



EFFICACY OF INTRAPLEURAL STREPTOKINASE IN THE TREATMENT OF COMPLICATED PARAPNEUMONIC EFFUSION

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ABSTRACT **Context:** Pleural effusions often become complicated because of multiloculations and secondary infections. This leads to pleural thickening and pleuropulmonary fibrosis leading to decreased pulmonary function and respiratory failure. It is always essential to treat the underlying cause and thoroughly drain the pleural fluid for proper expansion of lung and prevention of lung fibrosis. **Aim :** To study the efficacy of streptokinase in complicated Parapneumonic effusion when compared to normal saline irrigation via intercostal drainage tube. **Methods and Materials:** 40 patients of parapneumonic effusions admitted in respiratory ward of NRIGH are included in our study. Out of which 20 cases treated with intrapleural streptokinase and 20 patients treated with normal saline irrigation via intercostal drainage tube. **Statistical Analysis:** All categorical variables are expressed in percentage. Comparison in radiological and clinical outcomes between patients who received STK and NS was done using Z scores and P values. Mean and SDs were calculated for numerical values. **Results:** Most of the patients belonged to 30-50 years of age. Males more common. All pleural effusion cases in our study are exudates. The most common organism isolated was streptococcus followed by staphylococcus and tuberculosis. Patients belonging to the STK group had better clinical and radiological outcomes. **Conclusion:** study concluded that role of intrapleural fibrinolytic therapy using streptokinase to manage complicated parapneumonic effusion. STK is a safe and effective adjunctive therapy in CPE management. Excellent clinical and radiological outcomes are seen in patients treated with intrapleural streptokinase compared to normal saline.

KEYWORDS : Fibrinolytic agents, Streptokinase(STK), Complicated Para-pneumonic Effusions(CPE).

INTRODUCTION

In 36–57 percent of patients with pneumonia, parapneumonic pleural effusions develop. Despite the widespread availability and use of very potent antibiotics, CPE still occurs and is associated with severe morbidity and mortality. The cornerstone of treatment is early evacuation of fluid from the pleural cavity, as well as broad-spectrum antibiotics. The most common method of pus drainage is intercostal tube drainage (ICTD). However, ICTD is hampered by the presence of thick pus, which might clog the tube, or many loculations that can't be drained by a single chest tube.

In the past, surgical techniques such as rib excision and open drainage were used to address such issues. Safer and less invasive surgical procedures such as video assisted thoracoscopic surgery (VATS) have been added to these operations¹. The use of fibrinolytic drugs for intrapleural instillation has allowed these individuals to be managed without having to undergo surgery. Because of its fibrinolytic properties, this therapeutic technique aids in the breakup of loculations.²

AIM:

To study the efficacy of streptokinase in complicated Parapneumonic effusion when compared to normal saline irrigation via intercostal drainage tube.

Case Study

This is a cross-sectional, descriptive, prospective study conducted at NRI Medical College & Hospital with sample size 40.

Duration of Study: 18 months From January 2020 To June 2021

Inclusion Criteria:

1. Patients aged 18-80 years
2. All patients of pneumonia with intrapleural confirmation of septations by Ultra Sonography (USG Both genders)
3. All patients with inadequate drainage of pleural space by intercostal tube even after confirmation of fluid by ultrasonography.

Exclusion Criteria:

- 1) Patients with bleeding disorders, stroke, hemorrhage in the preceding 6 months, and the use of STK in the past 2 years.
- 2) Patients with poor general condition.

- 3) HIV positive cases
- 4) Pregnant and lactating women
- 5) Patients who didn't provide consent.

Patients were divided into 2 groups: NS group and STK group. NS(normal saline) to 20 patients STK(streptokinase) to 20 patients. NS group were given normal saline irrigation was given with intercoastal drainage and STK group were given intrapleural streptokinase. 2.5 units of streptokinase reconstituted with 50ml of normal saline and 10ml of 2% xylocaine was given for an average of 7 days until the drainage was minimal. In the group treated with saline irrigation 250 ml of normal saline was instilled once daily for seven days.

Data analysis was done using Microsoft excel -2019 and SPSS software version 23.0. Z scores and P values were calculated to compare between two groups.

RESULTS;

1. Age Distribution

Age	No of patients	% of patients
20-30	5	12.5
31-40	10	25
41-50	17	42.5
51-60	4	10
61-70	4	10

2. Causative Organism

Organism	No of patients	%
Staphylococcus	8	20
M TB	5	12.5
Klebsiella	4	10
Psuedomonas	7	17.5
Streptococcus	10	25
No organism	6	15

3.C- X Ray Before Treatment

CXR before treatment	No of patients	% of patients
Whole	2	5%
Less than 1/3rd	27	67.5%
More than 2/3rd	11	27.5%

4.C-X Ray Clearance In Both Groups

CXR	NS	STK
100% Clearance	6	9
0%	6	0
80-99%	7	11
50-79%	0	0
Below 50%	1	0

5. Complications

Complication	No of Patients	% of patients
Pain	20	50%
Fever	15	37.5%
SOB	4	10%
Septicemia	1	1.25%
Respiratory Failure	0	0

DISCUSSION:

Comparison with Andreas H Diacon³, Johan Theron, Macé M Schuurmans study: This was a randomized, placebo-controlled trial to assess if streptokinase installations decrease the requirement for surgery. Patients received antibiotic treatment, chest tube drainage, and oncedaily pleural rinses with either normal saline or normal saline with streptokinase (250,000 IU), similar to our study.

Parameters	Andrea' study	Current study
Type of study	Placebo- controlled: placebo: normal saline	Placebo-controlled
Groups	2groups 22-NS group 22: STK group	2 groups 20 NS group 22 STK Group
Follow up	1 death	No deaths
Outcomes	No significant radiologic or clinical outcomes were observed between the two groups.	Significant radiologic or clinical outcomes were observed between the two groups.

CONCLUSIONS

The current study was done on 40 patients with complicated parapneumonic effusions. Twenty patients received Normal saline, and 20 patients received streptokinase in this study. Most of the patients belonged to 30-50 years of age. Males are more and right-sided effusion was more common in the current study. All pleural effusion cases in our study are exudates. The most common organism isolated was streptococcus ,staphylococcus followed by M. TB. Malignancy was found in 2 cases. The whole chest was involved in 2 cases. Most of the patients had less than 1/3rd of lungs involved. Pleural fluid is serosanguinous in 80% of cases. Most of the patients were treated for 3 to 5 days. Patients with both thick and thin loculations were included. Most of the patients had 300-400ml fluid, as assessed by the USG before initiating the treatment. Clinical and radiological outcomes were compared between both the groups using Z score. There is statistically significant difference in clinical and radiological outcomes in patients in these two groups. Patients who belonged to the STK group had better clinical and radiological outcomes. There is no poor clinical outcome in the STK group. Many patients had a 100% clearance rate in CXR after treatment with STK. Patients with thick loculation, who were treated with NS had poor outcomes.

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