10115-Drinking Water Quality and Gastrointestinal Infectious Diseases Among Children

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Introduction: Drinking water quality remains a public health's major concern. Out of the currently existing local water pipe systems in Georgia, 75% does not meet the standard requirement by technical conditions. Consequently drinking water quality suffers throughout the country, especially in the rural areas, where, in addition, treatment operations are insufficient. It is likely that high level of diarrheal diseases among children is related to drinking water.

Objectives and methods: Analytical epidemiological methods were applied in order to study: 1.Trend and spectrum of gastrointestinal infectious diseases; 2.Water quality in different parts of the country with respect to the level of diarrheal infections; 3.Diarrheal diseases and waterborne outbreaks among children; 4.Pathogens of drinking water microbial contamination; etc.

Results: Although the incidence rates of gastrointestinal diseases differed throughout the country from year to year, the percentage of children was always high ranging from 66.3% to 80.2%. Diarrheal infections, especially of unknown ethyology, are mainly registered in rural areas. An upward trend has been observed.

The analysis of drinking water quality by bacteriological criteria for the past decade showed that water treatment remains a serious problem. Since the last year 15.2% of water samples, collected throughout the country has not meet the standard requirements. Waterborne outbreaks mainly occurred in rural areas. The bacteriological testing of drinking water samples revealed a broad spectrum of microbial contaminants, including bacteria, virus of Hepatitis A and protozoa.

It was difficult to associate sporadic cases of diarrheal diseases among children with drinking water, but investigation of waterborne outbreaks revealed that proportion of children (2.0-75.0%) varies depending on the ethyology of drinking water microbial contamination. For instance, during the waterborne epidemic of amoebiasis in 1998-1999, 81% of the cases were adults while waterborne outbreaks of diarrheal infections, caused by possible enteropathogens, were mainly registered among children. Although it should be mentioned that such outbreaks were not easy to detect.

Conclusion: 1. Gastrointestinal infectious diseases of unknown ethyology tend to increase among children. 2. Microbial contamination of drinking water with possible enteropathogens is a major threat of DD to children. 3. According to the quality of drinking water, the later can be a source of diarrheal diseases more frequently then it is epidemiologically confirmed.

10124-An outbreak of cercarial dermatitis (swimmer's itch) : From the diagnosis to the gestion.

Introduction/Rationale

Cercarial dermatitis can affect the bathers of natural public beaches on all continents. It is a dermatological pathology caused by the penetration of the skin by cercaria of certain species of nonhuman schistosomes. The life cycle of these schistosomes implicates aquatic snails as intermediary hosts and a bird or a mammal as a definitive host. We are presenting the investigation of an outbreak of dermatitis that occurred in a recreational-tourist lake in the Québec City region (Canada) in the summer of 1999.

Methods

An epidemiological surveillance system was used. A case-reporting form based on a precise definition of the disease was sent to 450 families likely to have activities that would bring them in contact with the lake's water. At the same time, the snails were characterised and the prevalence of their infestation by schistosomes was investigated. Sampling was also carried out to two beaches in order to verify the presence of fecal coliform, fecal streptococcus, *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

Results/Discussion

In total, 63 episodes consistent with cercarial dermatitis were reported. The lesions mainly affected the lower limbs and trunk. Sixty-nine percent (69%) of the cases occurred from swimming at the same beach. This location was the one where the only population of snails in the lake was identified.

A total of 142 snails were collected for parasite investigation. Two forms of furcocercaria-type cercariae were identified; one non-ocellate cercaria and one ocellate cercaria respectively in 1.4 and 2.8 % of the gastropods. The latter had already been identified during a previous investigation of dermatitis at another lake located some one hundred kilometres from Québec city. Concentrations of indicators of fecal pollution were lower than 10 cfu/ml, there was no *Pseudomonas aeruginosa* and the concentrations of *Straphylococcus aureus* were lower than 40 cfu/100 ml.

We concluded to an outbreak of cercarial dermatitis. Shoreline residents were informed that they should not feed waterfowl, and a cleanup of the snail population was done at the start of the following summer. There were no cases of cercarial dermatitis at this site the following summer. The implemented epidemiological surveillance system permitted to investigate the scope of the problem at low cost, and to propose solutions to minimise it for the future.

10468-THE TOXIC EFFECTS OF THE ACETATE LEAD ESTIMATED BY THE HELP OF BIOTESTS ON AQUATIC ORGANISMS REGARDING THE ASSESSMENT WATER QUALITY

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Heavy metals are considered noxas, being very dangerous for the aquatic animals by themselves of by its toxic salts, which manifest a great stability. The present study followed the evidence of some toxic effects of the acetate lead appreciated by byotests on aquatic organisms after the administration in different concentrations. The suitability of such a study becomes evident even from the fact that the documents elaborated by WHO, consider the biological monitorization as an important approach for obtaining the identification of the risk of the human exposure at the chemical pollutants and appreciate the fact that the effects measurement upon health, by the help of the environmental (or experimental ones) studies give many times a more direct indication of the total exposure in comparison which measuring the levels from the elements of the environment. The tested substance used in our research $[Pb(CH_3COO)_2]\bullet 3\ H_2O$ is pure from a chemical point of view, with a minimum content of 99%. The biological material: microshellfish - the *Daphnia magna Straus* species (laboratory clone culture at 24 and 48 hours after the "bio-assay" biological method) and sweet water fish - the *Carassius auratus* (Gibelio)-Bloch species. The experiments were effectuated in simple instalations for biotests. The total cholesterol was determined on blood serum (tooh from the *Carassius auratus* species) - by the method which is based on the Lieberman-Burchard reaction. For seeing the results, we used a photocolorimeter in the wave length of 630-660 mm (red filter).
The correlation coefficient and the right of regression regarding the rate of the death tested organisms expresses a direct acute toxicity value, depending on the concentration and the exposure time. After 24 and 48 hours of exposure, the cholesterol values registered small grows at the treated lots with concentrations of 4 and 5 mg/liter acetate lead (1.3 mg% and 4.1 mg% in comparison with the control lot. The research regarding the testing of the toxic potential of the acetate lead by the help of toxicity tests effectuated on different groups of animals (invertebrate - microshellfish and vertebrate - fish) emphasized the toxic character of the substance manifested by: behaviour modifications; morphological modifications; degree of death which grows progressively with the time of exposure and substance concentration.
The toxic action upon the *Daphnia magna Straus* microshellfish shows a significant death rate, higher than 1.0 mg/liter. The rapid passing from a hiperexcitability to a total inertia of more than 50% from the tested organisms (at concentrations higher than 10 mg/liter) confirm the neurotoxic action of the acetate lead. All the tested concentrations in lab conditions go to modifications of the total cholesterol level at *Carassius auratus* which is correlated with the exposure time. The aquatic organism may be definite as true detectors of the pollution degree being recommended in the monitoring program of water quality, important component part of Program Environmental and Health.

10682-THE DECADE OF THE MUSCULO-SCELETAL SYSTEM, THE PROBLEMS OF THE FLUORID INTAKE IN HUNGARY BY BIOLOGICAL MONITORING OF THE FLUORID EXCRETION

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Objective: To determine the fluoride intake of the Hungarian children population as one component in the development of the bone according to the WHO proposed method, the urinary fluoride excretion. A small part of the population (2%) is exposed to very high level of fluoride trough the consumption of the drinking water containing more than 1.5 mg/L fluoride while the majority suffer from fluoride deficiency.
Design: 30-30 children were selected based on schools and kindergardens from 34 settlements havin wide range (0.3 – 2.0 mg/L) of fluoride in the drinking water. Early morning urine samples were collected by the school nurses and sent to the central laboratory where fluorid-sensitive electrod method was used for fluoride determination and the results were given for g creatinin to minimize the error originating from the differences of the water consumption. Fluoride intake originating from other sources (tablets, mineral water) were registered by the answers of the parents.
Results: Optimal fluoride intake (0.5 –1.0 mg fluoride/ g creatinine) occurred in those settlements where the fluoride content of the drinking water was between 0.7- 1.1 mg/L, in 4 settlements. Children of 7 settlements had high fluoride intake and the children of the other 23 settlement are fluoride deficient according to the urinary fluoride excretion. The fluoride excretion of children from the kindergardens were always higher in the same settlement than of the schools. Other forms of the fluoride intake was rare, less than 5 %, exept in one village where a systemic fluoride intake was ensured through the kindergartens.
Conclusion: the results showed strong corellation between the fluoride content of the drinking water and the urinary fluoride excretion the marker of the fluoride status. The present status of the fluoride intake is insufficient and the results serves as a basis for the acceleration in the implementation of the fluoride into the health promotion program of Hungary.