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Abstract (poster session)

A novel ELISA-based diagnostic test may replace the traditional microscopy in detection of Blastocystis spp. in human stool specimens

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Objectives: Blastocystis is an enteric protozoan parasite highly prevalent in humans and animals. It is worldwide associated with non-specific symptoms, i.e. diarrhea, abdominal pain, anal itching, excess gas, and irritable bowel disease, and therefore under-diagnosed. Detection of Blastocystis is routinely performed by microscopy, culture, and formol-ether concentration technique (FECT). Yet, these methods are laborious, require special skilled personnel, and time consuming. Since Blastocystis has several morphological forms (vacuolar, cyst, amoeboid, granular, multivacuolar, and avacuolar), microscopy is difficult. FECT destroys some of the forms during stool processing, therefore is unreliable. Culture requires 2-3 days for diagnosis and may allow preferential growth of specific strains while eliminating others. ELISA-based test for detection of Blastocystis antigens in fresh and preserved stool samples was recently launched and evaluated (CoproELISA Blastocystis, Savyon, Israel). The aim of this work is to demonstrate the usefulness of the newly developed test, as a proper alternative to currently used methods, especially the microscopy. Methods: A mixture of the most abundant human infecting strains was used to prepare polyclonal anti-Blastocystis antibodies, which compose the ELISA. A cohort of 251 fresh/frozen samples was tested by the newly developed ELISA, microscopy examination of Lugol's iodine staining, culture and staining with fluorescent (FITC) anti-Blastocystis antibodies (Antibodies Inc, USA). The culture and fluorescent antibodies results were considered as consensus for reference purposes. Results: Considering the consensus results as reference, the ELISA performance demonstrates 82% sensitivity, 80% specificity, 81% accuracy, 82% PPV and 80% NPV. The sensitivity of Lugol staining microscopy was 24%. The ELISA detects the most prevalent subtypes in humans (1, 2, 3, 4, 5, and 7), and most of the known morphological forms. Conclusions: This work presents a unique ELISA that provides superior performance compared to microscopy, the currently most widely used method. The ELISA enables high throughput screening, adaptation to automatic procedures and is overall cost-effective. In addition it is expeditious in providing reliable results and efficient requiring no special skilled personnel. Taken these considerations, the ELISA is expected to be the method of choice for diagnosis of Blastocystis in the common laboratory.