Incidence of Enteric Pathogens Causing Community Gastroenteritis among Kindergarten Children in Gaza Governorate

Rohaifa Al-Haddad MSc1, Fouad Ridwan PhD1, Mansour Elyazji PhD2, Nahed Al Laham PhD*3

1Department of Biological Sciences, Faculty of Science, Al Azhar university- Gaza, Palestine
2Department of Biological Sciences, Faculty of Science, Al Aqsa university- Gaza, Palestine
3Department of Medical Laboratory Sciences, Faculty of Applied Medical Sciences, Al Azhar university- Gaza, Palestine

Abstract

Diarrheal diseases continued to be a common and costly problem. Gastroenteritis considered as one of the leading causes of illness and death in children under five-year old especially in developing countries.

The present study conducted to investigate the incidence of different enteric pathogens causing community gastroenteritis among kindergarten children in Gaza governorate. The study was cross sectional case control study and population included both symptomatic (diarrhea) with suspected community gastroenteritis children (cases) and asymptomatic healthy (no diarrhea) children (controls) from both genders from kindergartens distributed in all parts of Gaza governorate. One hundred fifty stool and blood samples were collected, divided into 96 cases and 54 controls. The collected stool samples were investigated for parasitic, viral, and bacterial pathogens using standard microbiological and serological procedures. However, blood collection, testing for complete blood count (CBC), serum iron (SI) and total iron binding capacity test (TIBC) were performed.

Out of the 150 study population, the overall percentage of positive stool samples with a known enteric pathogen was 60.6%. The incidence of different enteric pathogens causing community gastroenteritis in diarrheal cases was significantly higher than in non-diarrheal controls (88.5%, versus 11.1%). The most prevalent enteric pathogens isolated were Entamoeba histolytica and Giardia lamblia (28%, 26.7% respectively), where they found to be significantly higher than the prevalence of other enteric pathogens. Rotavirus was found in 3.1% of diarrheal stool samples but not detected in non-diarrheal stool samples. However, adenovirus types 40 and 41 weren’t detected in all study population. The bacterial enteric pathogens Shigella and enterohemorrhagic Escherichia coli O157:H7 (EHEC) had similar rates as rotavirus (3.1%). Meanwhile, Salmonella wasn’t isolated.

Mixed infections with more than one pathogen were found in 7.4% of the total studied samples. Age group of 3 years old showed the highest incidence of community gastroenteritis where E. histolytica was the highest causative agent (75%). In age group of 4 years old, also E. histolytica was the highest causative agent (33.3%). Age group of 5 years old showed the highest incidence of G. lamblia (29.9%).

Blood parameters results revealed that 21.8% (21/96) of the diarrheal cases and 14.8% (8/54) of non-diarrheal controls were iron deficient with Hemoglobin ≤11 g/dl.

In conclusion, the parasitic etiologic agents were found to be the common cause of community gastroenteritis in this population. However, low incidence of viral and bacterial pathogens was detected as causative agents of community gastroenteritis in this population.

Key words: Community gastroenteritis; enteropathogens; kindergarten; blood parameters; Gaza