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"Gheorghe Asachi" Technical University of Iasi, Romania

ASSOCIATION OF NEPHROLITHIASIS WITH DRINKING WATER QUALITY AND DIET IN PAKISTAN

Suneela Jadoon[1], Jin Wang[2], Qaisar Mahmood[1*], Xu-Dong Li[*], Bibi Saima Zeb[1], Imran Naseem[3], Malik Tahir Hayat[1], Shamyla Nawazish[1], Allah Ditta[4,5]

[1]Department of Environmental Sciences, COMSATS University Islamabad, Abbottabad Campus 22060, Pakistan
[2]Department of Landscape Architecture, School of Design, Shanghai Jiao Tong University, Shanghai 200240, PR China
[3]Department of Management Sciences, COMSATS University Islamabad, Abbottabad Campus 22060, Pakistan
[4]Department of Environmental Sciences, Shaheed Benazir Bhutto University Sheringal, Upper Dir, Khyber Pakhtunkhwa, Pakistan
[5]School of Biological Sciences, The University of Western Australia, 35 Stirling Highway, Perth, WA 6009, Australia

Abstract

Bad water quality has serious implications for human health, which may include gastrointestinal, liver, respiratory diseases and even cancer. In view of drinking water hardness in the study area, it was hypothesized that bad water quality has some association with the renal disorders. The possible association between nephrolithiasis, drinking water quality and diet in human subjects in district Abbottabad, Pakistan was investigated. Drinking water samples were collected from different areas (total number, n=100) and analyzed for various physico-chemical properties like turbidity, electrical conductivity, and pH by using standard methods. The concentration of total hardness ranged from 250 mgL^{-1} to 800 mgL^{-1} which exceeded the standard value of 60 mgL^{-1} and the water was found to contain high content of calcium ions. Kidney stones analysis reports of affected subjects (n=100) were examined for the type of stone. The calculi collected showed various shapes and were composed of calcium oxalate (88%), struvite (4%), uric acid (7%) and mix of calcium oxalate and uric acid (1%). Oxalate rich diet was another important risk factor for nephrolithiasis. The patients were consuming 100-300 mg day^{-1} of dietary oxalate. In conclusion, the quality of drinking water and diet habits contributed to nephrolithiasis.

Key words: human diet, nephrolithiasis, water hardness, water quality

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[*] Author to whom all correspondence should be addressed: e-mail: mahmoodzju@gmail.com; lixudong@sjtu.edu.cn; Phone: (92)992-383591-6; Fax: (92)992-383441