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INTRODUCTION

Water-borne parasite *Cryptosporidium* spp. belongs to one of the major causes of diarrheal disease in children. In addition to inadequate hygiene and poor sanitation practices, individuals with HIV possess higher risk of contracting the disease. In major city of Yogyakarta, Indonesia, the disease burden of cryptosporidiosis in children with HIV is not well known. Current study aimed to estimate the disease burden and determinants of cryptosporidiosis in this population.

METHODS

A cross-sectional study was conducted in Sardjito General Hospital in Yogyakarta, Indonesia from May through August 2021 in HIV-positive children aged 6 months through 18 years. Single stool specimen was collected from each subject during monthly visit. Stool specimens underwent several examinations: microscopic, coproantigen (Crypto/Giardia Ag Combo ELISA, Cortez Diagnostics, USA), and PCR. Determination of infection was made using the PCR results. Social and behavioral determinants were obtained from structured questionnaire.



Figure 1. Study flow.

RESULTS

A total of 52 participants were included in the final analysis. Prevalence of cryptosporidiosis was 42.3% (22/52). Approximately 91% of participants found positive for cryptosporidiosis belonged to age group of under 12 years. Symptoms reported include diarrhea ($P = 0.037$), weight loss ($P = 0.019$), nausea or vomiting, and fever (Figure 2).

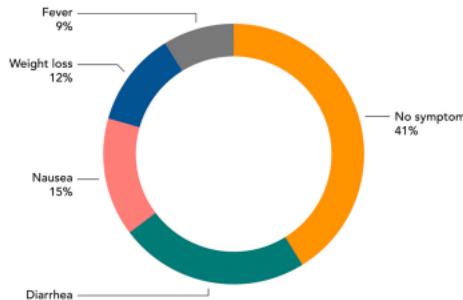


Figure 2. Reported symptoms of cryptosporidiosis in the study.

Roughly 36.5% of participants was found to be in underweight nutritional status. Additionally, among subjects with cryptosporidiosis, 18 (81.8%; $P = 0.003$) had well water for drinking water source.

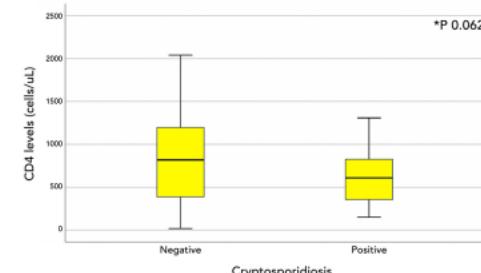


Figure 3. Mean CD4 levels in infected and non-infected participants.

About 54% of infected participants belonged to none to mild immunodeficiency and 68% had CD4 count of over 200 cells/µL. Multivariate analysis showed that use of well water (AOR 6.75; 95%CI 1.87-24.9) and history of diarrhea (AOR 5.14; 95%CI 1.17-22.4) were predictors of cryptosporidiosis.

CONCLUSION

Cryptosporidium spp. infection was found to be prevalent in mild immunodeficient children, with diarrhea and use of well water for drinking as the risk factors.

REFERENCES

- Houpt ER, Bushen OV, Sam NE, Kohli A, Aspinwall A, Ng CT, et al. Short report: asymptomatic *Cryptosporidium hominis* infection among humans in a predominantly rural community in Tanzania. Am J Trop Med Hyg. 2005;73:520-2.
- Sarkar S, Bhattacharya MR, Ajampur SS, Prabakaran AD, Jayaraman A, et al. Risk factors for Cryptosporidiosis among children in a semi urban slum in southern India: a nested case-control study. Am J Trop Med Hyg. 2014;91:128-37.
- Xiao L, Singh A, Limor J, Graczyk TK, Gradus S, Lal A. Molecular characterization of *Cryptosporidium* oocysts in samples of raw surface water and wastewater. Appl Environ Microbiol. 2001;67:1097-101.

