Implementation of Bronchoscopic Conventional Transbronchial Needle Aspiration Service in Giza Chest Hospital

Thesis

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Manar Hussieny Taha

Contents

List of Abbreviations

Abb.	Full term
μg	Microgram
ABG	Arterial blood gases
ABPA	Allergic bronchopulmonaryaspergillosis
AFA	Alcohol-formalin-acetic acid
AFB	Acid fast bacilli
AJCC	American Joint Committee on Cancer
BAL	Bronchoalveolar lavage
Bca	Bronchogenic carcinoma
BTS	British thoracic society
CBC	Complete blood count
CCD	Charge coupled device
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CPR	Cardiopulmonary resuscitation
CT	Computed tomography
C-TBNA	Conventional Trans bronchial needle aspiration
CXR	Chest x-ray
EA	Eosin- azure
EBUS	Endo bronchial ultrasound
ECG	Electrocardiogram
ENB	Electromagnetic navigation bronchoscopy
ETT	Endo-tracheal tube
EUS	Endoscopic ultrasound
EWC	Extended working channel

Abb.	Full term
FEV_1	Forced Expiratory Volume in one Second (lung airflow measure)
FEV_1/FCV	Forced Expiratory Volume in One Second/Forced Vital Capacity
FOB	Fiber optic bronchoscope
FVC	Forced Vital Capacity
G.A	General anesthesia
HTN	Hypertension
I.M	Intramuscular
IASLC	International association for study lung cancer
ICU	Intensive care unit
IV	Intravenous
Kg	Kilogram
L.A	Local anesthesia
LLL	Left lower lobe
LN	Lymph node
LUL	Left upper lobe
mg	Milligram
mI	Milliliter
ML	Middle lobe
Ml	Myocardial infarction
mm	Millimeter
NO.	Number
NSCLC	Non small cell lung cancer
O_2	Oxygen
OG-6	Orange-G

Abb.	Full term
PaO_2	Partial arterial Pressure of oxygen
PAP	Pulmonary alveolar proteinosis
PAS	Periodic acid shiff
PET	Positron emission tomography
PFT	Pulmonary function test
PSB	Protected-specimen brushing
RBCs	Red blood cells
RLL	Right lower lobe
ROSE	Rapid on site cytological examination
RUL	Right upper lobe
SaO_2	Arterial oxygen saturation
SCLC	Small cell lung cancer
SPSS	Statistical Package for Social Sciences
SVC	Superior vena cava
TBLB	Trans bronchial lung biopsy
TBNA	Trans bronchial needle aspiration
VAP	Ventilator associated pneumonia

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Implementation of bronchoscopic conventional transbronchial needle aspiration service in a tertiary care chest hospital

Abstract

Background: Conventional transbronchial needle aspiration (C-TBNA) is a unique technique that allows the sampling tissue from beyond the endobronchial tree, such as enlarged lymph nodes, peribronchial, or submucosal lesions. However, it remains underutilized and even unavailable in many countries and centers around the world including Egypt.

Objective: This study aimed to implement bronchoscopic CTBNA service in a tertiary care chest hospital with special emphasis on the diagnostic yield, complications encountered, and learning experience.

Patients and methods: This cohort study was conducted on 60 patients with bronchoscopic nonvisible extraluminal lesions who have sought bronchoscopic C-TBNA service at the Bronchoscopy Unit of both Ain Shams University Hospital and Giza Chest Hospital during the period from June 2016 to February 2018.

Results: The overall C-TBNA had a diagnostic yield of 88.3% in which 68.3% were malignant and 20% had sarcoidosis without serious complications recorded except for minor nonlife-threatening bleeding in 21.7% of cases. After 6 months of C-TBNA learning experience, the diagnostic yield showed improvement in physicians without previous C-TBNA experience, but without reaching a statistical significance. Also, there were significant reduction in both duration and complications of C-TBNA.

Conclusion: Implementing C-TBNA service in a tertiary care chest hospital in bronchoscopically nonvisible extraluminal lesions seems to be a safe, easy technique with high diagnostic yield and its learning performance was able to be improved over time.

Keywords: conventional transbronchial needle aspiration, fiberoptic bronchoscope, physicians without transbronchial needle aspiration experience bronchoscopic nonvisible lesions.

Introduction

Pulmonologists usually try to determine the nature of lymph node enlargement and submucosal or peribronchial diseases in order to differentiate benign from malignant process and add essential staging information to determine the best treatment plan for non small cell lung cancer patients **(Jacob et al., 2014).**

Transbronchial needle aspiration (TBNA) is a simple, safe technique that can be done without additional resources in any centers with a bronchoscopy service. It provides rapid diagnostic information in malignant and benign conditions and staging information in non small cell lung cancer (NSCLC) and may avoid the delays, risks, inpatient stay and financial implications associated with surgical exploration of the mediastineum **(Le Jeune & Baldwin, 2007).**

TBNA was applied by Wang and Terry in the 1980s it is a method of sampling performed under conscious sedation via a flexible bronchoscope with a few risk of complications, major complications represent 0.3% in a meta-analysis and mainly were haemorrhage, pneumothorax requiring chest drainage and pneumomediastinum **(Holty et al., 2005)**.

Non invasive techniques such as computed tomography (CT) scanning and positron emission tomography (PET), scanning provide essential radiological information based on size, characteristics and metabolic activity of lesions but not favourable due to suboptimal sensitivity and specificity of both techniques and need for definitive diagnosis before deciding surgical treatment in malignant diseases **(Andrea et al., 2014).**

Percutaneous radiologically guided needle aspiration has been used as a staging investigations but has a significant risk of bleeding from central vessel puncture and risk of pneumothorax in 25-30% of these cases **(Sachin et al., 2013).**

The gold standard for diagnosis and staging is via mediastinoscopy, anterior mediastinotomy or thoracotomy depending on node station, they has sensitivity of 87% and specificity of 100%, but requires general anaesthesia and risk of death in 0.2% and morbidity in 1% **(Neal et al., 2009).**

Ultrasound guided mediastinal lymph node aspiration either via endobronchial (EBUS) or endoscopic (EUS) techniques has been done, they need experienced