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ATYPICAL MYCOBACTERIA IN HOSPITAL WATER SUPPLIES

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Atypical Mycobacteria are widely distributed in nature including soil and water. Tap water harbor atypical mycobacteria which are generally more resistant to chemical disinfection than other bacteria. These opportunistic fast bacilli are often implicated in human disease in both immunocompetent and immunocompromised patients particularly these suffering from acquired immunodeficiency syndrome (AIDS).

Studies were made in 64 samples of the cold tap water at different wards of three hospitals in Patras town. We examined 64 samples in order to find out both the microbiological quality and the presence of atypical mycobacteria in the water of the hospitals of our region.

The method used was the membrane filtration method according to Standard Methods. As far as faecal indicators is concerned, all examined samples were found satisfactory according to Greek legislation.

Ten of 64 samples (15.6%) grew atypical mycobacteria in Middlebrook 7H10 agar. All the mycobacteria belong to rapidly growing species. There was no correlation between the presence of faecal indicators and the atypical mycobacteria ($P < 0.005$). Identification of the isolated mycobacteria is performed by Polymerase Chain Reaction and restriction enzyme analysis methods.

As environmental waters are presumed to be one of the most important source of atypical mycobacteria for immunocompromised patients, it seems worthy to examine hospital water supplies for the presence of these microorganisms.

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A REVIEW OF EPIDEMIOLOGICAL RESEARCH CONCERNING HEALTH EFFECTS CRITERIA FOR RECREATIONAL WATERS

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The basic aim of investigations into the health effects of swimming or bathing has always been to determine what difference in illness incidence might be expected from swimming in waters containing varying degrees of bacterial pollution. Most studies have been of the prospective epidemiological type, now generally termed "Cabelli-style", after the first study conducted by the EPA in the 1970's. Trained staff approached people leaving the beach and asked them to take part in the study by filling in a questionnaire including details about whether they had entered the water, swum or bathed, their various activities on the beach, their age, employment and details about their state of health. The state of health of these people and their families was followed up. The microorganisms employed to assess water quality varied from one to a combination of total and faecal coliforms, faecal streptococci, *E. coli*, enterococci and staphylococci. Prospective studies were carried out in Alexandria, Egypt (1980), two in Tel-Aviv, Israel (1983 & 1991), three in Spain (1983), two in France (1983 & 1987), two in Canada (1985 & 1989), Turkey (1989), Hong Kong (1988) and Australia (1989). Practically all of them obtained results in the form of higher morbidity among bathers as compared to non-bathers, the best correlation with water quality being with one or other microorganism where different beaches were compared. Faecal streptococci counts showed a significant relation with the occurrence of gastroenteritis in the 1-4 age group. The prospective studies received strong criticism concerning the accuracy of their protocol and the comparability of their results. During the last five years a "health volunteer" design has been tried in the U.K. A first step included two pilot studies which were followed by larger-scale ones. Healthy volunteers were recruited and divided into bathing and non-bathing cohorts. Clinical tests were held both before and after exposure. While significantly higher rates of sore throat, ear and eye symptoms were reported by the bathers three days after the study and diarrhoea three weeks later, there was no correlation between the results of the clinical tests and the perceived symptoms reported. Faecal streptococci counts, measured at chest level, showed a significant dose-response relation with gastroenteritis. Adverse health effects were identified when faecal streptococci counts exceeded 32/100 ml. Studies in our laboratory showed significantly higher counts of staphylococci and anthropogenic fungi when the number of swimmers on the beach increased.