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Prevalence, characteristics and correlates of enteric pathogenic protozoa in drinking water sources in Molyko and Bomaka, Cameroon: A cross-sectional study

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Background: Access to potable water remains a major challenge particularly in resource-limited settings. Although the potential contaminants of water are varied, enteric pathogenic protozoa are known to cause waterborne diseases greatly. This study aimed at investigating the prevalence, characteristics and correlates of enteric pathogenic protozoa in drinking water sources in Buea, Cameroon.

Methods: A cross-sectional study was conducted using 155 water samples collected from various drinking sources (boreholes, springs, taps and wells). Each sample was subjected to physicochemical examinations (pH, turbidity, odour and sliminess) and parasitological analysis (wet mount, modified Ziehl-Neelsen stain) to determine the presence of enteric pathogenic protozoa. A data collection tool was used to note characteristics of collected samples and the data was analysed using EPI-INFO Version 3.5.3.

Results: The overall prevalence of enteric pathogenic protozoa in water sources was 62.6%. Eight species of enteric protozoa were observed with *Cryptosporidium parvum* being the most predominant (45.8%). Spring water was the most contaminated source with enteric protozoa (85.7%) while pipe borne water had all eight species of protozoa identified. A pH of 6 was the only significant factor associated with the prevalence of these pathogens in water sources.

Conclusion: The prevalence of enteric protozoa in water sources in Molyko and Bomaka is high, spring water is the most contaminated water source and *Cryptosporidium parvum* is the most common protozoa contaminating water. A water pH of 6 is associated to the prevalence of protozoa. Community members need to be educated to treat water before drinking to avoid infection by enteric protozoa in water and further studies with larger samples of water need to be conducted to find other correlates of the presence of protozoa in water.

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Occurrence of Metallo-β-lactamase in clinical isolates of *Escherichia coli* and *Klebsiella pneumoniae*

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Resistance mediated by Metallo-β-Lactamases (MBL) enzyme to broad spectrum antibiotics is an increasing global problem. The member of *Enterobacteriaceae* producing MBL, particularly in *E. coli* and *K. pneumoniae* constitutes a serious threat to current β-lactam therapy. Therefore, this study was conducted to know the occurrence of MBL producer in the clinical isolates of *E. coli* and *K. pneumoniae*. This was a descriptive cross sectional study conducted at OM Hospital and Research Centre (P) Ltd., Chabahil, Kathmandu, Nepal between May and December 2015. A total of 177 non-duplicate, consecutive isolates of *E. coli* (n=138) and *K. pneumoniae* (n=39) were isolated from different clinical samples. Of the total 177 isolates, 7 (4%) and 61 (34.5%) isolates were MBL and ESBL producer respectively. The co-existence of ESBL and MBL within the same isolates was not observed. MBL producing isolates showed high resistance to both β-Lactam and non-β-Lactam antibiotics used; entire MBL producers were Multi Drug Resistant (MDR). Of the drug used in the study, Colistin was only found effective for the treatment of MBL producing isolates. Our finding showed considerable number of MBL producing *E. coli* and *K. pneumoniae* isolates with MDR. Thus, it would be important for the early detection of MBL producing isolates for establishing potent antibiotics therapy which will be fruitful for controlling infection and also to avoid circulation of such strains within the hospital.

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