

Knowledge, Attitude, and Practice of Hospital Administration and Chief Medical Officers about Nosocomial Infections and Hand Hygiene

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Abstract

Background & Objectives: Nosocomial infections have increasingly resulted in unwanted side-effects and death and the patients should bear high treating costs. This research has been done to determine the knowledge, attitude, and practice of Hospital Administration and Chief medical officers about Nosocomial Infections Control and hand hygiene in Imam Hossein Hospital of Tehran in 2013.

Materials and methods: This KAP study was conducted among 40 Hospital Administration and Chief medical officers in Imam Hossein. Three world health organization questionnaires and checklist was used to collect the Knowledge, Attitude, and Practice data from them. Data was entered and analyzed by using SPSS version 17.

Results: Of the 40 Hospital Administration and Chief medical officers, 25 (62.5%) were female and 15 (37.5%) were male. The mean age (\pm SD) of participants was 44.5 ± 7.3 years. The small number of participants could identify correct answer of knowledge questions. More than 80% had positive attitude towards nosocomial infections control and hand hygiene. Overall, based on the questionnaire and check list their practice about Nosocomial Infections Control and hand hygiene in hospital was not suitable.

Conclusions: The limited knowledge and unsuitable practice of most Hospital Administration and Chief medical officers regarding Nosocomial Infections Control and hand hygiene was observed. So paying more attention by authorities to this specific topic is essential in order to apply the necessary actions and implementation of WHO protocols.

Key words: Hospital Administration, Chief medical officers, Nosocomial Infections, Hand Hygiene

Antifungal Effect of Aqueous and Ethanolic Extract of Pinecone (Pinus eldrica) of Tehran on *Aspergillus niger* and *Candida albicans*

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Abstract

Background and objective: In recent decades, infections of fungi caused significant increase in the rate of disease creation. Also, there are some limitations in the treatment of fungal diseases such as shortages and high price antifungal drugs, lateral complications and drug resistance caused Attention of researchers to new antifungal drugs, especially herbal medicines. The purpose of this study is studying on antifungal effect of aqueous and ethanolic extract of pinecone (Pinus eldrica) of Tehran on *Aspergillus niger* and *Candida albicans*. Then, the minimum inhibitory concentration and minimum bactericidal concentration was determined.

Materials and methods: In this study, antifungal activity of aqueous and ethanolic extracts of pine tree of Tehran was investigated by two methods: agar disk diffusion methods at 4 levels (5, 30, 55 and 80 mg/ml) and pure plate method. Data were analyzed by SPSS 16 software and the means were compared using by analysis of variance (ANOVA) at a significant level of $P < 0.05$.

Results: MIC and MFC of ethanolic extract for *Aspergillus niger* was 32mg/ml and 128mg/ml, respectively. On the other hand, MIC of ethanolic and aqueous extracts of *C. albicans* was respectively 32 and 8 mg/ml and MFC for this mold was 128 and 64 mg/ml, respectively. In the agar diffusion method, all concentrations of methanol extract have inhibited effect on mentioned microorganisms. *Aspergillus niger* in mixed cultures showed the greatest resistance when used to aqueous and ethanolic extract of pine cone of Tehran.

Conclusion: The results show that aqueous and especially ethanolic extracts of pinecone of Tehran have anti fungal effects especially on candida. So there is hope that in the future by replacing this extraction instead of chemical anti fungal drugs that have many lateral complications. Therefore, these method be able to control fungal infections.

Key words: Pine cone of Tehran, antifungal effect, *Candida albicans*, *Aspergillus niger*

The Actual Amount of Active Hepatitis C in Asymptomatic Volunteer Blood Donors in the City of Ardabil

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Abstract

Background and objectives: Hepatitis C virus (HCV) is a , enveloped, , single-stranded RNA virus of the family Flaviviridae, is transmitted primarily through contact with infected blood . After primary infection, approximately 80% of patients will have chronic disease. The study was conducted to determine active hepatitis C infection rate among Ardabil city blood donors.

Materials and Methods: In this cross sectional study from all of donated blood samples during three years, cases that were positive in both: ELISA screening test and confirmatory specific RIBA test were studied. RT-PCR was used to confirm active infection.

Results: All of the 55262 blood samples from 2009 to 2012 were evaluated. In 60, blood donors screening HCV ELISA test were positive (0.01%). Confirmatory, specific RIBA test in 19 of them (31%) were positive. ELISA was falsely positive in about 70% of cases. Among 19 patients with positive RIBA test, polymerase chain reaction performed and in 12 of them (63%) active infection were documented.

Conclusion: Probability of a positive PCR test in asymptomatic volunteer blood donors with positive ELISA test was 20%. Only 63% of persons with true positive antibodies against hepatitis C (positive RIBA test) had positive RT-PCR test, so approximately 37% of infected patients have resolved spontaneously. Before disease labeling, it is necessary to confirm infection with performing specific RT-PCR test because ELISA test is falsely positive in some cases and positive RIBA test may be related to past spontaneously resolved infection.

Key words: blood donors, hepatitis C, active infection, Ardabil

Typing of Meticillin Resistant *Staphylococcus aureus* Strains Isolated from an Animal Husbandry in Tehran

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Abstract

Background and objective: *Staphylococcus aureus* is a member of normal flora of all animals including humans and poultries, and known as a leading cause of nosocomial infections. The aim of this study was to isolate, analysis of the antibiotic resistance pattern and typing of meticillin resistant *S. aureus* strains isolated from an animal husbandry in Tehran.

Materials and methods: Totally 97 isolates of MRSA from animal samples were collected from an animal husbandry in Tehran. All isolates were identified at the species level using standard biochemical test. Susceptibility to 11 antibiotics was determined using disc diffusion method according to guidelines of Clinical Laboratory and Standard institute (CLSI). Minimum inhibitory concentration (MIC) of oxacillin and vancomycin in MRSA isolates were also detected using broth microdilution assay according to CLSI recommendation. Primers for identification of 6 classes of prophages were used in a Multiplex-PCR assay. *Sccmec* types of MRSA isolates were detected using multiplex-PCR.

Results: All MRSA isolates showed resistance to penicillin, ciprofloxacin, erythromycin and tobramycin. Eighty percent of MRSA isolates showed high level resistance (MIC \geq 256 μ g/ml) to oxacillin. Four different prophage types (SGB, SGF, SGFa and SGFb) and 2 prophage patterns were found in MRSA isolates and. All isolates carried *SCCmec* type III.

Conclusion: High prevalence of *SCCmec* type III and also high level antibiotic resistance among MRSA strains isolated form animals indicating the hospital origin of these isolates. The results of this study provide the important role of animal samples as reservoirs of MRSA strains.

Key words: *S. aureus*, meticillin, typing, Tehran, animal

A Comparative Study of Effect of Types of *Hibiscus Sabdariffa* Extracts and Selective Antibiotics on Clinical and Standard Strains of Infection Agents in Vitro

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Abstract

Background and objective: Nowadays, abundant research was done for replace of medicinal plants; plant antimicrobial components with structure of different from antibiotics cause destroy of bacteria that are clinically important. So, the present study was carried out with purpose of antimicrobial effect investigation of different types of *Hibiscus Sabdariffa* extracts on some clinical infection agent strain and comparison with common medical antibiotics in culture media condition.

Materials and methods: In this study, three types of ethanolic, methanolic and aqueous extracts were prepared by method of maceration. Microbiology evaluation of strains was done using four methods: pour plate, Kirby Bauer method using disks, minimum inhibitory concentration of microbial growth (MIC) and minimum bactericidal concentration of bacteria (MBC) using Serial Dilution Method, onto six strains of infection agent. Turbidity of micro plate was determined by ELISA reading devices.

Results: The ethanolic extract of *Hibiscus Sabdariffa* has a diameter of 20.16 ± 0.50 mm in concentration of 40 mg/mL on *Pseudomonas auerginisa*. In the present study, the bacteria of *staphylococcus aureus* and *Salmonella enteritidis* were showed maximum and minimum sensitivity relation to aqueous extracts of *Hibiscus Sabdariffa*, respectively. Among of tested strains, *Salmonella enteritidis* has maximum MIC and MBC. 30 and 40 mg/mL Concentrations of Redcurrant have significant antimicrobial effect on bacteria. Antibacterial effect of extracts was decreased with decrease of extract concentration in disk.

Conclusion: According to result, alcohol extracts of *Hibiscus Sabdariffa* have antimicrobial effect on growth of all of the strains exposed analyzes and antimicrobial effect of that was maximum on Gram-positive bacterium of *Staphylococcus aureus*.

Keywords: *Hibiscus Sabdariffa*, Clinical strain, Antibiotic, Culture media condition

Evaluation of Related Factors of Tuberculosis Indexes Changes in Hamadan Province

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Abstract

Background and objective: Tuberculosis (TB) is an infectious disease that causes acute or chronic necrotizing involvement of various body organs, especially the lungs. The relatively high annual incidence of TB and its mortality rate is a major health problem in developing countries. This study is focused on TB trends and associated factors in Hamadan.

Materials and methods: This descriptive - analytical study included all cases of TB in Hamadan province during 1384-1389. Data consist of 694 TB patients which their age, sex, place of residence and conditions were measured. Data analysis included logistic regression and trend chi-square test. Spss16 software was used for the statistical analysis.

Results: 50.4% of patients were female. Patients mean (SD) of age was 52.2 (21.9) and 56.2% of patients were over 50 years of age. 68.6 % of patients had pulmonary Tuberculosis. There is no difference in TB incidence in different years. Place of residence (urban - rural) and gender had no effect on incidence ($p>0.05$), but the effect of age on the tuberculosis incidence was significant ($p<0.05$).

Conclusion: education about risk factors and symptoms of TB and also more accurate case finding in this age groups is recommended with the hope to decrease the incidence of TB.

Keywords: Tuberculosis, Index, Incidence rate, Hamadan

Estimating Cost Analysis for Health Care Services Delivered to Brucellosis Patients in Qom Province

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Abstract

Background and Objectives: Brucellosis (Malta fever) is one of zoonosis diseases that it is still a public health problem in most countries of the world including Iran. This disease can cause economic problems for patients. This study was performed to evaluate the cost for health care services delivered to Brucellosis patients in Qom Province.

Materials and methods: This cross - sectional study based on data from patients with brucellosis in Qom, during 2013 was performed. At first, by using the forms that made by researchers, the direct and overhead costs related with the health services in the studied areas were calculated. This costs obtained by visiting the archives and accounting documents. The price paid for out of pocket cost per patient and treatment services to patients and the overall total costs were calculated using Excel software.

Results: During 2013 a total of more than 440 million riyals have spent on providing health services to 120 patients with Brucellosis in Qom. Direct health care costs about 274 million Rials, overhead, about 170 million riyals, the state cost per patient over 3 million and 700 thousand Rials, the patient's out of pocket costs to the patient and finally the average total cost of about 760 thousand riyals during one year of service to each of these patients was estimated at 4,460,000 rials.

Conclusion: Based on results, considerable costs for diagnosis and treatment of Brucellosis spent in Qom. So health planners should give priority to prevent this disease in their programs.

Keywords: Brucellosis, Cost analysis, Health Service, Qom

Aminoglycoside Resistance among Meticillin Resistant *Staphylococcus aureus* Strains Isolated from Two Hospitals in Tehran

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Abstract

Background and objective: Meticillin resistant *Staphylococcus aureus* (MRSA) now is well documented as a nosocomial pathogen causing a variety of infections in human. Aminoglycosides are a class of bactericidal antibiotics which play an important role in treatment of staphylococcal infections. The aim of this study was to illustrate the phenotypic and genotypic resistance to aminoglycosides among MRSA strains isolated from 2 hospitals in Tehran, during 2011 and 2012.

Materials and methods: During a year, a total of 575 strains of *S. aureus* were collected and analyzed further. Resistance of strains to oxacillin and cefoxitin was determined using disk diffusion method in accordance with guidelines of CLSI. MRSA strains were collected and susceptibility of strains to 15 different antibiotics was determined. Minimum inhibitory concentrations (MICs) of oxacillin, vancomycin and gentamicin were evaluated using broth microdilution assay, and presence of *mecA* and *pvl* gene was showed by PCR method. For SCC*mec* and *ccr* typing, multiplex-PCR assays were employed and the genes encoding aminoglycoside modifying enzymes were detected.

Results: In this study, 127 strains were resistant to oxacillin and cefoxitin and also harbored *mecA* gene. The highest resistance was to penicillin (100%), erythromycin (91%), ciprofloxacin (90%), kanamycin (86%), tobramycin (84%) and clindamycin (81%) and also, 60% of strains were gentamicin resistant. On the other hand, all isolates showed susceptibility to vancomycin, lynezoled and quinupristin–dalfopristin. Thirty six and 32% of MRSA strains were resistant to high level of oxacillin and gentamicin (MIC \geq 512 μ g/ml). SCC*mec* type III and type 3 *ccr* were the dominant types among MRSA strains. the frequency of *aac(6')-Ie+aph(2')*, *ant(6)-Ia*, *ant(4')-Ia* and *aph(3')-IIIa*, were detected successfully in 77%, 55%, 50% and 26% of strains. Moreover, the presence of *pvl* gene was limited to community acquired MRSA strains.

Conclusion: Our findings illustrated the presence of aminoglycoside resistant strains of MRSA in hospitals in Tehran. These strains also showed high level resistance to other antibiotics and harbored SCC*mec* type III, indicating their hospital origin. Moreover, emergence of MRSA strains with high susceptibility to all classes of antibiotics, except for penicillin, are able to acquire antibiotic resistance genes, is an urgent for public health.

Key words: MRSA, aminoglycoside, SCC*mec* typing, *ccr* typing, *pvl*

Evaluating of Serological and Molecular Methods in Detection of Entropathogenic *Escherichia Coli* Isolated from Children with Diarrhea.

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Abstract

Background and objective: Entropathogenic *Escherichia coli* (EPEC) are one of the major factors in children infection and continues diarrhea in the world. EPEC is one of the *E.coli* pathotypes with specific serogroups which can cause diarrhea in the children. The *eae* gene can be used for the molecular detection of these bacteria. In Iran clinical laboratories still use serogrouping for detection of EPEC which is suggested to produce false positive results. The aim of this study was to compare serogrouping and molecular methods for detection of EPEC and calculate sensitivity and specificity of serogrouping assay.

Materials and methods: A total of 885 *E.coli* were examined in this study and for each *E.coli* isolate serogrouping and molecular detection of *eae* gene with specific primer sets was conducted. The O serotyping method was used to identify the isolates belonging to commercially defined O serogroups. Isolates which could agglutinate with one of the specific commercial pathogenic O antisera were considered as suspected EPEC and subjected to molecular detection with primers specific for *eae* gene.

Results: Thirty five *E.coli* isolates belonging to one of the O serogroups were identified and characterized as suspected EPEC. Of these just 10 isolates harbor *eae* gene while 68 isolate of all 885 *E.coli* isolates carried *eae* gene and identified as EPEC.

Conclusion: The result of this study strongly confirm that serogrouping which is a usual method for detection of EPEC in clinical laboratory in Iran leads to false positive and negative results and should be replaced with more reliable molecular methods.

Key words: Entropathogenic *E.coli*, serogrouping, PCR

Seasonal Variation of *Acinetobacter baumannii* Wound Infections in Burnt Patients

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Abstract

Background and objective: In the recent years, *Acinetobacter baumannii* has emerged as a major nosocomial pathogen, particularly in burn and intensive care units. Based on the several studies showing the seasonal increase in incidence of *A. baumannii* infections in the summer months, we conduct a study to determine the incidence of wound infections in patients admitted to a burn hospital over a one-year period.

Materials and methods: 298 burned patients hospitalized in Motahari burn care center were investigated for *A. baumannii* wound infection during the one-year period. The correlation between infection rates and weather conditions in each month was analyzed statistically using SPSS software.

Results: The wound infection rate due to *A. baumannii* was 25.5%. Significant difference was found statistically between the first and second six-month of study period in the infection rate. In addition, the highest rate of *Acinetobacter* infection was between late June and late September.

Conclusion: Due to higher prevalence of *A. baumannii* strains in warm months of the year, it is necessary to implement essential measures for decrease infections caused by such bacteria and improve health care quality in burned patients.

Key words: *Acinetobacter baumannii*, burn, wound infection, summer