Genetic Profile of IS1004 among Environmental Vibrio cholerae Isolated from Surface Water Sources in Iran

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Abstract

Background and objective: Vibrio cholerae includes toxigenic and non-toxigenic serotypes. Non O1-non O139 serotypes are non toxigenic and do not have any role in cholera epidemics or pandemics all over the world. Different typing methods are widely used for molecular epidemiological investigations of clinical and environmental V. cholerae. The aim of this study is to investigate the genetic relatedness of environmental isolates of this bacterium using IS1004 profiling as an epidemiological marker.

Materials and methods: Environmental samples collected from surface water sources in Tehran and cultured of TCBS agar after filtration. One single colony on TCBS was selected and cultured on BHI agar after which the cultures were used for biochemical diagnostic tests and serogroupings. DNA was isolated and used for PCR confirmation of V. cholerae isolates and wbeT gene. Genetic relatedness of isolates was determined using southern blot analysis.

Results: From total 20 environmental V. cholerae identified in this study no wbeT gene was detected for the isolates. A total of 7 different banding patterns were obtained for the isolates while other 13 isolates identified as non-typeable by this method. Comparison with our previous studies indicated no identical pattern with clinical V. cholerae isolates.

Conclusion: Differences in the banding pattern of IS1004 revealed a high heterogeneity among the isolates from surface water sources in Iran while these heterogenic isolates do not have any genetic relatedness with clinical isolates.

Keywords: Vibrio cholerae, IS1004, Surface water

Staphylococcus aureus resistance to pine oil

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Abstract

Background and objective: Increasingly use of antibiotics and biocide materials and using various combinations such as pine oil in biocide materials has led to the appearance of pine oil resistant staphylococcus aureus strains. Purpose of this study was to do mutations in S. aureus resistance to pine oil and prove it by testing antibiogram and detect bands of sigB, mecA genes in PCR.

Materials and methods: one hundred samples of Staphylococcus aureus from clinical sources were isolated. It was studied its sensitivity and resistance to biocide material of pine oil and two antibiotics effective on cell wall such as oxacilin and vancomycin by phenotypic method. To prove the phenotypic results obtained, presence or absence of resistance genes, mecA and sigB, measured and evaluated by PCR.

Results: Within 100 collected samples, 90% were resistant against oxacilin antibiotic and 60% were resistant to biocide material of pine oil and all samples were sensitive to vancomycin antibiotic. Eighty percent of pine oil resistant S.aureus, also were resistant to oxacilin.

Conclusion: This research has studied presence of mecA and sigB genes within Staphylococcus aureus for the first time in Iran. mecA gene induct persistence to antibiotics effective on cell wall such as oxacilin and biocide materials such as pine oil. Relation between antibiotic resistance and use of biocide materials, which was proved by presence of this gene, indicates importance of using antibiotics and biocide materials in houses and clinical places.

Key words: Staphylococcus aureus, mecA gene, sigB gene, pine oil.

Extended Spectrum β-lactamases and TEM and SHV Genotypes in Klebsiella pneumoniae

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Abstract

Background and objective: Klebsiella pneumoniae is an important nosocomial pathogen. There are increasing reports of extended spectrum β-lactamases (ESBLs)-producing K. pneumonia isolates which has become a serious concern for clinicians and infection control specialists. The genes coding for ESBLs are located on transferable plasmids that can horizontally spread among different bacterial species. The TEM and SHV are the most prevalent types of acquired ESBLs. This study was conducted to assess the frequency of bla_{TEM} and bla_{SHV} genes among ESBLs-producing K. pneumonia isolated from teaching hospitals of Qazvin, Iran.

Materials and methods: One hundred non duplicated clinical isolates were included in this study between May 2011 and May 2012. All isolates were identified using standard microbiology and laboratory methods. The collected isolates were screened for ESBL production using the standard disc diffusion method according to Clinical and Laboratory Standards Institute (CLSI) guideline and then were confirmed by confirmatory disk combination (CD) method. PCR assay was performed for detection of ESBL-encoding bla_{TEM} and bla_{SHV} genes.

Results: In total, 57 isolates were non-susceptible to screening antibiotics, 45 (78/94 %) of them were found to be ESBLs producers. Twenty six isolates (58%) carried bla_{TEM} and 19 isolates (42%) carried bla_{SHV} ESBL genes. Eleven isolates (24/4%) harbored simultaneously both of two genes.

Conclusion: Considering the high prevalence of ESBL-producing Klebsiella pneumoniae isolates in the selected hospitals, the initial identification and following of resistant isolates are necessary to prevent further spread of infection by these organisms. In addition, use of appropriate infection control measures and rational antibiotics therapy leads to substantial important in managing of patients

Keywords: Klebsiella pneumoniae**,** extended spectrum β-lactamases, bla_{TEM} ‘bla_{SHV}

Genetic Diversity among Ciprofloxacin Resistant Enterococcus faecalis Isolated from Clinical Specimens with Pulsed-Field Gel Electrophoresis (PFGE) Method

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Abstract

Background and objective: Resistance to ciprofloxacin among Enterococcus faecalis (E.f) isolates especially in UTI makes difficulties for treatment. In this study, the genetic diversity using PFGE method and detection of resistance genes including parC, gyrA , gyrB and parE among ciprofloxacin resistant E.f isolated from clinical specimens, are determined.

Materials and methods: A total of 384 entreococcal isolates were collected from 6 hospitals and 3 private laboratories in Tehran and 50 ciprofloxacin resistant E.f isolates were obtained. Identification of species and resistance genes were done by PCR method. Antimicrobial and minimum inhibitory concentration (MICs) tests were assayed with standard methods and finally genotyping was accomplished using PFGE method.

Results: The range of ciprofloxacin MICs was 16 to 512 µg/ml. All of these isolates contained parC, 98 % gyrA , gyrB and 80 % parE genes. PFGE analysis, grouped 50 strains in 11 common types and 7 single types. The P4, P9 and P10 genotypes were shared between hospital and community isolates.

Conclusion: According to these results the E.f isolates showed high clonal diversity. Because of the ciprofloxacin high MICs level among common pulsotypes we concluded that they have various distributions which may be due to highly transmission of resistant genes among enterococci. Indeed the colonized patients with these resistant isolates are reservoir for releasing of the resistant genes to community which requires more surveillance programs.

Key Words: Enterococcus faecalis, Ciprofloxacin,Genotyping

Frequency of Extended Spectrum β-lactamases (ESBLs) in Acinetobacter bumannii by Phenotypic and Genotypic Methods

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Abstract

Background and objective: Production of Extended Spectrum β-lactamases (ESBLs) is the most common resistance mechanism against β-Lactam antibiotics in Acinetobacter bumannii . PER-1 is one of the most frequent ESBLs in A.baumannii. This study was done to find out the prevalence rate of PER-1 type ESBL in A.baumannii isolates using phenotypic and genotypic methods.

Materials and methods: In this study, a total of 100 A.baumannii isolates were collected from hospitalized patients in Imam Reza hospital of Tabriz. The identification of A. baumannii isolates carried out using microbiological methods and then confirmed by PCR OXA-51 screening by PCR method. All A.baumannii isolates were investigated for production of ESBL with screening test and confirmatory tests including Double Disk Synergy Test (DDST), Combined Disk Test (CDT) and PCR method. All Data analyzed using SPSS sotware.

Results: All isolates had OXA-51 gene and confirmed as A.baumannii. A total of 100 A. baumannii isolates were ESBL positive by using screening test. Using DDST (53%) CDT (64%) and by both of tests, 70% of samples were ESBLs producer and of these isolates, 72.8% had PER-1 gene. We could detected 96% and 64.7% of PER-1 gene producing isolates by using CDT and DDST, respectively.

Conclusion: This study showed that PER-1 gene is the most prevalent ESBL gene in A. baumannii isolates in this area and this result revealed that CD method more reliable than DDST for detection of PER-1 gene producing A. bumannii isolates.

Keywords: Acinetobacter baumannii ، ESBL، nosocomial infection

Non-Agglutinating Groups Vibrio Outbreak in Qom Province in 2011

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Abstract

Background and Objectives: Vibrio Cholera outbreaks have constantly been a worldwide health report in recent years and always have posed major threats to public's health. In present study, we aimed to identify the routes of cholera distribution and its determinants which might help to spread of cholera outbreak in Qom Province in 2011.

Materials and methods: In a case-control study 100 qualified cases (Our criterion to enter a cholera positive case into study was to be staying in Qom province 5 days before onset of clinical symptoms) from total 100 positive cases and 100 control cases who were pair matched (in terms of age, gender and district of residence) with positive cases were entered into the study. Frequency tabulations were used to conduct descriptive analyses. Conditional logistic regression was used to identify outbreak determinants.

Results: Mean and standard deviation of age variable among cases and controls were 34+- 16 and 35+-6 respectively. Fifty-eight percent of cases in case group and 55% of cases in control group were men. Regarding occupational status, 30% and 31.5% of subjects among cases and controls were housekeepers respectively. Mean and standard deviation of household size for cases and controls was 5+-1.6 and 3+-1.5 respectively. Consumption of non-disinfected vegetables AOR=3.5 (1.9-6.5) was the main reason of Vibrio distribution among the population. There was no significant relationship between cholera morbidity and consumption of ice-cream, home-made fruit juice, cubic ice (produced in ice factories) and water that is sold by water tankers and shops.

Conclusions: As with past years, consumption of non-disinfected vegetables is keeping a high risk for cholera outbreak and, consequently, much more attempts are needed to solve this problem.

Keywords: Outbreak NAG, Risk factors, Qom

The Prevalence of Head lice Infestation among Primary School Children in Tonekabon, Iran

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Abstract

Background and objective: Head lice infestation as contagious disease can spread in many parts of the world due to challenges such as declining academic and social problems for the students. The highest incidence is found among primary school children. This study aimed to determine the prevalence and risk factors associated with head lice among primary school pupils in Tonekabon.

Materials and methods: In this cross-sectional study in 2012, visited 1,846 students that selected whit cluster sampling from four area of the township. Information collected through the hair and scalp examination and questionnaire to all students was filled. Data obtained using the chi-square test and were analyzed with SPSS-18 software.

Results: In this study, 957 (51.8%) girls and 889 (48.2%) boys with a mean age of 9±1.41 years old were investigated. The sample included 952 (51.6%) rural and 894 (48.4%) urban students. The prevalence of Pediculosis capitis was 5.74%. Statistical tests between the prevalence of head lice and sex, level of education of parents, symptom showed meaningful relationship.

Conclusion: Increased public awareness, especially in elementary school, play a role in timely diagnosis and proper treatment of head lice.

Key Words: Head lice, Primary school children, Tonekabon.

Knowledge and Attitudes of Health Providers about AIDS.Esfahan-2011

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Abstarct

Background and objective: Expanding of AIDS is such an important issues that one of the main goal of WHO is increasing of knowledge about HIV/AIDS in general population. Thus in forth developing program of IRAN, prevention programs for HIV/AIDS has been mentioned. AIDS is a behavioral disease so education is necessary for changing of high risk behaviors.

Materials and methods: This descriptive study was conducted in 1390 .The samples were 2465 health providers were working in these centers. We collected data by a valid questioner.Then the data were analyzed by SPSS. Total score for knowledge and attitude was 100.

Results: 2465 health providers participated in this study 75.5%of theme were living in city and 24.5% in village. Most of them were female (81.7%).most of health providers were technicians (27.2%)and then bachelor of science(26.4%).The mean score 95.3 ± 8.1 and there wasn't a significant relation between the score of knowledge and their age and career but there was a significant relation between the score of knowledge and education level (P<0.012).
The mean score for attitude was 91.1 ± 7.5 and there was observed statistical significant between the score of attitude and their educational level and career (p<0.001).

Conclusion: Findings showed limited knowledge about HIV/AIDS so we need to improve methods of training and use variety in our awareness program in health providers. It is necessary to train health providers about VCT .In addition we must try for decreasing stigma, keeping the rights of patients and increasing social marketing for VCT, care and treatment of people live with HIV/AIDS.

Key Words: Knowledge , Attitude , AIDS , Health provider

Anti-Brucella Antibodies in Chronic Hemodialysis Patients

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Abstract

Background and objective: Brucellosis is a zoonosis that can affect all the systems and organs in the body. Although brucellae have been recovered from the urine of patients with brucellosis, renal involvement appears to be uncommon. In this study, anti brucella antibodies were investigated among hemodialysis patients of Qom.

Material & methods: Blood samples were obtained from 200 patients undergoing chronic hemodialysis in Kamkar Hospital, Qom city. All serum samples were tested by rose Bengal initially. Positive Samples in this test were examined by writing tests, 2 mercaptoethanol (2-ME) and Coombs.

Results: In this study, the Rose Bengal test of 6 patients (3 male and 3 female) of these 200 patients, were positive. Wright and Coombs test was positive for 5 patients.

Conclusion: Considering the significant prevalence of the disease in the country, especially in endemic areas, it is suggested further research in this area continues.

Keywords: Brucellosis, malta fever, hemodialysis.

Sensitivity Trend of E.coli

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ABSTRACT

Background and objective: The resistance to antibiotics among of pathogen bacteria is one of the main concerns of doctors all around the world, with consideration to different reports about E.coli bacteria's sensitivity, this study was done to examine the pattern of sensitivity and antibiotic resistance of E.coli strains collected from clinical samples of patients hospitalized in Tehran's Araad hospital.

Materials and methods: In this descriptive examination, after extracting E.coli derivations from clinical samples (urine, catheter, phlegm, wound, abscess, vagina and blood), their sensitivity was measured using standard Kirby-Bauer test, in contract with following antibiotics Amikacin, Ciprofloxacin, Gentamicin, Imipenem, Sulfametoxazole Trimetoprime, Ceftriaxone and Cefotaxime.

Results: Most of E. coli strains isolated were from urine samples every four years and the lowest of E. coli strains from vaginal samples. The most amount of sensibility to Imipenem and Amikacin and the most amount of resistant were seen to Sulfametoxazole-Trimetoprime and Ciprofloxacin.

Conclusion: The results of this study are indicating that E.coli's strains resistance has increased against Trimethoprim and Ciprofloxacin; presumably it is due to excessive consumption of these antibiotics. It is obvious that, with regard to increasing consumption of antibiotics, and consequently, augmentation of antibacterial resistance, control of this resistance factor is necessary and inevitable, so it is recommended to avoid unnecessary usage of antibiotics.

Key words: Antimicrobial Resistance, Antibiotics, E.coli, Araad hospital.