DocID: https://connectjournals.com/03896.2020.20.4421

Biochem. Cell. Arch. Vol. 20, No. 2, pp. 4421-4425, 2020 | www.connectjournals.com/bca | *ISSN 0972-5075*

COMPARISON OF THE EFFICIENCY OF DIFFERENT TECHNIQUES FOR THE DETECTION OF *BLASTOCYSTIS HOMINIS* IN PATIENTS ATTENDING HOSPITALS OF DUHOK CITY, KURDISTAN REGION, IRAQ

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(Received 28 March 2020, Revised 22 August 2020, Accepted 11 September 2020)

ABSTRACT : The current study included 579 stool specimens collected from patients suffering gastrointestinal disorders, who visited Azadi Teaching, Golan and Heavy Pediatric Hospitals in Duhok city, Kurdistan Region, North of Iraq. All specimens were examined by direct microscopic, culturing and PCR methods at the parasitology laboratory, College of Science, University of Duhok. The study started from October 2017 to August 2018. The results of the current study showed that the infection rate of *Blastocystis hominis* was 4.84%, 16.92% and 15.2% by direct, culturing and PCR methods, respectively. In conclusion, culture method can be considered as the technique of choice for identifying the *Blastocystis hominis*.

Key words : Intestinal protozoa, *Blastocystis hominis*, gastroenteritis, Duhok.

INTRODUCTION

Blastocystis is one of the most prevalent enteric protozoa, it has been identified in the gastrointestinal tract of human, several zoonotic mammalians, avian, and reptilian hosts (Wawrzyniak *et al*, 2013; Roberts *et al*, 2014). Several studies from developed countries mentioned approximately a 1.5-10% overall prevalence of *B. hominis* (Herwaldt *et al*, 2001). *Blastocystis hominis* was considered to be a member of normal intestinal flora in the past, but in recent years it has been accepted as a very controversial pathogenic protozoan (Kaya *et al*, 2007). *Blastocystis hominis* infection caused gastrointestinal symptoms such as diarrhea, abdominal pain and bloating. (Kuo *et al*, 2008). Blastocystosis found in immunocompromised and immunocompetent individuals (Rao *et al*, 2003). *Blastocystis* has different morphological forms, including vacuolar, granular, amoeboid, and cyst forms (Tan, 2008). The vegetative form changes from one state to another, the irregular spherical shape of the amoeboid form with its small size makes it identical to neutrophils and macrophages resulting in more difficulties in the identification of the parasite in stool specimen by microscopic examination (Zhang *et al*, 2003). Several laboratory techniques have been developed to diagnose and identify *Blastocystis* such as microscopy, culturing, serology and molecular approaches (Parkar *et al*, 2007; Stensvold *et al*, 2007). Few studies of intestinal parasites in Iraq including Kurdistan region have shown evidence of *B. hominis* in children and adults with different infection rates (Yakoob *et al*, 2010). The present study is designed to determine the infection rate of *B. hominis* in patients with a primary diagnosis of gastroenteritis and evaluation of different methods of identification.

MATERIALS AND METHODS

Specimens collection

The current study included 579 stool specimens collected from patients suffering gastrointestinal disorders such as abdominal pain and diarrhea who visited Azadi Teaching, Golan and Heavy Pediatric Hospitals in Duhok city, Kurdistan Region, North of Iraq. All specimens were transferred immediately to the parasitology laboratory of the College of Science, Duhok University for examination by different laboratory techniques.

Stool samples were divided into four portions, two of them were examined microscopically and the third portion was cultivated and the last one was stored at -20^{0}C for DNA extraction and molecular detection.

Direct microscopic examination

It was performed by two methods:

a) Wet mounts preparation was prepared by mixing a punch of stool with one drop of normal saline 1% and