Assessment of Management and Outcome of Lower Respiratory Tract Infection in Ahmed Maher Educational Hospital

Thesis

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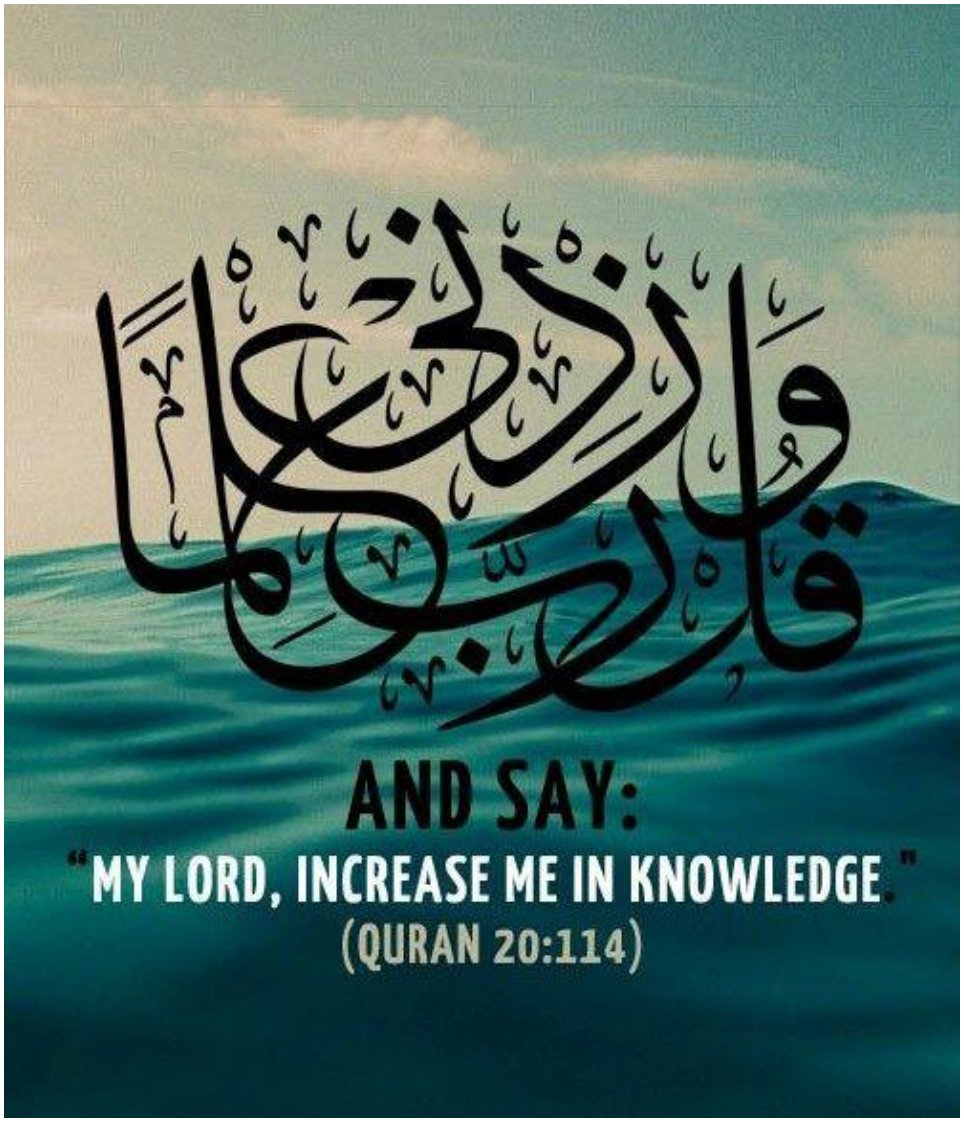
وَقُل رَّبِّ زِدْنِي عِلْمًا
AND SAY:
"MY LORD, INCREASE ME IN KNOWLEDGE."
(QURAN 20:114)

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List of Abbreviations

Abb.	Full term
AB	*Acute Bronchitis*
ABG	*Arterial Blood Gases*
AEBX	*Acute Exacerbation of Bronchiectasis*
AECB	*Acute Exacerbation of Chronic Bronchitis*
AECOPD	*Acute Exacerbation of Chronic Obstructive Pulmonary Disease*
AE-ILD	*Acute Exacerbation of Interstitial Lung Disease*
AIDS	*Acquired Immunodeficiency Syndrome*
ALRTIs	*Acute low respiratory tract infections*
BIPAP	*Bi-Level Positive Airway Pressure*
BSI	*Bronchiectasis Severity Index*
C.burnetti	*Coxiella.burnetti*
CAP	*Community Acquired Pneumonia*
CAT	*ComputerizedAxial Tomography*
CO2	*Carbon Di-Oxide*
COPD	*Chronic Obstructive Pulmonary Disease*
CPAP	*Continuous Positive Airway Pressure*
Cr	*Creatinine*
CRP	*C-Reactive protein*
dl	*deciliter*
DM	*Diabetes Mellitus*
DNA	*Deoxyribonucleic Acid*
ECHO	*Echo cardiography*
ELISA	*Enzyme Linked Immuno-sorbent Assay.*
ESR	*Erythrocyte Sedimentation Rate*
H.Influenza	*Haemophillus Influenza*
HF	*Heart Failure*
HFNC	*High flow nasal cannula*
Hg	*Mercury*
HGB	*Haemoglobin*
HIV	*Human Immunodeficiency virus*
Hrs	*Hours*

List of Abbreviations cont...

Abb.	Full term

HTN.....Hypertension
IBM.....International Business Machines.
ICU.....Intensive Care Unit
IL.....Interleukins
ILD.....Interstitial Lung Disease
IMV.....Invasive Mechanical Ventillation
IPD.....Invasive Pneumococcal Disease
IV.....Intra-Venous
L.....Liter
LCF.....Liver Cell Failure
LFNC.....Low flow nasal cannula
LRTI.....Lower Respiratory Tract Infection.
LTOT.....Long Term Oxygen Therapy
M.pneumoniae.....Mycoplasma Pneumoniae
mg.....milligram
mm.....Millimeter
NIV.....Non Invasive Ventillation
No.....Number
Nr.....Normal
NSAIDS.....Non Steroidal Anti-Inflammatory Drugs
O_2.....Oxygen
P.aeruginosa.....Pseudomonas aeruginosa
PAH.....Pulmonary Artery Hypertension
PaO_2.....Partial pressure of oxygen in arterial blood
PCV.....Pneumococcal Conjugate Vaccine
pH.....Potential Hydrogen
PHT.....Pulmonary Hypertension
PLT.....Platelets
PP.....Post-Prandial
PPSV.....Pneumococcal polysaccharide vaccine
RF I.....Respiratory Failure Type One
RF II.....Respiratory Failure Type Two
RF.....Respiratory Failure

List of Abbreviations cont...

Abb.	Full term

Spp.....*Species*
SPSS.....*Statistical Package for Social Science*
Staph. Aureus .....*Staphylococcus Aureus*
Strept. Peumoniae....*Streptococcus pneumonia*
U .....*Unit*
URTI.....*Upper Respiratory Tract Infection*
WBCs .....*White Blood Cells*

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INTRODUCTION

Acute lower respiratory tract infections are a persistent and pervasive public health problem. They cause a large burden of disease all over the world than severe viral infection, malaria, cancer, or heart attacks ***(Mizgerd, 2008).***

Lower Respiratory Tract Infection (LRTI) is an acute disease (present for 21 days or less), presenting with cough as the main symptom, with at least one other lower respiratory tract symptom such as (sputum production, dyspnea, wheeze or chest discomfort/pain) and no other explanation (sinusitis, asthma or drug induced) ***(Woodhead et al., 2011).***

LRTI was diagnosed as acute bronchitis, an acute exacerbation of chronic bronchitis/COPD, bronchiectasis and ILD besides pneumonia. Over the last decades, some changes such as ageing and increase in co-morbid conditions leaded to the introduction of respiratory vaccination programs ***(Hak et al., 2006).***

In patients over 65 years of age the following characteristics are associated with a complicated course of LRTI: presence of COPD, diabetes or heart failure, previous hospitalization in the past year, taking oral glucocorticoids, antibiotic use in the previous month, general malaise, absence of upper respiratory symptoms, confusion/diminished consciousness, pulse >100 beats per minute, temperature>38°C, respiratory rate >30 breaths per minute, blood pressure <90/60 ***(ATS, 2005).***

In patients below 65 years of age it is thought that diabetes and infection with pneumonia are risk factors for complications ***(Woodhead et al., 2011).***

For all age groups, serious conditions such as active malignant disease, liver and renal disease and other disorders that are relatively rare in primary care but affect immune-competence do also increase the risk of complications ***(ATS, 2005).***

Many of LRTIs are due to viruses therefore treatment should be considered only in patients with features suggesting the presence of risk factors of bacterial infection that is not self-limiting such as increased sputum amount and sputum purulence ***(Meyer, 2014).***

The initial decision to give antibiotics and their choice depends on the clinical situation and on results of chest radiography and microbiological investigations. This decision and choice may be modified according to risk factors of particular micro-organisms and have to be reconsidered after the results of microbiological examination ***(Swigris et al., 2010).***

Preventive measure such as Pneumococcal vaccine, Influenza vaccine, oral immunization, prophylactic antibiotics treatment of URTIs, early antibiotic therapy, tonsillectomy, surgery for recurrent sinusitis have been considered to lower the incidence and hazards of lower respiratory tract infection ***(Johnstone et al., 2007).***

AIM OF THE WORK

Assessing the clinical characteristics, management plan and outcome of patients with LRTI admitted to Ahmed Maher Educational tertiary Hospital.

REVIEW OF LITERATURE

Lower respiratory tract infection (LRTI) is a broad terminology which includes pneumonia, acute bronchitis, acute exacerbations of chronic obstructive pulmonary disease/chronic bronchitis (AECB), interstitial lung disease (ILDs) and bronchiectasis. Acute LRTIs (ALRTIs) are one of the common clinical problems in community and hospital settings ***(Mahashur, 2018).***

Lower respiratory tract infections (LRTIs) cause high morbidity and mortality all over the world. Empiric therapy often base the choice of antibiotic treatment on antibacterial spectrum of the agent rather than on its pharmacological properties or the pathogen resistance profile. Inappropriate prescribing leads to therapeutic failure and antibiotic resistance, with increasing direct and indirect health costs ***(Blasi et al., 2017).***

Antibiotic therapy aims not only at improving the clinical outcome, but also eradicating the targeted pathogens or reducing bacterial load. Therefore in empiric therapy we should select the right dose and the most appropriate duration of treatment to obtain the optimal clinical response, to minimize toxicity and to prevent the emergence of resistant pathogens ***(Di Marco et al., 2014).***

Etiology of LRTI:

Although viruses, mycoplasma, rickettsiae and fungi can all result in lower respiratory tract infections, bacteria are the main pathogens leading to much more high percentage of lower respiratory tract infections ***(Woodhead et al., 2011).***

The most common etiological factors inducing LRTI are bacterial pathogens; therefore, the majority of infections need the usage of antibiotics ***(Guzek et al., 2014).***

A bacterial pathogen is identified in about one in five adult patients with LRTI in primary care, and a viral pathogen was recognized in under half, while mixed infections in one in ten; these new findings support a restrictive approach to antibiotic prescribing for LRTI and the use of first-line, narrow-spectrum agents in primary care ***(Ieven et al., 2018).***

Severe LRTI infections often presented with these risk factors for example chronic heart disease, lung disease, diabetes, renal failure, cancer, hematologic diseases, or malnutrition ***(Guzek et al., 2014).***

Types of LRTI:

Lower respiratory tract infections (LRTI) are the most common hospital-acquired infections. They have not only an impact on each patient's individual health but also result in a considerable financial burden for the healthcare system ***(Leistner et al., 2013)*** and it includes the following:

- **Acute bronchitis:**

Definition:

Acute Bronchitis is a clinical diagnosis characterized by acute cough, with or without sputum production, and signs of lower respiratory tract infection in the absence of chronic lung disease, such as chronic obstructive pulmonary disease, or an identifiable cause, such as pneumonia or sinusitis ***(Kinkade and Long, 2016).***

Pathophysiology:

Acute bronchitis is the result of acute inflammation of the bronchi secondary to various triggers, most commonly bacterial and viral infections, allergens, pollutants, etc. Inflammation of the bronchial wall leads to mucosal thickening, epithelial-cell desquamation, and erosion of the basement membrane. Also viral upper respiratory tract infection can progress to infection of the lower respiratory tract resulting in acute bronchitis ***(Singh et al., 2019).***