

IMMUNOMOLECULAR INVESTIGATION OF PATIENTS INFECTED WITH VENTILATOR ASSOCIATED PNEUMONIA IN NAJAF PROVINCE

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ABSTRACT : Ventilator associated pneumonia is one of the most important types of pneumonia that infect persons, who are recumbent under mechanical ventilation in the hospitals worldwide. This study has been to investigate some of causative microorganisms at molecular and immunological levels, as well as other features such as seasonal variations, age distribution and detect the most suitable methods for diagnoses. The study has been accomplished in Al-Najaf Province, in Al-Zahraa Teaching Hospital, Al-Sadr Teaching Hospital and Al-Hakeem General Hospital during the period from September 2017 to December 2018. Blood and nasal swabs samples have been from 80 patients with ventilator-associated pneumonia, their age ranged from (few days to 80 years). Immunochromatographic assay for RSV has been used to detect their antigens in nasal swab samples after that the positive results have been confirmed by reverse transcriptase real time PCR technique, were showed incidence in 25% of the infections with RSV. This study has shown that the molecular method is more suitable for the diagnosis of the cases than the other methods.

Key words : Ventilator associated pneumonia, RT-q PCR, immunochromatography.

INTRODUCTION

Ventilator-associated pneumonia (VAP) is the most important and common infection that affects critical patients, who are mechanically ventilated in Intensive Care Units (ICU) due to the vulnerable state of these patients, it is related to health care, and usually happens through aspiration, the secretions from the upper airways being its main source, followed by exogenous inoculation of contaminated material or gastrointestinal tract reflux (Natesia, 2016; Horan *et al*, 2008).

VAP usually results from the aspiration of oropharyngeal secretions past the endotracheal tube cuff, or from inoculation directly into the airway (Valles, 1995).

VAP is the infection that occurs 48 hours after intubation, which was not incubated during the period of the patient's admission, and 72 hours after extubation. Mortality estimation attributed to this infection varies in different studies, but roughly, 33% of patients with VAP die as a direct result of it, which results in prolongation of hospitalization in about 12 days and in an increase in costs of around \$ 40,000 per episode (ANVISA, 2015).

Standard bacterial pathogens, but atypical bacteria and even commensal bacteria cause most cases may play a role. Viruses, fungi and other miscellaneous causes are

uncommon but potentially important VAP pathogens, particularly in immune compromised patients (Chastre, 2002; Am, 2005).

Typically, bacteria causing early-onset VAP include *Streptococcus pneumoniae* (as well as other streptococcus species), *Hemophilus influenzae*, methicillin-sensitive *Staphylococcus aureus* (MSSA), antibiotic-sensitive enteric Gram-negative bacilli, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* species, *Proteus* species and *Serratia marcescens*. Culprits of late VAP are typically MDR bacteria, such as methicillin-resistant *S. aureus* (MRSA), *Acinetobacter*, *Pseudomonas aeruginosa* and extended-spectrum beta-lactamase producing bacteria (ESBL) (Hunter, 2012).

It is often difficult to differentiate between viral and bacterial pneumonia in children. Seven viruses have been considered to be the usual suspects for LRTI and have been sought in many studies: respiratory syncytial virus (RSV); influenza A and B; parainfluenza 1, 2 and 3 and adenovirus. Human respiratory syncytial virus (RSV) is one of the most important and frequent viruses for respiratory tract infections. Worldwide RSV causes severe lower tract infections like bronchiolitis or pneumonia in infants and young children. Moreover, it is