Molecular and Conventional Detection of Zoonotic Giardia and Cryptosporidium in Children and Calves in Upper Egypt

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Abstract:

Giardia and Cryptosporidium are widespread pathogens of human and many species of mammals. This study aimed to investigate the potential direct transmission of Giardia and Cryptosporidium between cattle calves and the surrounding living children and to improve the knowledge of zoonotic Giardiasis and cryptosporidiosis situation in Assiut Governorate, Egypt. Faecal samples from 70 diarrheic children (above 5 years) and 62 diarrheic calves (1-3 months) were collected from the same villages at Assiut Governorate, Egypt. Samples were subjected to conventional microscopic examination for Giardia and Cryptosporidium. Positive samples were subjected to molecular identification. By conventional microscopic examination, Giardia cysts were detected in 27 out of 70 (38.57%) children's stool samples, while Cryptosporidium oocysts were detected in 12 samples (17.14%). Mixed infection of Giardia and Cryptosporidium were detected in all Cryptosporidium positive samples. In children, 81.48% of Giardia samples were G. intestinalis assemblage B meanwhile, all samples were negative by PCR for C. parvum. In calves 29.03% of faecal samples were positive for Giardia by microscopic examination, while only 12.90% of those samples were positive for Cryptosporidium oocysts. 21 out of 26 (80.76%) Giardia positive samples were positive to G. intestinalis assemblage B and 22 out of 26 Cryptosporidium positive samples (84.61%) were positive for C. parvum. High prevalence of G. intestinalis assemblage B infection detected among children was significantly associated with contact with calves explaining the existence of its zoonotic transmission and more studies are needed to investigate the zoonotic potential of Cryptosporidium in the study area.

Keywords:

Giardia, Cryptosporidium, Zoonoses, PCR, children, Calves

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