

EFFECT OF MODIFIED CHEST PHYSIOTHERAPY ON SPUTUM CULTURE RESULTS OF PATIENT UNDERWENT NEUROSURGICAL INTERVENTIONS

¹Prof.Dr.V.S.Reetha Devi, ²Abhilash.V, ³Bindu.K.Nair

¹Ph.D (N), Principal, DM WIMS Nursing College, Wayanad, Kerala, India

²M.Sc (N), Assistant Professor, DM WIMS Nursing College, Wayanad, Kerala, India

³M.Sc (N), Assistant Professor, Govt. College Of Nursing, Trissur, Kerala, India

Abstract: Study to find out the effect of modified chest hysiotherapy on sputum culture results patient undergone neurosurgical interventions was conducted in Medical College Hospital, Kozhikode, Kerala, India. The main aim of the study was evaluate the effect of Modified Chest Physiotherapy and conventional chest physiotherapy on sputum culture results of patients undergone neurosurgical interventions through physical examination and biophysiological measures. Quasi experimental with time series non-equivalent control group design was used for the study. The present study was based on Betty Neuman's system model.

Keywords: Conventional chest physiotherapy; Modified Chest Physiotherapy; Neurosurgical Interventions; PPC (Post-operative pulmonary complications) Respiratory Outcome; Respiratory Status Grading Scale; Sputum cul ture results,

I. INTRODUCTION

Good respiratory function is a sign of overall health. It is not possible without proper or efficient clearance of secretions in the airway. Otherwise it may lead in to am series of respiratory problem some times end with death. Following neurosurgery, it is believed that mucociliary clearance is adversely affected due to effects of general anesthesia, intubation and pharmacological agents such as narcotic analgesics used in the perioperative period. Reduced ability to cough effectively due to altered level of consciousness and increase the pooling of secretions because of the long term immobility with a decrease in regional ventilation provides a good potential for pulmonary secretion formation. When we took the statistics of the deaths in neurosurgical clients shows that approximately 20-25% of death not merely because of neurologic trauma ;sometimes associate severe respiratory problems. MorikaThoru of University medical school, Kumato reported that patients undergone neurosurgical interventions having cardio respiratory complications than that from neurological origin. American Association of Neurological Surgeons reported that there are approximately 1.5million traumatic brain injury cases in United States alone. In this there are nearly 2lakhs clients may need surgical interventions- out of them 10-20% of patients suffering from respiratory complications.

The main factor investigator noticed that patients didn't get proper respiratory physiotherapies to drain out their airway. This may due to the following problems;

- There is no clear cut instruction on the positions for the postural drainage.
- Difficulties to carry out standard chest physiotherapy interventions on neurosurgical clients.
- Lack of authorized clinical guidelines for Chest physiotheray on neurosurgical clients.

These factors stimulated the investigator to “Evaluate effect of modified chest physiotherapy on sputum culture results of patient underwent neurosurgical interventions.” The present study was based on Betty Neuman’s system model .Quasi experimental with time series non-equivalent control group design was used for the study.

II. BODY OF ARTICLE

Statement of the Problem:

“A Quasiexperimental study to assess effect of modified chest physiotherapy on sputum culture results of patient underwent neurosurgical interventions, Medical College Hospital, Kohikode , Kerala, India”

Quasi experimental with time series non-equivalent control group design was used for the study. Patients who seem to have satisfied the inclusion criteria and was the maximum number of patients available during the data collection period included in the study .

In this study the patients who had undergone neurosurgical interventions are the population. The sampling technique used was purposive sampling. In 40 samples, 20 received modified chest physiotherapy and remaining 20 received conventional chest physiotherapy, 15 minutes three times in a day. Interview schedule was used to collect socio-personal data and respiratory status assessed by respiratory status grading scale.

Majority (67%) of samples from the control group had sterile sputum culture results before conventional physiotherapy .Most (50%) of samples from the experimental group had sterile sputum culture results before modified chest physiotherapy. Majority of sputum positive subjects in the control and experimental group before conventional and modified chest physiotherapy had Acitinobacter species in their sputum samples 58% (25% in the control group, 33% in experimental group), Pneumococcus 25% (8% in the control group, 17% in experimental group) .

After conventional and modified chest physiotherapy 70% of the subjects in the control group and 85% of subjects in the experimental group had sterile sputum culture results. In 30% of cases from the control group and 15% from the experimental group had organisms present in the sputum that are highly pathogenic.

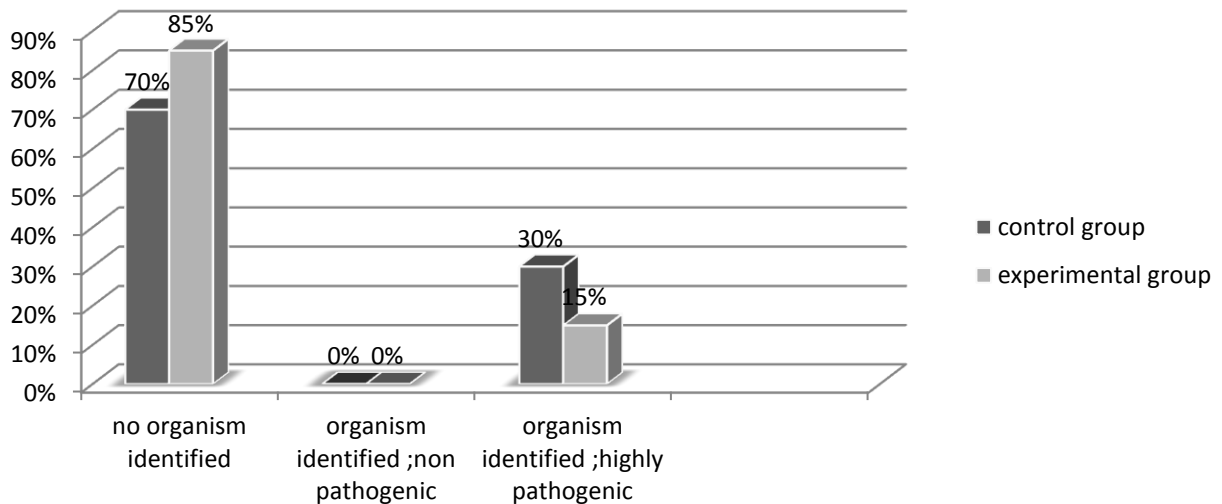


Figure I: comparison of difference between sputum culture results of subjects in the control and experimental group before and after conventional and modified chest physiotherapy

Majority of sputum positive subjects in the control and experimental group after conventional and modified chest physiotherapy had Acitinobacter species in their sputum samples 42.9% (28.6% in the control group, 14.3% in experimental group). Pneumococcus 28.6 in the control group and absent in sputum of patient in the experimental group. Among the samples 85% had sterile sputum culture results from the experimental group. Respiratory status grading scores of patient in control group had mean score (M=0.8, SD=0.5) compared with the experimental group (M=1.3, SD=1.1) the difference was statistically significant at p<0.05 level.

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The result can be attributed to the effectiveness of modified chest physiotherapy (Cohen's $d = 0.7$). The study findings revealed statistically significant improvement in sputum culture results as well as respiratory status of patients underwent neurosurgical interventions who were received modified chest physiotherapy.

III. CONCLUSION

The following conclusions were made based on the findings of the study.

- Majority of samples were undergone neurosurgical interventions due to non- traumatic causes.
- Patients were undergone neurosurgical interventions had progressive decline in their respiratory status.
- Modified chest physiotherapy is an effective and safe intervention in improving the respiratory status of patients undergone neurosurgical interventions.
- There is no significant association between age, domicile, occupation, unhealthy habits, level of consciousness, indication for surgery, surgical approach, post operative medications and the effect of modified chest physiotherapy.

In this context, the findings of the present study confirm that the simple measure like modified chest physiotherapy is effective and safe in neurosurgical patients for normalization of respiratory status. A trained nurse can effectively perform this. Thus present study highlights the positive role of modified chest physiotherapy in the present scenario especially for neurosurgical patients in order to reduce mortality and morbidity due to respiratory status alteration. The findings of the study necessitate the need of in- service education to the nursing personnel would help in updating all the modified techniques of chest physiotherapy for improving the nursing management of patients undergone neurosurgical interventions.

Investigators recommended that a study can be done to evaluate the effectiveness of modified chest physiotherapy in the care of patients with cerebro-pontine angle tumour undergone surgical resection and patients underwent thoraco abdominal Surgerie

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