سورة البقرة الآية: ٣٢

Pattern of Lower Respiratory Tract Infection Through Patients in El- Shorta Hospital Nasr city

Thesis

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Bassem Mohamed EL Kholy

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List of Abbreviations

AECOPD	:	Acute exacerbation of chronic obstructive pulmonary disease
AMT	:	Abbreviated Mental Test
ARDS	:	Acute respiratory distress syndrome
ATS	:	American thoracic society
BAL	:	Bronchoalveolar lavage
BTS	:	British thoracic society
CAP	:	Community acquired pneumonia
CDC	:	Centers for Disease Control and Prevention
COPD	:	Chronic obstructive pulmonary diseases
CMI	:	cell-mediated immunity
C.pneumoniae	:	Chlamydia pneumoniae
HAP	:	Hospital acquired pneumonia
H.Influenza	:	Hemophilus influenza
ICU	:	Intensive care unit
IgA	:	Immunoglobulin A
IDP	:	Incompletely diagnosed Pneumonia
IDSA	:	Infectious Diseases Society of America
IPD	:	Inpatient department
K.pneumoniae	:	klebsiella pneumonia
LA	:	Lung Abcess
LRTI	:	Lower respiratory tract infections
MDR	:	Multi drug resistant
M.pneumoniae	:	Mycoplasma pneumonia
MRSA	:	Methicillin resistant staphylococcus aureus
NIV	:	Non invasive ventilation
NPB	:	Non Pneumonic Bronchitis
OPD	:	Outpatient Department
P. aeruginosa	:	Pseudomonas aeroginosa

PCR	:	Polymerase chain reaction
PMN	:	Polymorphoneutrophils
PSI	:	Pneumonia severity index
RR	:	Respiratory rate
S.aureus	:	Staphylococcus aureus
SIRS	:	Shock systemic inflammatory response syndrome
S pneumonia	:	Streptococcus pneumonia
TMP-SMX	:	trimethoprim-sulfamethoxazole
TTA	:	Transtracheal aspiration
VAP	:	Ventilator associated pneumonia
WHO	:	World health organization

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Introduction

Lower Respiratory Tract Infection

Acute lower respiratory tract infections are a persistent and pervasive public health problem. They cause a greater burden of disease worldwide than human immunodeficiency virus infection, malaria, cancer, or heart attacks. In the United States, they cause more disease and death than any other infection, and there has been little change in mortality due to respiratory tract infection for more than five decades ***(Mizgerd, 2006; Armstrong et al, 1999).***

The outcome of an acute lower respiratory tract infection depends on the virulence of the organism and the inflammatory response in the lung. When small numbers of low-virulence microbes are deposited in the lungs, an effective defense can be mounted by resident innate immune defenses, such as the mucociliary escalator, antimicrobial proteins in airway surface liquid, and alveolar macrophages ***(Mizgerd, 2008).***

In contrast, numerous or more virulent microbes elicit an inflammatory response. Although this response serves to reinforce innate immunity and is essential to rid the lungs of microbes, it contributes directly to lung injury and abnormal pulmonary function ***(Mizgerd, 2008)***.

Acute inflammation features the accumulation of neutrophils and a plasma exudate outside of blood vessels. In the pulmonary capillaries of uninfected lungs, these blood contents are normally separated from the alveolar air by less than 1 μm, the thinnest interface between the blood and the environment. The trapping of neutrophils in these capillaries,

which is the result of geometric and biophysical constraints, increases their quantity per volume of blood by approximately 50 times as compared with other blood vessels, forming a marginated pool of neutrophils that is ready to respond when needed ***(Doerschuk, 2001).***

During pulmonary infection, neutrophils migrate out of the pulmonary capillaries and into the air spaces. ***Elie Metchnikoff,*** the discoverer of phagocytosis, considered neutrophils (or microphages, as he called them) to be "the defensive cells *par excellence* against microorganisms" ***(Burns et al., 2003; Metchnikoff 1905).***

After phagocytosis, neutrophils kill ingested microbes with reactive oxygen species (e.g., hypochlorite), antimicrobial proteins (e.g., bactericidal permeability-inducing protein and lactoferrin), and degradative enzymes (e.g., elastase) an additional microbicidal pathway has also been identified — the neutrophil extracellular trap (NET). Neutrophils extrude NETs composed of a chromatin meshwork containing antimicrobial proteins, and these NETs ensnare and kill extracellular bacteria ***(Nathan 2006; Brinkmann et al., 2004).***

Lower respiratory tract infections (LRTI) have long been recognized as the major cause of morbidity and they rank among the most frequent causes of death among Patients especially the elderly (≥ 65 years) with greater incidence ranging from 25-40 cases per 1000 inhabitants per year. Accordingly, epidemiological studies on the occurrence of such illnesses in the community have been abundant ***(Monto and Cavallaro, 1999).***