy tube for drainage of pleural fluid, then sclerosing agents were instilled intrapleurally via the tube.

Results: Vincristine, viscum and povidone–iodine resulted in complete pleurodesis in 53.3%, 73.3% and 73.3% respectively. Failed pleurodesis was higher in the vincristine group 26.7% but in viscum and iodine groups were 13.3% and 20% respectively.

Pain was the most common complication 48.89% and reported in a higher ratio in the vincristine group 66.67%, while in viscum and iodine groups it was 53.33% and 26.67% respectively.

There was no statistically significant difference between the three groups regarding pleural fluid chemistry and duration of ICT.

Conclusion: According this study, povidone iodine is considered the ideal sclerosing agent for pleurodesis in comparison to vincristine and viscum because of its high efficacy, availability, cheapness and least side effects.

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Introduction

Pleural effusion is defined as abnormal fluid accumulation in the pleural space, it is caused by many conditions, as: congestive heart failure, pneumonia and malignancy [1]. Malignant pleural effusion is a complication of many advanced malignancies [2], which is usually secondary to lung and breast cancers, but may be caused by any site of primary cancer as well as primary pleural malignancy [3]. Malignant pleural effusion is still a common problem especially in patients with metastatic disease, they usually suffer from progressive dyspnea, dry cough and chest pain in addition to reduced physical activity with decreased quality of life [4]. Therapeutic possibilities for this effusion are not always successful, additionally these patients need to visit the hospital regularly for fluid aspiration or even stay hospitalized for several days.

Management of this fluid is usually palliative, but is undoubtedly needed to decrease patient complaints in addition to improving patient quality of life [5].

Chemical pleurodesis is the recommended treatment for these patients to prevent fluid re-accumulation, and to reduce patients suffering; either physically or psychologically [6].

There is no universal agreement on the most effective and least harmful agents in inducing pleurodesis in malignant pleural effusion [7]. There are many agents available for chemical pleurodesis, such as tetracycline derivatives, talc (insufflation or slurry), bleomycin, mitoxantrone, nitrogen mustard, silver nitrate, iodopovidone, dry killed *Corynebacterium parvum* [8]. Each of these agents has its own set of advantages and disadvantages, so the planned agent to be used must be selected judiciously. The criteria for selection include agent's effectiveness, availability, ease of administration, cost and safety profile [9].

Some physicians used cytotoxic drugs such as viscum album L. (mistletoe) extract to induce pleurodesis in patients with malignant effusion [10]. Vincristine also was used for induction of pleurodesis in malignant pleural effusion [11]. Povidone–iodine was used mostly as an antiseptic agent, but recently many studies used it as s sclerosing agent for pleurodesis because of its low-cost and availability [12].

Aim of the study

The aim of this study is to compare and evaluate the efficacy and safety of viscum, vincristine and povidone–iodine in chemical pleurodesis for recurrent malignant pleural effusion.

Materials and methods

This study was conducted prospectively on forty five patients with recurrent malignant pleural effusion admitted either to chest or cardiothoracic departments, Tanta University Hospital (Tanta city, Egypt) from March 2014 to May 2015. Malignant pleural effusion was established using either positivity of pleural fluid cytology or thoracoscopic pleural biopsy.

Inclusion criteria

- Malignant pleural effusion (positive pleural fluid for malignant cells and/or positive pleural thoracoscopic biopsy for malignant tissue).
- Reaccumulation of malignant pleural effusion after fluid aspiration.
- Symptoms related to pleural fluid reaccumulation as; dyspnea, cough and chest pain.
- Lung inflation after chest tube insertion and fluid drainage.

Exclusion criteria

- Patients with hypersensitivity to iodine.
- Incomplete lung inflation.
- Intrapleural chemotherapy or local radiotherapy to the effusion side.
- Other comorbidity that can affect pleural effusion reaccumulation.
- Encysted pleural effusion.

All patients were subjected to:

- Full history taking, general and local examination, chest X-ray (CT in some cases), liver and kidney functions and coagulation profile.
- Chest tube was inserted under a complete aseptic technique in the operating room under local anesthesia in 5th intercostal space midaxillary line, drainage of pleural effusion was followed daily till it became less than 150 cc per 24 h and chest X-ray was done to ensure complete pleural fluid evacuation with total inflation of the ipsilateral lung.
- Patients were subjected to pleurodesis after their randomization into 3 groups:

All patients received 15 ml of lidocaine (Xylocaine 2%, Astra Zeneca) intrapleurally prior to sclerotherapy.

- *Group A (vincristine group; 15 patients):* intrapleural instillation of 2 mg Vincristine Sulfate Injection® (each vial of 10 ml contains 1 mg/ml Vincristine Sulfate) mixed with 100 ml of normal saline and injected via the chest tube [13]. [Vincristine Sulfate Injection® is manufactured by: Pfizer (Perth) Pty Limited – Australia.]
- *Group B (viscum group; 15 patients):* intrapleural instillation of 5 ampules of Viscum Fraxini 2®, (each ampoule of 1 ml contains 20 mg mistletoe extract: equivalent to 10,000 ng Lectins) mixed with 100 ml of normal saline and injected via the chest tube [14]. [Viscum Fraxini 2® is manufactured by: ABNOBA Heilmittel GmbH – Germany. Packed by: ATOS Pharma (Sekem Group) – Egypt.]
- *Group C: (povidone–iodine group; 15 patients):* intrapleural instillation of 20 ml of 10% Betadine® in 80 ml normal saline and injected via the chest tube [6]. [Betadine® is manufactured by Nile Co. for Pharmaceuticals and Chemical Industries, Cairo, Egypt; licensed by Mundi Pharma AG, Basel, Switzerland.]

The tube was clamped for two hours, while that; the patient was asked to change his position every 20 min to six directions (supine, prone, sitting upright, right and left lateral decubitus and lying low) to ensure the contact of sclerosing agents with the whole pleural surfaces.

After two hours, the tube was unclamped. Follow up X-ray was done daily until the amount of the drained fluid became less than 150 ml/day; the tube is removed.