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AUDIT ON MEDICAL THORACOSCOPY IN PATIENTS WITH EXUDATIVE PLEURAL EFFUSION IN TERTIARY CARE HOSPITAL IN CENTRAL SRI LANKA

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ABSTRACT

Introduction

Pleural effusion is a common condition in respiratory medicine, yet about 20% of cases remain unexplained even after thorough evaluation, including closed pleural biopsy. Medical thoracoscopy (MT) has emerged as the preferred diagnostic and therapeutic tool for exudative pleural effusions, especially valuable for patients at high risk for more invasive procedures like VATS. At the National Hospital -Kandy in Sri Lanka, several deficits were identified in the thoracoscopy procedure, prompting a prospective audit aimed at improving service quality and patient care. British Thoracic Society guideline on thoracoscopy procedure was used as the standard for comparison with our data.

Method

This prospective, standard-based audit was conducted among 75 patients who underwent medical thoracoscopy at Respiratory Unit 11, National Hospital Kandy, Sri Lanka, between January 2021 and December 2022. Data collection was primarily carried out through direct questioning of patients, supplemented by information extracted from patient records and observations documented in a data collection form. This study evaluates key aspects of patient care following chest tube insertion, focusing on consent acquisition, real-time ultrasound use, and monitoring for complications like fever, pain, pneumothorax, and infection. It also examines post-procedure mobility, patient satisfaction, chest tube drainage duration, and hospital stay length to assess their impact on patient outcomes and improve chest tube management practices.

Results

Informed written consent was obtained from over 94% of patients. Pre-procedure chest CT was performed for 50% of patients, while only 60% had real-time ultrasound guidance during the procedure. No significant complications related to the thoracoscopy were reported. Most patients expressed satisfaction with the procedure, and 95% received a definitive diagnosis, with only 5% having an uncertain diagnosis.

Discussion

Significant deficiencies in the practice of medical thoracoscopy (MT) at National Hospital Kandy, Sri Lanka, have been identified. In response, we implemented several improvements: standard documentation templates were introduced to enhance record-keeping, real-time ultrasound scans were integrated to improve procedural accuracy, and a protocol for the safe and efficient transportation of samples was established. Additionally, we introduced small-gauge chest drains to minimize patient discomfort and enhance post-procedure pain management. These recommendations aim to systematically advance thoracoscopy practices, ensuring better patient outcomes and upholding high standards of care.

Keywords: Medical Thoracoscopy, Pleural Effusion

1. INTRODUCTION

Pleural effusion is a common entity encountered in respiratory medicine. However, the cause of around 20% of pleural effusions remains undetermined even with thorough assessment including closed pleural biopsy Light (2022). Therefore, medical thoracoscopy is becoming the diagnostic modality of choice for exudative pleural effusions which is a safe, reliable and diagnostic as well as therapeutic procedure used in the management of pleural disease Patil et al. (2016). Medical Thoracoscopy is considered to be one of the main areas of interventional pulmonology/pneumology Seijo & Sterman (2001) and an important part of a specialist pleural disease service Hooper et al. (2010).

Medical thoracoscopy is an overall safe procedure with very low complication and mortality rate when performed by trained pulmonologists S et al. (2016). The application of MT in pleural diseases is supported by studies showing high diagnostic yield and effective therapeutic intervention Shojaee & Lee (2015). There is a high diagnostic accuracy of thoracoscopic biopsy compared with closed needle or image-guided biopsy Agarwal et al. (2013). Medical thoracoscopy appears to be valuable in patients who are not surgical candidates or are at an increased risk of complications from more invasive procedures such as VATS Gioia & Arancibia (2024). Although such a minimally invasive procedure is still underutilized, it is expected that MT will be widespread as interventional pulmonology programs are now training more pulmonologists in this procedure.

1.1. OBJECTIVE

A prospective study of all patients who underwent medical thoracoscopy under local anesthesia from January 2021 to December 2022 is conducted.

This study aims to evaluate several key aspects of patient care following chest tube insertion. The primary objectives include assessing whether written consent was obtained, utilizing real-time ultrasound for chest procedures, and monitoring for post-procedure complications such as fever, pain, pneumothorax, subcutaneous emphysema, pleural space infection, and accidental tube dislodgement. Additionally, the study will investigate patient mobility post-procedure, patient satisfaction levels, the duration of chest tube drainage, and the overall length of hospital stay. These factors will be analyzed to determine their impact on patient outcomes, providing valuable insights for optimizing chest tube management practices

1.2. STANDARDS

Medical Thoracoscopy best practice guidelines based on British Thoracic Society was considered as standards.

2. METHOD

This was a prospective and standard-based audit carried out among 75 patients who has undergone medical thoracoscopy in Respiratory Unit 11, National Hospital Kandy, Sri Lanka from January 2021 to December 2022. Details of cases were collected mainly from direct questioning. Data from patient records, and observations of data collection form were also used. Each set of data was audited against the documented audit tool which had been developed according to the BTS guidelines.

3. RESULTS

Seventy-five patients (male 42, female 33) with a mean age of 56 underwent medical thoracoscopy. Among them, 71 patients were given written consent (94.67%) and 4 patients (0.05%) had given verbal consent.

40 patients (53.33%) had chest CT prior to the procedure and 30 patients (40%) had only chest X-rays prior to the procedure. 45 patients (60%) had real-time Ultrasound-guided, 25 (33.33%) with remote X marking on the spot and 5 (6.67%) without ultrasound-guided.

20 patients (26.67%) complained of pain after the procedure. 4 patients (5.3%) developed fever, and 3 patients (4%) had subcutaneous emphysema. 2 chest drains (3%) were accidentally felt down after the procedure. 69 patients (92%) were satisfied with the procedure. Among all patients, 70 (93.33%) mobilized on the same day following the procedure. Post-operative chest tube drainage and hospital stay were 2 and 3 days retrospectively.

40 patients (53.3%) were diagnosed with primary or secondary malignancy and 19 patients (25.3%) were diagnosed with tuberculosis pleural effusion. Furthermore, 10 patients (13.3%) had empyema and loculations were breakdown during the procedure while 4 patients (5%) diagnoses were uncertain. 1 sample was missing during the transportation to the lab and 1 sample was incorrectly labelled. Inadequate documentation was noted in 1 case.

4. CONCLUSION

Significant deficiencies have been identified in the current practices of medical thoracoscopy at the National Hospital in Sri Lanka, particularly in areas such as obtaining consent, utilizing ultrasound guidance, maintaining thorough documentation, and managing post-procedure pain. These gaps highlight the urgent need for a comprehensive quality improvement initiative aimed at bolstering patient safety, enhancing procedural precision, and elevating the overall quality of care. Implementing standardized protocols, integrating advanced technologies, and ensuring meticulous documentation are essential steps that the hospital must take to rectify these issues. By doing so, the hospital can substantially enhance its thoracoscopy practices, ultimately leading to improved patient outcomes and higher standards of healthcare delivery.

5. RECOMMENDATIONS

To enhance thoracoscopy practices, we have identified key areas for improvement and proposed practical, cost-effective recommendations to refine existing protocols. These suggestions are designed to foster and elevate best practices in medical thoracoscopy, with the goal of delivering exceptional patient care. Our key recommendations include the development of standardized documentation templates to ensure comprehensive and precise record-keeping, the integration of real-time ultrasound scanning to enhance procedural accuracy, and the establishment of protocols for the safe and efficient transportation of samples. Furthermore, we advocate for the introduction of small gauge chest drains to minimize patient discomfort, the implementation of robust pain management strategies to improve post-procedure relief, and the creation of guidelines that encourage early post-procedure mobility to expedite recovery. These

recommendations are structured to systematically advance thoracoscopy practices, ensuring better patient outcomes and upholding high standards of care.

1) **Standardized Documentation:**
   - Implement a standardized consent form, pre- and post-procedure checklists, and a detailed monitoring chart to ensure consistent and thorough documentation throughout the patient's care journey.
   - Provide patients with an information sheet outlining the procedure to ensure they are well-informed and comfortable.
2) **Ultrasound Utilization:**
   - Make real-time ultrasound scanning mandatory for all procedures to enhance accuracy and reduce the risk of complications.
3) **Sample Management:**
   - Assign responsibility for sample labelling and transportation to a dedicated individual, with a double-check system in place to prevent errors.
4) **Patient Comfort and Safety:**
   - Transition to the use of small gauge chest drains instead of larger 24fg drains to minimize complications and improve patient comfort.
   - Ensure proper fixation techniques are consistently applied to prevent accidental dislodgement of chest drains.
5) **Post-Procedure Care:**
   - Collaborate with respiratory physiotherapists to facilitate patient mobilization and encourage early discharge, thereby reducing the risk of complications associated with prolonged hospitalization.

These actions aim to meet standard criteria within one year, prior to the scheduled re-audit, ultimately improving the quality and safety of medical thoracoscopy practices at the hospital

5.1. PLAN OF RE-AUDIT

For the completion of audit cycle, a re-audit will be planned in 12 months to estimate the progress in the practice of medical thoracoscopy based on the implementations initiated following the current audit.

CONFLICT OF INTERESTS

None.

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REFERENCES

Agarwal, R., Aggarwal, A.N., & Gupta, D. (2013). Diagnostic Accuracy and Safety of Semirigid Thoracoscopy in Exudative Pleural Effusions: A Meta-Analysis. Chest. (6):1857-1867. doi: 10.1378/chest.13-1187. PMID: 23928984. https://doi.org/10.1378/chest.13-1187

Gioia, M., & Arancibia, R.L. (2024). A Review of Medical Thoracoscopy and Its Role in Management of Malignant Pleural Effusion. J. Respir. 4, 35-49. https://doi.org/10.3390/jor4010004

Hooper, C.E., Lee, Y.C., & Maskell, N.A. (2010). Setting up a Specialist Pleural Disease Service. Respirology. 15(7):1028-36. doi: 10.1111/j.1440-1843.2010.01832.x. PMID: 20874745. https://doi.org/10.1111/j.1440-1843.2010.01832.x

Light RW. (2022). Clinical Practice. Pleural Effusion. N Engl J Med. 346(25):1971-7. doi: 10.1056/NEJMcp010731. PMID: 12075059. https://doi.org/10.1056/NEJMcp010731

Patil, C.B., Dixit, R., Gupta, R., Gupta, N., & Indushekar. V. (2016). Thoracoscopic Evaluation of 129 Cases having Undiagnosed Exudative Pleural Effusions. Lung India. 33(5):502-6. doi: 10.4103/0970-2113.188969. PMID: 27625443; PMCID: PMC5006329. https://doi.org/10.4103/0970-2113.188969

S, N.M.A., Saka, H., Mohammadien, H.A., Alkady, O., Oki, M., Tanikawa, Y., Tsuboi, R., Aoyama, M., & Sugiyama, K. (2016). Safety and Complications of Medical Thoracoscopy. Adv Med. 2016;2016:3794791. doi: 10.1155/2016/3794791. Epub. PMID: 27413774; PMCID: PMC4930797. https://doi.org/10.1155/2016/3794791

Seijo, L.M., & Sterman, D.H. (2001). Interventional Pulmonology. N Engl J Med. 344(10):740-9. doi: 10.1056/NEJM200103083441007. PMID: 11236779. https://doi.org/10.1056/NEJM200103083441007

Shojaee, S., & Lee, H.J. (2015). Thoracoscopy: Medical Versus Surgical-in the Management of Pleural Diseases. J Thorac Dis. (Suppl 4):S339-51. doi: 10.3978/j.issn.2072-1439.2015.11.66. PMID: 26807282; PMCID: PMC4700382. https://doi.org/10.3390/jor4010004