

The Effect of Using Sewerage System on Incidence of Acute Diarrhoea on Children under Five Years Old in Bandar-Anzali City in Guilan Province in 2009-Phase I

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Abstract

Background and objective: The scarce water resources and poor quality drinking water with the lack of a proper sewage collection and disposal system and increasing management problems due to rapid population growth made Islamic Republic of Iran to pay priority attention to the water and sewerage problems of districts in its five-year development plan. In this regard, water and sewerage project in Bandar Anzali became a priority by Guilan province Urban Water and Sewerage Company with the government partnership and World Bank financial support. The objective of this study is to complete the first phase of a two-phase study to determine the impact of using an urban sewerage system on acute Diarrhoea in children under five years of age in Bandar-Anzali in the Guilan province.

Materials and methods: The study is a concurrent control before and after field trial which is carried out in two stages: before (phase I) and after (phase II). Sampling for phase I was performed in the middle month of each season, November and February 2009 and May and August 2010. The incidence of acute Diarrhoea was measured with the participation of 2400 mothers of children under 5 years old in the city of Bandar-Anzali in two groups: the intervention group (inside the sewerage system project perimeters) and the control group (outside the project perimeters). Data were collected by local female general practitioners and medical students in each city, under supervision of the community medicine department and by door-to-door interview with mothers. Data were analyzed using the SPSS 11.5 software package and the Pearson Chi-Square was used to compare qualitative variables between groups, and the t-test and One-Way ANOVA was used to compare quantitative variables.

Results: The annual incidence of acute diarrhoea in children under five years old was 11.9%. The seasonal pattern of acute diarrhoea incidence was 12.6% in May, 13.3 in August, 11.5% in November, and 10.3% in February respectively. The highest incidence of acute diarrhoea was seen in children from 2 to 5 years of age.

Conclusion: The study showed the incidence of acute diarrhoea on children under five years old in Bandar-Anzali city is moderate and it follows a seasonal pattern. The highest rate was seen in summer and the lowest rate in winter. It is expected to decrease with the initiation of the sewerage system program.

Key words: Acute Diarrhea, Diarrhea, Epidemiology, Incidence, Sewerage, Sanitation, Bandar-Anzali, Iran

Acceptance Rate of Hand Hygiene in Health Worker

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Abstract

Background and objectives: Transmission pathogens in hospital environment usually are spread through contaminated hands of health care workers. Transmitted infections by health care workers are major problem in survival. The objective of the study was to assess the hand washing by healthcare workers in different opportunities in different wards of the hospital.

Material and methods: A cross sectional approach was used in three type hospitals: academic hospital, non-academic general public hospitals and private hospital. Direct observation of hand washing in Healthcare workers in potential opportunities, groups, type of detergent, type of hospital and shifts were analyzed by chi-square in Spss18.

Results: Overall, 21.9% had hand washing. The rate of hand washing had significant difference in potential opportunities ($p < 0.001$). After contact with fluid and before contact with patient were the most and the least hand washing respectively. Hand hygiene among three hospitals was found significant difference. Among occupational groups with remove of the students did not seen significant difference.

Conclusion: Low rate of hand washing in hospitals under consideration is the fact. Authorities must determine the causes and change the situation.

Key words: hand washing, healthcare worker

Sensitive Procedure for Rapid Detection of Human Brucellosis, Based on PCR Method in Contaminated Serum Samples

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Abstract

Background and objective: Brucellosis is a zoonosis transmittable to humans poses a significant public health problem in many developing countries and requires rapid and accurate diagnostic methods. Here, our aim was to develop a diagnostic polymerase chain reaction (PCR) assay in artificially contaminated serum samples as a model for rapid and accurate laboratory confirmation of human brucellosis.

Material and methods: In this study, initially the standard *Brucella abortus* strain (2308) were cultured on *Brucella* agar medium and then colonies were inactivated by formalin 10 %. Genomic DNA was extracted from inactivated bacterial colonies. Serial dilutions of bacterial-DNA were prepared in fetal bovine serum (FBS) and water and subsequently DNA extraction were repeated on these artificially contaminated samples. The two pairs of primers amplified two different fragments included in: a gene encoding an outer membrane protein (omp-2) (primers JPF/JPR) and a sequence 16S rRNA of *B. abortus* (primers F4/R2).

Results: The two primers assayed showed a difference in sensitivity for detecting *Brucella* DNA, ranging between 5 pg and 50 pg for artificially contaminated serum samples and 50Fg and 5 pg for contaminated control samples. Therefore, the sensitivity of PCR using F4/R2 primers was greater than the PCR using JPF/JPR primers.

Conclusion: Although the sensitivity of PCR using these primers was affected by serum inhibitors, they are still the most sensitive and they could provide a useful tool for the diagnosis of human brucellosis.

Key words: Brucellosis, Optimization, PCR, Omp-2

Pulsed Field Gel Electrophoresis and Genetic Diversity in Mycobacterium tuberculosis

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Abstract

Background and objective: Tuberculosis is a considerable public health problem due to its high risk of person-to-person transmission, morbidity, and mortality especially in developing countries. According to the World Health Organization there is the emergence of multi-drug resistant *M. tuberculosis* and the association of TB with HIV has led to TB being declared. Molecular genotyping methods are important in detecting the dominance of transmission or reinfection in a population. During one year study genotyping of 100 of *M. tuberculosis* (*M.t.*) isolates from patients referred to Pasteur Institute of Iran were accomplished with PFGE method.

Material and methods: After identification of *M.t.* isolates and performing of antibiotic susceptibility test using standard methods, Melted Incert agarose and lysozyme were mixed with bacterial suspension to prepare PFGE plaques. After lyses and washing process the plaques digested with XbaI restriction enzyme. Finally the digested DNA fragments on 1% agarose with PFGE method were stained with ethidium bromide and analyzed with GelcomparII software.

Results: Dendrogram of genetic diversity among 100 *M.t.* isolates were obtained in comparison of molecular weight marker and revealed two common types. Pulsotype A with 71 isolates and just one MDR and pulsotype B included 29 isolates and 3 MDR cases. No correlation between antibiotypes and pulsotypes were observed.

Conclusion: It is very important to know about the existence of any clonal expansion of special *M.t.* genotypes with resistant strains. Our research shows 3 MDR isolates into the low incidence pulsotype B which could be an alarm for more accurate MDR-TB surveillance program. Probably such observed limited polymorphism may be due to conservation of restriction sites of XbaI enzyme. In order to investigate the genetic relatedness of isolates using other restriction enzymes and different molecular typing methods simultaneously were recommended.

Key words: *Mycobacterium tuberculosis*, PFGE, genotyping

Frequency and Antimicrobial Resistance Pattern of Extended Spectrum Beta Lactamases Producing Escherichia coli Strains Isolated from Urinary Infections

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Abstract

Background and objectives: Escherichia coli is the most common cause of urinary tract infections. The resistance of Escherichia coli strains to broad spectrum cephalosporins may be mediated by extended spectrum β -lactamases (ESBLs) has now raised in worldwide. Frequency and spectrum awareness of drug resistance in these isolates will be useful in choosing more effective methods of control and treatment.

Materials and methods: This cross - sectional study was done on 100 Uropathogenic E. coli strains collected from selected center and then were identified by biochemical tests. All of the samples were screened by DAD method. The phenotypes of ESBL were determined using the disk diffusion synergy test(DDST) as recommended by the interpretative guidelines of the NCCLS. SPSS16 was used for statistical analysis.

Results: A total of one hundred isolates,89(89%)were found to be resistant at least on of the indicators cephalosporin tested according to NCCLS guideline.55(55%)of the isolates were resistant to all the indicators tested. Sixty tree isolates (63%) were ESBL producers. The E. coli strains showed high susceptibility to imipenem (66/7%)and amikacin (65/1%).

Conclusion: Our results show that the most appropriate antibiotic to be used for empirical therapy are imipenem and amikacin.High prevalence of ESBL in our hospital cannot be ignored. ESBL producers can be detected by DDST and phenotypic confirmatory test with equal efficacy.we recommend DDSTusing multiple antibiotics in all microbiology units as a routine screening test.

Keywords: E. coli; Urinary Infection; ESBL; Antibiotic Resistance

Urinary Tract Infection and fimH Gene in Escherichia coli

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Abstract

Background and objective: E. coli is considered causes of urinary tract infection (UTI) and the majority part of nosocomial infections. This bacterium for having pathogenicity effects is necessary to have virulence factors. One of this factors is fimH (Type I fimbriae). The aim of this research “Study of prevalence of fimH gene in Escherichia coli isolated from patients with and without kidney stone.

Materials and methods: A total of 70 urinary samples of stricken with UTI of referred to Taleghani Hospital, 42 urinary samples were contaminated with E. coli. Then, is accomplished antibiogram with 9 conventional antibiotics for all of the bacteria. The presence of fimH gene was investigated by PCR.

Results: A total of 70 urinary samples were collected, 42 samples (60%) were contaminated with Escherichia coli. Of 42 samples, 12 samples (28.6%) have had kidney stone & 30 samples (71.4%) have not had kidney stone ($P<0.05$). 24 samples (57.1%) have had fimH gene & 18 samples (42.9%) have not had fimH gene ($P<0.05$). Of 12 samples individuals of stricken with kidney stone, 8 samples (66.7%) have had fimH gene & 4 samples (33.3%) have not had fimH gene ($P<0.05$). By doing antibiogram, recommended antibiotics for Urinary Tract Infection were included Imipeneme & Gentamicin.

Conclusion: Escherichia coli with prevalence of 60% were the most common bacteria isolated from the urine of patients with UTI. Individuals with UTI are susceptible for kidney stone formation. fimH gene in patients with UTI is an important pathogenic factor. This gene is involved in advancing kidney stones formation. The identification of microorganisms present in the kidney stone can be treated with appropriate antibiotics to reduce the risk of stone.

Keywords: Type I fimbriae, E. coli, fimH gene, Kidney stone, PCR, Antibiogram

Antibiotic Resistance and the Frequency of Extended-Spectrum B-Lactamase in *Acinetobacter baumannii* Isolated from Clinical Samples through Phenotypic Methods

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Abstract

Background and objectives: Nowadays *Acinetobacter baumannii* is as one of the problematic opportunistic pathogens, especially in intensive care because of the incidence of drug-resistant strains in the world. The purpose of current study was to define the antibiotic susceptibility patterns and detect the prevalence of producing strains of extended-spectrum β -lactamase (ESBL) in *A. baumannii* isolates which had been isolated from clinical samples with combined disk test.

Materials and methods: This study was conducted in 3 major hospitals in Tehran on 500 clinical samples during 6 months. After identification of isolates in species level using cultural and biochemical methods, in order to determine sensitivity of 100 isolates of *A. baumannii* to 11 antibiotics, the susceptibility tests were carried out according to CLSI guidelines using disk diffusion method. Also MIC (Minimum inhibitory concentrations) was determined for cefepime and ceftazidime, and finally to identify of producing strains of ESBL was applied phenotypic method of combined disk.

Results: In this survey, 100 *A. baumannii* strains, 30 *A. lwoffii* strains and other *Acinetobacter* species were isolated from patients. The majority of isolates were from blood specimens. Isolates of *A. baumannii* revealed the highest resistance to cefepime, ceftriaxone, amikacin, imipenem, piperacillin - tazobactam, meropenem, gentamicin, tobramycin and tetracycline, respectively. Ampicillin - sulbactam and polymyxin B considered as effective drugs in this study. Multi-drug resistance in these strains was 70%. The Total isolates studied the Minimum inhibitory concentrations of ceftazidime in 84% samples was MIC \geq 128 μ g/ml and Minimum inhibitory concentrations of cefepime in 91% samples was MIC \geq 128 μ g/ml. According to the results of combined disk test, 20% of total samples were demonstrated to be ESBL positive.

Conclusion: Regarding to produce of ESBL in this bacterium and possibility of transformation of coding genes to the other bacteria, reconsideration in antibiotics consumption patterns and as well as more attention to nosocomial infections control criteria are inevitable.

Keywords: *Acinetobacter baumannii*, Extended-spectrum β -Lactamase (ESBL), Drug resistance, Antibiogram, Combined disk

Epidemiology of Animal Bite in Samirom in 2008 to 2012

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Abstract

Background and objective: Animal bite is one of the major health and economic problems in human societies that is also growing in our country each year. The present study was designed to investigate the epidemiology of animal bite and candidate factors in Samirom city since 2008 to 2012.

Materials and methods: During the study period of 5 years, data were collected from the Animal Bites form of questionnaires in Anti-Rabies Center in Samirom . Then data classification and statistical analysis was performed.

Results: During the years 2008 to 2012, 1246 animal bite cases have been reported in Samirom. Aggressive dogs with 63.4% are known as the most biting animals. Most bites occurred in the age range 10 to 19 years with rate of 63.4% and the lowest in the age group 0 to 4 years (2.32%). Bites were 76% in men and 24% in women. Students by 23.5% and employees by 5.5% had the most and little bites. Legs with 67% and head and face with 23% were injured as the highest and the lowest bite wound.

conclusion: Due to the increase of animal bites and the importance of complications as one of the major health and economic problems, Increased training activities especially for target groups and other preventive measures in collaboration with various organizations are considerably effective in controlling it.

Key words: Animal bite, Epidemiology, Dog, Cat, Samirom city

Prevalence of HBsAg Positive among Afghan Sweepers in Tehran, 2009

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Abstract

Background and objective: Hepatitis B virus is one of the great public health problems all over the world. Moreover prevalence of Hepatitis B in Iran is near 1.5 million (2.03%) of general population. The objective of this study was to determine the prevalence of Hepatitis B among Afghan sweepers in 2, 5 and 9 municipal areas of Tehran in 2009.

Materials and methods: This was a cross-sectional study on 250 afghan sweeper in 2, 5 and 9 municipal areas of Tehran. Demographic form including age, duration of working and migration, history of sexual contacts, needle stick injury, IV drug abuse, surgery and blood transfusion was completed for all cases. The blood samples were collected and examined for HBsAg by Eliza test at Iran Blood transfusion organization laboratory.

Results: From 250 Afghan sweepers enrolled in this study, HBsAg positive was detected in 10 (4%) cases. We found significant relation between the HBsAg positive, needle stick injury, unprotected sexual contact, age and time migration to Iran ($P < 0.05$).

Conclusion: Prevalence of Hepatitis B was approximately high among afghan sweeper in Tehran. The results indicated that prevalence of risk factors like needle stick injury and unprotected sexual contact were high among Afghan sweepers. Educations of Hepatitis B, ways of transmission, screening of infectious disease, and other blood-born infection to sweepers are important.

Keywords: Hepatitis, HBsAg, Afghan sweepers, Tehran

Seroprevalence of Toxoplasma Gondii among Childbearing Age Women: a population based study in Babol

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Background and objective: Toxoplasmosis is a widespread zoonosis infection caused by Toxoplasma gondii. It may have severe pathologic effects on the fetus in pregnant women and also on immunocompromised hosts. so this study was conducted with purpose of survey immunity in childbearing age women in Babol.

Materials and Methods: This cross-sectional study was conducted on 800 women in childbearing age in 2011. Toxoplasma specific IgG antibodies were detected using a Toxoplasma IgG ELISA kit (Made in Germany). Testing was performed according to the manufacturer's instructions. Data analyzed by SPSS18 software.

Results: The mean age of the participants was 21 ± 5.5 with the mode of 21 years old. In total of 800 samples in this study, Toxoplasma IgG seropositivity was seen in 428 (53.5%). There was a statistical significant association between seroprevalence and age group ($P < 0.001$).

Conclusion: According to high percent of non-immune women in this study, we should be increased awareness of women to Performance toxoplasma's test and Observance its Hygiene during Pregnancy.

Key Words: Prevalence, Toxoplasma Gondii, Childbearing age women, Babol