Original Research Paper

Volume - 11 | Issue - 02 | February - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Pulmonary Medicine

A STUDY ON USE OF STREPTOKINASE IN MULTILOCULATED PLEURAL EFFUSION & COMPLEX EMPYEMA

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ABSTRACT **BACKGROUND:** In patients with multiloculated exudative pleural effusion and complex empyema.It is always difficult to drain the fluid, most of the cases end up in aggressive surgery,fibrinolytics like streptokinase is a good alternative

AIMS AND OBJECTIVES 1.To estimate the use of streptokinase in multiloculated effusion as fibrinolytic

2. To determine use of streptokinase as a alternative for surgery

METHODS: A total of 23 patients with age>18 years with multiloculated pleural effusion and empyema presented to katuri medical college , Guntur, from september 2018 to aug 2019,were included in the study. Findings are confirmed by radiology and ultrasound. Icd was kept in all patients and streptokinase 2.5 lakh units mixed in 50 ml saline was given through icd tube twice for 3 days, after failure to drain the effusions with a standard chest tube because of multiloculation and multi septation

RESULTS: Post procedure drain was noted and radiologically evaluated. Out of 23 patients 19 patients showed good lung expansion and increase drainage of pleural fluid and 3 cases showed moderate lung expansion and 1 patient showed hypersensitivity

CONCLUSION: Streptokinase is proved as effective safe, cheaper and easily available fibrinolytic used in drainage of multiloculated pleural effusion who fail to drain adequately with a standard chest tube

KEYWORDS : multiloculated pleural effusion, fibrinolytic, Streptokinase

INTRODUCTION

Separated pleural effusion are those with ultrasound evidence of fibrin strand or septae floating inside the pleural space. Intrapleural adhesions and septated effusion remain a common and burdensome clinical entity, the presence of adhesions carries a poor prognostic factor in patients with exudative[1] pleural effusion and may render the pleural fluid drainage difficulty.[2]

In dealing with this problem, intrapleural fibrinolytics may be safe, easy, cost effective management option . It may be a useful alternative for others such as use of video assisted thoracic surgery or the conventional thorocotomy[3] .The purpose of our study was to assess the safety and efficacy of streptokinase for intrapleural fibrinolysis in patients with septated pleural effusion

AIMS AND OBJECTIVES

1. To estimate the use of streptokinase in multiloculated effusion as fibrinolytic
2. To determine use of streptokinase as a alternative for surgery

STUDY DESIGN:

It is a Prospective study done over a period of 12 months

STUDY SIZE

The study was designed as a prospective study manner. 23 patients halving septated pleural effusion were included in the study. All are admitted at katuri medical college guntur during the period between September 2018 to August 2019

INCLUSION CRITERIA.

Patients who fulfilled all of the following criteria were included

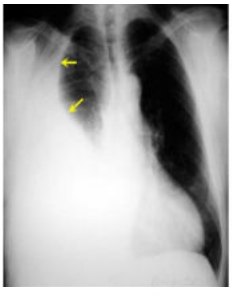
A) Patient had pleural effusion with known underlying etiology
B) Presence of intrapleural adhesions as documented demographically
C) Pleural fluid drainage was indicated
D) Difficult thoracocentesis
E) failure of satisfactory pleural fluid drainage 24 hrs following inter coastal tube placement provided that the tube was properly positioned and not obstructed

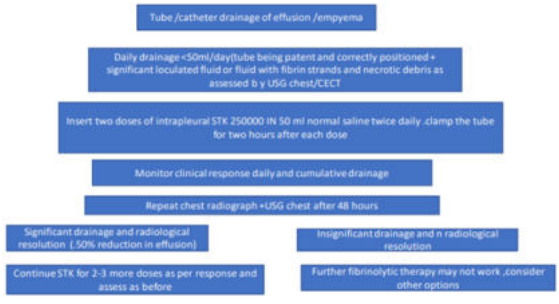
EXCLUSION CRITERIA:

A) Recent severe trauma ,haemorrhage or stroke
B) Patient had bleeding disorder
C) Patient maintained on anti coagulant therapy
D) Patient had history of streptokinase administration in the previous 2 years

METHOD OF COLLECTION OF DATA:

- Before the procedure chest x ray should be done..
- An ultrasound evaluation of chest
- Patent intra coastal tube should be confirmed





Procedure

All patients initially had a closed intra coastal tube drainage with a size 24-32. The chest tube is placed under the water seal system. The first dose of fibrinolytic therapy started 24hrs after ICT placement. For intrapleural fibrinolysis, no premedications or analgesics were administered systemically or intrapleurally. Streptokinase was used at a dose of 250,000 IU dissolved in 40ml of normal saline instilled in the pleural cavity through the chest tube.

Streptokinase dose is repeated once daily, for 3-5 days.depending on resolution and response. Patient was placed in the lateral decubitus position with the unaffected lung dependent during agent installation, to be sure that all of this agent drained from the chest catheter in to the treated pleural cavity.

The tube is then camped for 2-4hrs and patient asked to repeatedly change position so that streptokinase could thoroughly spread in

pleural cavity. Patient remained in bed until the tube was unclamped, to minimize the amount of agent that might leak around the tube there by decreasing its effective dwell time in the pleural cavity Data about volume of pleural fluid drained from the chest tube before and after streptokinase administration were daily collected. Chest x ray and ultrasound chest were performed daily till discharging day, and doses of streptokinase are also noted... We planned to stop administering streptokinase if severe complications occurred and drained fluid is less than 100cc in 24hrs provide tube is patent and positioned properly. Patients were assessed carefully for evidence of drug complications including fever, pain, allergic reaction, bleeding or haemodynamic changes... Effectiveness of the protocol assessed by dissolution of adhesions by chest ultrasound, and by improvement in chest x ray.

Patients in whom procedure is partially successful were transferred to cardiothoracic surgeon for further management.

While in successful group the inter coastal tube is removed and patient is discharged to continue their treatment.

Evaluation of pleural effusion after STKdone by chest x ray as
0-----No change
1------less than 1/3 improvement
2------- improvement between 1/3 and 2/3
3-------more than 2/3rd with out complete clearence
4-------complete radiological clearence

Regarding evaluation by chest ultrasound
0----------No change
1---------Dissolution of adhesion in some regions
2----------dissolution of adhesion in all region with residual pleural lesion
3----------total adhesion dissolution with out residual pleural lesion
Residual pleural lesion means pleural fibrosis, nodules, masses…

RESULTS

23 patients were included in the study with age group of 30 to 75 years and their descriptive data are demonstrated in **Table 1**

Regarding the etiology in studied patients are demonstrated in **Table 2** Result observed in pie diagram

Table 1. Descriptive data of the studied patients

AGE	**30-75 YEARS**
SEX	**Number involved in study**
MALE	**20**
FEMALE	3

Table 2.Etiological diagnosis of pleural effusion in the studied population

Diagnosis	Number of patients
EMPYEMA	11
TUBERCULOSIS PLEURAL EFFUSION	9
MALIGNANT PLEURAL EFFUSION	4

Figure 1. Outcome Definition Of The Studied Patients

RESULT

Out of 23 patients 19 were successfully treated, showing resolution in chest x ray and ultrasound finding, 3 are partial successful or not fully resolved, 1 patient showed hypersensitivity to STK showing chest tightness[9] and headache ,fever.

DISCUSSION

Tillet and sherry introduced fibrinolytic therapy in1949 as atreatment for empyema .

There have been many studies which support the use of fibrinolytic agents in empyema and effusion, these agents are safer,easier and cost effective option for managing pleural adhesion and loculations.[4]

Our study included 23 patients presented with empyema and loculated effusion as documented by chest sonography[5].

small number of patients involved in our study Regarding the amount of fluid drained before and after streptokinase instillation ,our study reported marked difference between the two.

However our success rate was slightly lower when compared with sanchez[6] et.al in (1996) study, success rate of them is 92%, in our study ours is 82 %. And when compared with study of Temes.et.al (1996) success rate (61%)[7]ours is 82% higher due to low study group……however experience,selection of ases and parameters used to assess success all may play a role.

In our work sonographic examination was not only helpful diagnostic tool but also it was valuable in predicting the patient outcome according to the echo features of pleural septa. Previously chen et.al 2000[8] use the sonographic septation as a useful prognostic indicator of acute thoracic empyema. No major adverse effect noted but chest tightness and fever and headache recorded in 1 patient in our study, so we discontinued STK usage in that patient. In Taylor et.al in 1994[10] reported that all patients tolerated intra pleural streptokinase well, only one complained discomfort in their study

CONCLUSION

We conclude that intrapleural streptokinase therapy may be considered in septated pleuraleffusion as a safe and effective treatment ,it may obviate need for surgery. Also ultrasound features of adhesions are considered as a predictor of response .

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