Rabies and Tetanus Prevention Costs after Dog Bite

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Abstract

Background and objective: Animal bites specially dog bite imposes a financial burden on country's health system annually. This paper aimed to report imposed financial burden due to rabies and tetanus prevention after dog bite incidence.
Materials and methods: in a cross-sectional study during one year, administered treatments for prevention of rabies and tetanus on dog bite cases that referred to Rasht rabies vaccination centers were studied. Data were collected by a check list and designed based on objectives of this research. Data were analyzed by descriptive statistics, fisher's exact test, independent t-test and one way ANOVA.
Results: Five hundred and sixty one cases of dog bite were studied. For each case the average doses of anti rabies and anti tetanus vaccine inoculated were 3.2 and 0.7 and administrated 499.5 unit rabies and 0.1 vial tetanus immunoglobulin. Mean of unit of rabies immunoglobulin administrated for men was significantly more than women. Among age groups mean of unit of rabies immunoglobulin administrated, dose of anti tetanus vaccine inoculated and vial of tetanus immunoglobulin administrated were significant. Rabies immunoglobulin that was administrated in 30-39 years old were higher than other age group.
Also anti tetanus vaccine and tetanus immunoglobulin that were administrated in 50 years old or further cases were higher than other age group.
Conclusion: Based on results each dog bite imposes heavy cost on health system for rabies and tetanus prevention. Older cases impose more costs than other. Design and perform dog bite prevention programs can reduce such costs.

Key words: Dog bite, Vaccination, Rabies, Tetanus

Prophage Typing of Meticillin Resistant *Staphylococcus aureus* Strains Isolated from Sewage Treatment Plants in Tehran

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Abstract

Background and objective: *Staphylococcus aureus* is a common cause of infection among human which contain broad spectrum of lysogenic phages and various virulence factors. Bacteriophages are involved in production of virulence factors via positive and negative lysogenic phage conversion. The aim of this study was to analyze different prophage types of methicillin resistant *Staphylococcus aureus* strains isolated from a sewage treatment plant (STP) in Tehran during 2010.
Materials and methods: Totally 653 isolates of *S. aureus* was collected from a STP in Tehran. All isolates were identified at the species level using specific primers. Susceptibility of isolates selected to oxacillin was determined using disc diffusion and Etest. Presence of *mecA* gene was checked by PCR. Primers for identification of 6 classes of prophages were used in a Multiplex-PCR assay.
Results: All *S. aureus* strains were confirmed using specific species primers. Amongst all isolates, 100 strains showed resistance to oxacillin. Resistance in 51% and 6% of MRSA isolates was very high and very low (MIC≥256 µg/ml) and (MIC≥4 µg/ml), respectively. One hundred percent of the MRSA isolates contained *mecA* gene. Five different prophage types and also 4 different prophage patterns were identified among MRSA isolates. All isolates contained at least 1 prophage types and 2 subtypes.
Conclusion: The results indicating presence and persistence of clonal MRSA isolates in a sewage treatment plant in Tehran. Moreover, high prevalence of different classes of prophages among MRSA isolates indicating the potential of these strains to produce various virulence factors.

Key words: MRSA, Prophage Typing, Sewage

The Quality of Health Services Provided to People Living with HIV/AIDS in Iran: A Qualitative Study

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Abstract

Background and objective: In the early decade of 2000, HIV/AIDS was introduced as the main cause of death from infectious diseases and the fourth leading cause of death worldwide. This study aimed to assess the quality of services provided to individuals living with HIV/AIDS in Iran.
Materials and methods: This qualitative study was conducted in Iran, in 2012. In this study, purposive sampling method was used. Data was collected during the interview via taking participants' views about the quality of services provided to people living with HIV/AIDS. Data was analyzed through qualitative content analysis method and using open code software.
Results: The most common issues raised by participants in this study were:, the need for continuous training of personnel, low awareness of physicians and medical staff, the need for consulting services, inappropriate treatment by health staff, inadequate medical care tools and facilities, dissatisfaction with hospital services, inadequate number of staff in health centers, and dissatisfaction with the quality of methadone maintenance treatment in some centers. **Conclusions:** Overall, it can be said that the quality of services for people living with HIV/AIDS in Iran is low and is not satisfactory. **Recommendations:** It seems that the following items are needed to improve the quality of services provided to people living with HIV/AIDS: careful planning and continuous evaluation of services, increased funding, better distribution of human power, employing skilled and experienced staff, continuous training, increased coverage of insurance for people living with HIV/AIDS, controlling and reporting the status of service delivery to improve the quality of provided services.

Key words: quality, health services, HIV/AIDS, Iran, qualitative study

Antimicrobial Effect of Aloe vera and Chitosan“in vitro study”

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Abstract

Background and objective: Since the infectious and toxic diseases constitute a wide range of diseases as well as the number of antibiotic-resistant microbial strains is increasing, a natural, new and safe antimicrobials is greatly required. The aim of this study is to investigate the antimicrobial effect of *Aloe vera* and Chitosan on *Streptococcus pyogenes* PTCC 1447, *Klebsiella pneumoniae* PTCC 1053, *Staphylococcus aureus* PTCC 1337 and *Escherichia coli* PTCC 1330 and its comparison with common therapeutic antibiotics.
Materials and methods: To evaluate the antimicrobial activity, Disc diffusion test with Kirby-Bauer method was used. The Minimum Inhibitory Concentrations (MIC) and Minimum Bactericidal Concentration (MBC) were determined by using the dilution method. Statistical analysis was carried out by analysis of variance (ANOVA).
Results: The highest zone of growth inhibition in 40 mg/ml concentration was related to *Streptococcus pyogenes* and the minimum zone diameter in this concentration was related to the Gram-negative bacteria, *Klebsiella pneumoniae.* MIC of *Aloe vera* for *Streptococcus pyogenes*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Escherichia coli* was 2, 8, 4 and 8 mg/ ml and their MBC of the was 4, 16, 8 and 8 mg/ml, respectively. MIC of Chitosan for *Streptococcus pyogenes*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Escherichia coli* was 2, 4, 4 and 8 mg/ ml and their MBC of the extract was 2, 8, 8 and 8 mg/ml, respectively.
Conclusion: *Aloe vera* and Chitosan in comparison with common therapeutic antibiotics had more inhibitory effect on some of the studied strains in vitro.

Keywords: *Aloe vera*, Chitosan, Infectious diseases, Antibiotic resistance, Inhibition zone

Therapeutic Efficacy of 1% Permethrin in Treatment of Pediculosis Capitis

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Abstract

Background and Objectives: Reportedly, Prevalence of Pediculosis Capitis in some parts of the country, including Qom province, has been increasingly soaring in recent years. This has caused some problems in pediculosis care namely repeated treatment or even persistent infestation at times. Present study was to investigate therapeutic efficacy of 1% permethrin in treatment of head louse (Pediculus Humanus var Capitis) and its influential factors in Qom province in 2013.
Materials and objective: In this trial, 378 head lice infested people with Permethrin shampoo 1% were treated and a week after the treatment period, were examined. After that, infested people were treated again and this trend will continue up for 4 courses of treatment.
Results: Of total cases who received the 1% permethrin treatment, 58.2% of cases were treated after one period of therapy. Those who were treated after two, three, and four periods of therapy were 35.4%, 2.4%, and 1.6% of the total cases respectively. Surprisingly, 2.4% of cases did not show any sign of treatment. Totally speaking, 93.6% of cases were free of infestation after one or two periods of treatment. Findings revealed that there was a relationship between infestation density within household, mother's education level, and increase in duration of treatment. Odds of increase in treatment duration among households with 1-2 infested persons were 2.39 (OR=2.39, P= 0.000), and with 3 infested persons were 5.23 (OR=5.23, P= 0.000) times higher than households with no infested person. People of over 20 years old (comparing to under 10 years old) had a higher odds of increase in treatment duration (Or=2.46, P=0.04).
Conclusion: Density of infestation and low level of parental education are of factors disposing head louse infested cases to repeated periods of treatment with 1% permethrin. Therefore, treatment of these households should pay more attention to sever education and follow-up.

Keywords: Treatment, Head Louse (Pediculosis Capitis), Permethrin, Qom

The Antibacterial Activity of the Ajowan Extract

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Abstract

Background and objective: *Trachyspermumammi* or ajowan or ajwain is a plant which its seeds are used as a spice in many of Asian countries such as egypt, India, Pakistan ,and Iran.Thymol in Ajwain seeds, is known as a strong germicide, anti-spasmodic . It is also used for cleaning the wounds and treating skin infections. Here , we aim to study the inhibitory effect of Ajowan extract on the microorganisms growth like Escherichia-coli(E-coli), kelebsiella, and staphylococcus,andStreptococcus pneumoniae.

Material and methods: Antibacterial activities of Ajowan extract has been evaluated against two gram negative bacteria; Kelebsiella and Escherichia coli and two gram positive bacteria; Streptococcus pneumoniae and Staphylococcus aureus.Minimum inhibitory concentration (MIC) value was determined against all the selected bacteria.

Results: The antibacterial activity of Ajowan extract was observed against all selected pathogens with different MIC. The extract was effective for S.aureus with MIC 1.25 mg/ml and Streptococcus pneumonia 2.5mg/ml and followed by E.coli with MIC 2.5 mg/ml, and Kelebsiella with MIC 5**.**

Conclusion: The results of our study showed that the Ajowan extract has effective antibacterial agents against human pathogens which are resistance to antibiotics. More studies should be done to show the detailed mechanism of its antimicrobial effect.

Key words: Ajowan, Extract, Inhibitory effect, Microorganisms

Evaluate the Effects of Bee Venom on *Toxoplasma gondii* tachyzoites: In-Vitro

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Abstract

Background and objective: Epidemiological studies shown that people were exposed to bee venom, much less affected parasitic diseases. This study measured anti-parasitic Effect of bee venom in cell cultures infected with *Toxoplasma gondii* tachyzoites.
Matherials and methods: Human foreskin fibroblasts (HFF) for 10 culture were selected. The *T.gondii* tachyzoites and bee venom was added to the 8 culture flasks. After 24 h incubation at 37 ° C, the growth of tachyzoites were examined by microscopy. For the control group, a flask without tachyzoites with bee venom 4 µg/µl and flask with cell line was used. Appropriate bee venom concentrations were obtained using the XTT test.
Results: Results showed that 4 µg/µl of bee venom has no effect on HFF healthy cells. Bee venom inhibits 70% tachyzoites growth ($P < 0.01$) and had anti-parasite *T. gondii* tachyzoites effect. significant differences between grows two groups observd ($P < 0.05$). It result was also shown that 64 µg/µl of bee venom, will inhibit the HFF cells growth.
Conlusion: According to this study, the anti-parasitic effects of bee venom clearly visible. Bee Venom for the destruction of *T. gondii* tachyzoites at a suitable concentration was very strong and recommended tested in animal models**.**

Keywords: *Toxoplasma gondii* tachyzoites, bee venom, HFF, XTT

Official Report of Food Borne Disease Outbreaks Due to *Shigella* in Iran in 2012

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Abstract

Background and objective: Shigella species are the major cause of foodborne outbreaks in world and in developing countries. The antibiotic resistance patten of such microorganisms for the treat foodborne diseases is vital, The aim of this study was to isolate the most common serotype of Shigella responsible of food bore disease ,and determination of their antibiotic rseistance paterns.
Materials and methods: This was a descriptive study .In total 305 stool samples of patients that cosumed contaminated foods and had diarrhea, fever and cramp were collected.The samples were for culture, sero-grouping,and antibiogram.
RESULTS: Among 305 examined samples collected from different provinces 6.9% were idntified as Shigella spp.The Shigella Sonnei was the most common type(71.5%) ,and Yazd provinces with (52.3%) was the most abundent ,while 39% of isolate were collected in autumn. The results of antibiotic suseptibility showed that ١٠٠% of serotypes were sensitive to ciprofloxacin,and All cerotypes were resistant to trimethoprim-sulfamethoxazole.
CONCLUSION: Shigella species are one of the main causes of foodborne related outbreaks. The knowledge of bacterial agent of foodborne diseases and determination of antimicrobial resistance pattern are helpful to reduce the rate of foodborne outbreaks, the cost of treatment.The prevention control of outbreaks is also very important.

KEY WORDS: foodborne diseases, outbreak, Shigella, antibiotic Susceptibility.

Methicillin Resistant *Staphylococcus aureus* in Surface Water in Karaj

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Abstract

Background and objective: *Staphylococcus aureus* is known as a bacterial pathogen responsible for a wide range of human infections in hospitals and communities that are difficult to treat. Surface water could be a possible source of methicillin resistant *S. aureus* strains in communities and may have a significant role in development and dissemination of antibiotic resistance. In this study for the first time in Iran, during 2013 we evaluated the prevalence, antibiotic resistance patterns and SCC*mec* types of MRSA strains isolated from two urban streams in Karaj, Iran.
Materials and methods: Sampling was carried out 12 times from 2 surface water streams (6 of each) in Karaj. Serial dilutions from each sample were prepared and samples were filtered. Filters were put on Hicrome aureus agar and incubated for 48 h at 37ºC. Black colonies were selected and identified at the species level using biochemical tests. Susceptibility of isolates to oxacillin was determined using disc diffusion and broth micro dilution assays. Resistance of MRSA isolates to 12 antibiotics was determined. SCC*mec* typing of MRSA isolates was done using multiplex-PCR.
Results: Totally, 288 *S. aureus* strains were isolated from different media. Prevalence of MRSA isolates was 12.8%. MRSA isolates showed high resistance to ciprofloxacin, erythromycin, tobramycin, amikacin, tetracycline, kanamycin and clindamycin, respectively. All MRSA isolates harbored SCC*mec* type III.
Conclusion: In conclusion, our results illustrate the presence and persistence of highly resistant clonal group of MRSA in surface water in Karaj, Iran. High prevalence of SCC*mec* type III among MRSA isolates indicating an epidemiological link between the isolates from the sewage and human infections. Spread of these highly resistant MRSA isolates via surface water could be a serious warning for public health.

Key words: MRSA, surface water, SCC*mec* typing

Frequency of blaKPC and blaNDM Genes among *Acinetobacter baumannii* by Molecular Method of PCR

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Abstract

Background and objectives: In recent years, *Acinetobacter baumannii* is one of threatening microorganisms for curing through antimicrobial drugs, because of its clinical effect and its ability of drug resistance. On the other hand, infections with bacteria which produce extended-spectrum beta-lactamases (ESBL) increase the above problem in worldwide. So the purpose of this study was to define antibiotic resistance pattern and distribution of bla_{NDM} and bla_{kpc} genes in *A. baumannii* isolates which isolated from patient in hospital of Tehran by PCR method.
Materials and methods: This study is done on 500 clinical samples in 3 hospitals in Tehran during one year. After identification of isolates in species level using cultural and biochemical methods, the susceptibility tests were carried out on 100 isolates of *A. baumannii* using disk diffusion method for 11 different antibiotics according to the Clinical and laboratory Standards Institute (CLSI) guidelines. Then isolates were considered for presence of bla_{NDM} and bla_{kpc} genes by PCR.
Results: According to the results of the initial screening, more than 55% of isolates showed multiple-drug resistance and also above 90% of isolates, resistance to cefepime, ceftriaxone, and amikacin was recorded. ÓAlso the PCR results showed that 19 cases (19%) and 13 cases (13%) of isolates had bla_{NDM} and bla_{kpc} genes respectively which most of them had been isolated from patients who were hospitalized in the ICU.
Conclusion: Multiple-drug resistant A. *baumannii* is expanding in Iran and it is considered as an important hazard for hospitalized patients. Moreover regarding to existence of bla_{NDM} and bla_{kpc} genes in this bacterium and possibility of transformation of these genes to the other microorganisms, reconsideration in antibiotics consumption patterns and more attention to nosocomial infections control criteria are inevitable.

Key words: ***Acinetobacter baumannii*, Multiple-Drug resistance, bla_{NDM} and bla_{kpc}, PCR**

Molecular Detection of *Salmonella enterica* Serotype *Enteritidis* by Housekeeping Genes

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Abstract

Background and objective: Salmonellosis is considered as the public health problem worldwide. Salmonella enterica serovar Enteritidis is the most prevalent serotype of Salmonella. This study evaluated the housekeeping genes to screen and identify Salmonella enterica serotype Enteritidis.
Materials and methods: In this study, the strains of Salmonella entrica serotype Enteritidis were collected from suspicious patients admitted to different hospitals in Tehran. Bacterial isolation and identification was carried out using standard microbiological and serorological methods. Housekeeping genes (sucA, thrA) were chosen as target genes for PCR amplification of Salmonella entrica serotype Enteritidis.
Results: The results obtained from PCR showed that housekeeping genes were amplified with size of 894 for thrA and 643 for sucA genes in all Salmonella entrica serotype Enteritidis. There was any positive reaction while the test was done on Shigella and E. coli strains which indicated that these genes are specific for Salmonella.
Conclusion: According to our results, housekeeping genes used in this study were efficient and suitable targets for screening of Salmonella enetrica serotype Enteritidis
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Key words: Salmonella entritidis, housekeeping genes, thrA, sucA