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Paper Poster Session I

Clinical and diagnostic parasitology

Time for a change in strategy of diagnostic parasitology

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Objectives
For decades, various more or less well-defined indications has led to examination of stool samples for parasites. Samples have been examined by microscopy and pathogenic and non-pathogenic parasites have been reported, as have unspecific findings such as Charcot-Leyden crystals regardless of their relevance in the clinical situation.
In order to provide more useful information for the clinician we set to examine the consequences of a symptom based approach, dividing indications into 1) diarrhoea and 2) other, and establishing optimal diagnostic technology for detection of parasitic agents of diarrhoea.

Methods
For determining the most relevant parasites to test for, we counted the number of cases in which specific diarrhoea-causing parasites had been reported over a period of nine years at our laboratory. In addition, the number of cases in which parasites not causing diarrhoea had been reported were recorded.
Based on these results we tested the ability of real time PCR assay to detect parasites in thirty microscopy-positive samples. Three different assays, specific for *Entamoeba histolytica* and *Giardia lamblia* were tested, and for *Cryptosporidium parvum/hominis,* we tested five different assays, one of these with specific detection for *C. parvum* or *C. hominis,* respectively.
To evaluate the reliability of microscopy-based reports of *E. histolytica*, samples reported positive with microscopy, were analysed by real time PCR assays for *E. histolytica* and *E. dispar*.

Results
Giardia lamblia (500 samples/237 patients), *Cryptosporidium parvum/hominis* (78 samples/62 patients), and *Entamoeba histolytica/dispar* (159 samples/62 patients) were by far the most the most frequently reported diarrhoea-causing parasites. Apart from those, the only diarrhoea-causing parasite identified was *Cyclospora cayatanensis*, which was detected in 25 samples from 12 patients in a period over nine years. In addition, a variety of parasites not considered agents of diarrhoea had been reported.
PCR confirmed *G. lamblia* and *C. parvum/hominis* in all tested samples with positive microscopy result except in one case of Giardia and one case of Cryptosporidium. All three PCR assays were negative for *G. lamblia* and all five PCR assays were negative for *Cryptosporidum sp.*. Out of ten *Cryptosporidium sp*. detected, six were *C. parvum* and four were *C. hominis*.
As previously reported, all *E. histolytica* reported from microscopy, were in fact *E. dispar* when tested by species-specific PCR.

Conclusion
The number of cases of diarrhoea caused by parasites other than *Entamoeba histolytica*, *Cryptosporidium parvum/hominis* and *Giardia lamblia* is almost neglect able. Replacing microscopy with specific PCR assays for these three parasites will result in better diagnostic sensitivity and specificity. Samples from patients with diarrhoea should be examined by specific PCR assays rather than microscopy. Microscopy will still be of value in detection of pathogenic parasites other than those causing diarrhoea.