Examining the average score of awareness of nursing staff about fungal infections in Zahedan non-university hospitals in2023

Hossein Ali Danesh[1], Shervin Asgharpour[2], <u>Nasser Keikha[3]</u>*

1.Associate Professor of Plastic & Reconstructive Surgery, Zahedan University of Medical Sciences, Zahedan, Iran.
2. Student Research Committee, Zahedan University of Medical Sciences, Zahedan, Iran.
3. Infectious Diseases and Tropical Medicine Research Center, Research Institute of Cellular and Molecular Sciences in Infectious Diseases, Zahedan University of Medical Sciences, Zahedan, Iran.

* nasserkeikha@yahoo.com

Abstract

Introduction and Objective: Fungal infections are recognized as one of the most significant health issues in hospitals, which can cause serious complications in patients. Nurses' awareness of these infections plays a crucial role in their prevention and proper management. The aim of this study was to assess the average awareness scores of nurses working in non-university hospitals in Zahedan regarding fungal infections in 2023.

Materials and Methods: This descriptive-analytical cross-sectional study was conducted in non-university hospitals of Zahedan. The study population included all hospital staff in 2023 who had at least one year of work experience and were willing to participate. The sampling method was convenience sampling, and 210 participants were included in the study. Data were collected using a researcher-made questionnaire and analyzed using SPSS software.

Findings: The mean total awareness score of the nurses was 12.52 ± 4.48. No significant differences in awareness levels were observed based on gender, age, or work experience, except for the treatment score, which showed significant differences based on educational level (p-value = 0.041). Most nurses had low to moderate awareness levels, and a notable proportion had very low awareness.

Conclusion: The results of this study indicate that the awareness level of nurses working in non-university hospitals in Zahedan regarding fungal infections is generally low to moderate. These findings highlight the need for educational programs and advanced training to improve the overall awareness and knowledge of nurses about fungal infections.

Keywords: Fungal infections, nurses' awareness, non-university hospitals, Zahedan

Human papillomavirus (HPV) pathogenesis and vaccines

Javid Taghinejad[1] Dorna Rafighi[2] Sina Samenezhad[3] Ali Khodadadeh Jigheh[4] Zahra Nikbakht[5]*

1.Department of Microbiology, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran
2.Department of Microbiology, Research Sciences Branch, Islamic Azad University, Tehran, Iran
3.Urology Department, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4.Department of Microbiology, Central Tehran Branch, Islamic Azad University, Tehran, Iran
5.Department of Microbiology, Medical Sciences Branch, Islamic Azad University, Tehran, Iran

* dornarafighi2222@gmail.com

Abstract

Background and Objective: Human papillomaviruses (HPVs) are a large and diverse group of double-stranded DNA viruses. HPV infection is one of the most important sexually transmitted diseases, accounting for over 5% of cancers worldwide. This review aims to investigate the pathogenicity and effective vaccines against cancers caused by this virus.
Method: In this study, the Research Gate, Scopus, and PubMed scientific databases, as well as the Google Scholar search engine, were used to search for articles from January 2009 to December 2021. Of the 74 articles, 46 articles that met the study criteria were included in the study cycle. Articles that were not open-access and were presented as abstracts at conferences were excluded from the review cycle.
Results: The results of this study show that human papillomavirus (HPV) is the main cause of cervical cancer and plays a key role in the pathogenesis of this disease. HPV infection can lead to the development of precancerous lesions that, if left untreated, can develop into cancer. HPV vaccines are an effective tool in preventing this cancer, but vaccination coverage is low, especially in developing countries.
Conclusion: This study showed that the human papillomavirus (HPV) is the main cause of cervical cancer and that complex mechanisms are involved in the development and progression of this disease. A deep understanding of these mechanisms can help develop more effective strategies for the prevention, early detection, and treatment of this cancer. Vaccination against HPV is recognized as an effective preventive strategy, therefore, increasing public awareness and access to vaccines, especially in developing countries, is essential.

Keywords: Cervical cancer, HPV vaccine, HPV, Pathogenesis pathway

Investigating crucial approaches to deal with infectious outbreaks with global health priorities

Parisa Azerang[1], Mona Sadat Larijani[1]**, Fatemeh Ashrafian[1], Anahita Bavand[1], Ladan Moradi[1] and Amitis Ramezani[1]*

1.Clinical Research Department, Pasteur Institute of Iran

* Amitisramezani@hotmail.com
* Mona.sadat@gmail.com

Abstract

In recent decades, the sudden emergence and rapid spread of infectious diseases has made it important to find new approaches in the field of prevention, identification and treatment of these diseases. Infectious diseases are always one of the basic challenges in the field of public health. For instance, the epidemics of the Zika virus, Ebola virus and recently the COVID-19 pandemic have shown the quick spread of an infectious disease from one geographical area to other parts of the world which could pose a serious threat to public health and the global economy. In this regard, the identification and study of prototype pathogens and priority pathogens are of particular importance as crucial strategies for the prevention, identification and production of therapeutic products for infectious diseases.

Prototype pathogens are viruses among virus families that have outbreak potential, and for this reason, the study of these pathogens enables the rapid development of research and the production of needed products in case of an epidemic. The results of this batch of research on SARS-CoV-1 and MERS-CoV led to the rapid development of a vaccine for SARS-CoV-2.

In addition to viral outbreaks, antibiotic resistance (AMR) in recent decades has led to the design and use of strategies to identify resistant strains of bacteria and control them. Therefore, simultaneously paying attention to pathogenic agents with the ability of outbreaks and having basic preparation to deal with them, as well as controlling antibiotic resistance, are known as priorities in the health field.

This study reviews the important steps regarding prevention outbreaks as well as the proper actions during them.

Keywords: Pandemic Preparedness, Prototype Pathogen, Vaccine, Monoclonal Antibody, Antimicrobial Resistance

Frequency and antibiotic resistance of ESBL-positive biofilm-producing *Escherichia coli* strains isolated from patients with urinary infection in Tehran during 2022

Fateh Rahimi[1]*, Sanaz Khashei[2]

1.Ph.D of Bacteriology, Associate Professor, Department of Microbiology, Faculty of Biological Science and Technology, University of Isfahan, Isfahan, Iran
2.Ph.D Student of Bacteriology, Department of Microbiology, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

f.rahimi@sci.ui.ac.ir

Abstract

Background: Uropathogenic *Escherichia coli* (UPEC) strains are among the leading causes of urinary tract infections (UTIs) worldwide. They can colonize the urinary tract and form biofilms that allow bacteria to survive and persist in unfavorable environments, causing relapses of infections and life-threatening sequelae. In this study, the prevalence of biofilm and extended-spectrum beta-lactamase (ESBL) producing UPECs among patients with UTI in Tehran, Iran during 2022 was determined.

Materials and Methods: A total of 141 suspected *E. coli* isolates were collected from patients with UTIs from a laboratory of a referral hospital in Tehran and identified using polymerase chain reaction (PCR) by specific primers for the *tuf*A gene. The ability of confirmed strains to form biofilm was assessed using qualitative Congo red agar (CRA) and quantitative microtiter plate (MTP) methods. The antibiotic susceptibility of strains to 17 antibiotics and also the ability to produce ESBLs were determined using the disk diffusion method by the guidelines of Clinical and Laboratory Standards Institute.

Results: A total of 127 strains (90%) were confirmed as UPEC strains using PCR test, in which 79 strains (62%) were able to produce curli and/or cellulose on CRA and selected as biofilm-positive strains, in which 16, 74, and 10% showed rdar, bdar, and pdar morphotypes, respectively. Moreover, 61 and 40% of strains were able to produce strong and moderate biofilm. On the other hand, high resistance to ampicillin, cefotaxime, cefpodoxime, ceftazidime, ceftriaxone, and sulfamethoxazole-trimethoprim was observed. Also, 68% of biofilm-positive strains were classified as ESBL producers, and with the exception of imipenem, meropenem, cefoxitin, piperacillin-tazobactam, and amoxicillin-clavulanic acid, the antibiotic resistance among ESBL positive strains compared to non-ESBLs was higher.

Conclusion: The results of the present study revealed the high prevalence of biofilm and ESBL-producing UPEC strains among patients with UTI in Tehran with high-level resistance to a broad spectrum of antibiotics, which indicated the emergence of using specific and rapid tests for identification of such strains.

Keywords: Urinary infection, UPEC, biofilm, ESBL

D

Correlation of long-term complications of COVID-19 disease / vaccination with the new onset of diabetes mellitus and high blood pressure

Mona Sadat Larijani[1], Fatemeh Ashrafian[1], Anahita Bavand[1], Ladan Moradi[1], Mahsan Zali[1], amirabbas Faridpour[2] and Amitis Ramezani[1*]

1.Clinical Research Department, Pasteur Institute of Iran, Tehran, Iran.
2.Student Research Committee of Arak University of Medical Sciences.

* Amitisramezani@hotmail.com

Abstract

COVID-19 pandemic and the rapid spread of SARS-CoV-2 infection in countries led to the design and early approval of the vaccine in order to prevent the severe form of the disease and reduce the possibility of hospitalization. The results of the clinical phases of these vaccines have often included short-term and transient side effects. Subsequent follow-up studies showed that in a subgroup of vaccinated people, unexpected adverse events were reported which could be related to the vaccine. In addition to the vaccine, the infection of COVID-19 in a subset of people causes long-term complications. These conditions can occur during the first weeks post-recovery or even through a longer window time. In some cases, the long-term adverse events remain known as long-COVID. Although it is difficult to identify these side effects and determine their exact association with the vaccine or the disease, conducting observational studies and case reports in different communities can help to complete and update the information.

The purpose of this study is to introduce cases that have experienced changes in blood glucose levels and/or increased blood pressure after the experience of COVID-19 or vaccination against it. The population investigated in this study includes 1358 people consisting of 536 adults (>18) and 822 adolescents aged 12-18 years, who were followed up after vaccination until June, 2024.

The information of the case was collected through a standard questionnaire form designed to record complications after vaccination, and trained experts completed the information of the people through face-to-face or telephone interviews. Among the examined people, in this study, new onset of diabetes mellitus/high blood sugar or high blood pressure have been reported. Also, the change in the previous status of these people has also been recorded.

The description of the cases recorded in this study showed that although the occurrence of high blood pressure or type 2 diabetes can be caused by the stimulation or effect of the COVID-19 /vaccine infection, it is not possible to distinguish between these two factors. Also, the presence of underlying disease and pre-existing conditions have played a significant role in the development or exacerbation of these conditions.

Obviously, conducting similar studies in different communities with the aim of long-term evaluation of complications after COVID-19 /vaccination can play a significant role in the possibility of new-onset increase in blood sugar/blood pressure.