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Blastocystis hominis from Foreign Workers in Hail, KSA, 2018

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Abstract: ***Blastocystis, a genetically intestinal parasite with controversial pathogenic potential, has increasingly been incriminated for diarrheal illness in immunocompromised individuals including colorectal cancer (CRC) patients. The aim of the study was to found the infection by Blastocystis in foreign worker in Hail, Saudi Arabia (KSA). Objective: The aim of this study was to determine the prevalence of Blastocystis hominis infection among foreign workers in Hail, KSA. Methods: This was a prospective study. Stool samples were collected from patients with gastrointestinal complaints and asymptomatic individuals were collected from 40 male workers in Hail. Each sample was examined by direct wet mount microscopic examination using both normal saline and Lugol's iodine preparation and concentration techniques using salt and formol–ether solutions. Results: Blastocystis hominis were found in 3 worker7.5 %. Conclusion: This study provides the first run-through information about Blastocystis hominis epidemiology in Hail city***

Keywords: Foreign workers, intestinal Protozoa, Blastocystis hominis Hail, KSA

1. Introduction

Blastocystis is an anaerobic unicellular eukaryote that can inhabit the intestinal tract of humans and many animals, it is the most commonly found non-fungal eukaryotic organism in human faecal samples [Stenzel DJ, Boreham PF (1996), Stensvold CR etal 2009, . Tan KS (2008)]. The distribution of the parasite is worldwide and the prevalence in human faecal samples ranges from 7 to 20% in developed countries to 30–60% in rural areas in developing countries [Rene BA etal 2009, . Li LH etal 2007, González-Moreno O etal 2011, Roberts T etal 2011, . Amin OM (2002)]. However, reports have been published of patients with gastrointestinal symptoms and Blastocystis as the only detected possible pathogen, and whose symptoms were relieved after successful treatment of Blastocystis [. Idris NS etal 2010, Dinleyici EC et al, Vogelberg C 2010]. Various gastrointestinal symptoms such as diarrhoea, abdominal pain, vomiting, constipation and flatulence have been linked to Blastocystis infection. As with other intestinal parasite infections, diarrhoeal episodes can alternate with normal defecation patterns or even constipation, conditions similar to chronic gastroin- testinal illnesses such as irritable bowel syndrome (IBS). In fact, an increased prevalence of Blastocystis has been found in IBS patients [Giacometti A etal 1999, Yakoob J etal 2004, Yakoob Jetal2010, Stensvold Cretal2009]. Moreover, symptomatic Blasto- cystis infection has been reported to occur more often in immunocompromised adult patients than in controls [Taşova Yetal2000] and has also been reported to be common in HIV-infected and immunocompromised children with gastrointestinal symptoms [. Idris NSetal2010,Tan Tc etal (2009)]. Blastocystis has a worldwide distribution with a marked prevalence in many countries. According to most epidemiological studies, nearly all countries of the world have been classified into well developed, with a moderate prevalence (10-15%), or under-developed, with a high prevalence (55–70%), attributed to the levels of hygiene and the presence or absence of contact with animals and/or contaminated water and food [Forsell et al.,2013, Tan , 2008]. The mode of infection has not been completely understood until now, but involves faecal-oral ingestion of a cyst, with animal handlers showing significantly high rates of infection [Stensvold et al., 2009].Blastocystis is an enteric protozoon found in the intestinal tract of humans and a wide range of animal hosts [Menounos et al., 2008]. Morphologically, Blastocystis is a highly polymorphic organism that takes several different forms during its life including vacuolar, cystic, amoeboid, granular, multivacuolar, and avacuolar forms [Stenzel & Boreham 1996, Yoshikawa et al., 2000]. The pathogenicity of these protozoa is still controversial and inconclusive with non-specific symptoms such as abdominal pain, nausea, vomiting, anorexia, flatulence, weight loss, and acute or chronic diarrhea.

2. Material and Methods

2.1 Sample collection

This study was carried out from December 2017 to April 2018 at Parasitology Lab. Faculty of Applied Medical science, Hail university. Approximately 50% of the collected samples were from patients with gastrointestinal complaints, including severe abdominal pain and diarrhoea, and the other 50% were from apparently healthy individuals

2.2 Direct microscopic examination using normal saline and iodine preparation

About 1–2 mg of stool was emulsified in 1–2 drops of normal saline (0.9%) or Lugol's iodine solution. A cover-slip was then placed and the slide was scanned under 10× and 40× objective lenses of a light microscope. . Iodine direct smear allows the examination of the characteristic features of the protozoa and the identification .

2.3 Formol–ether concentration

After completion of direct stool examination, one gram of each sample was emulsified in 10% formalin solution and formol–ether concentration technique was performed as described elsewhere in order to increase the chance of detecting parasites. Permanent stained smears were performed for intestinal coccidian parasites by the modified Ziehl-Neelsen technique according to Utzinger et al. (2010) and modified trichrome stain according to Ryan et al. (1993)

3. Results

Detection and identification of Blastocystis

In the present study, there were 3out 40 (7.5.%) were infected, whose ages ranged between 20 and35 years, they were mostly worker in Hail university .

Morphological forms of Blastocystis

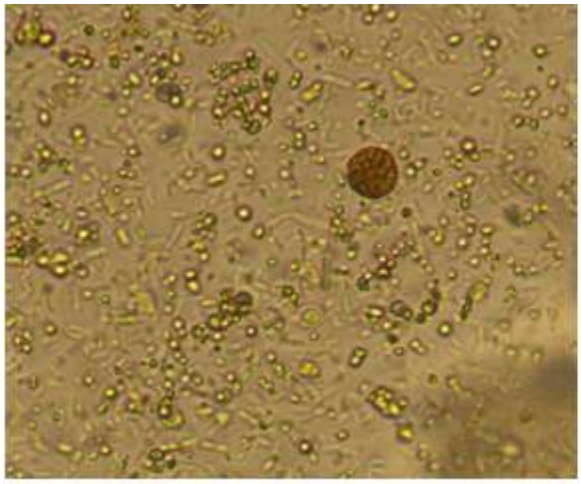

Figure 1: Vacular

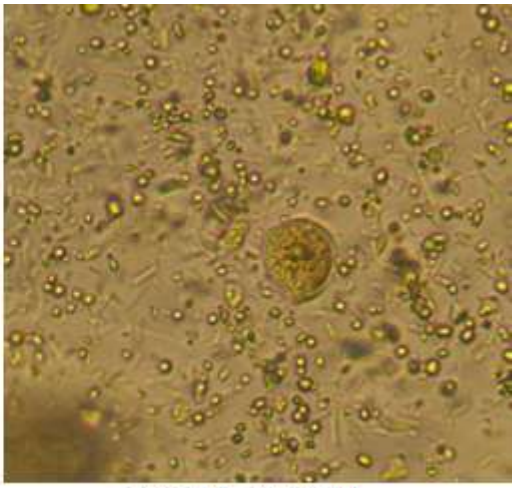

Figure 2: Amoeboid

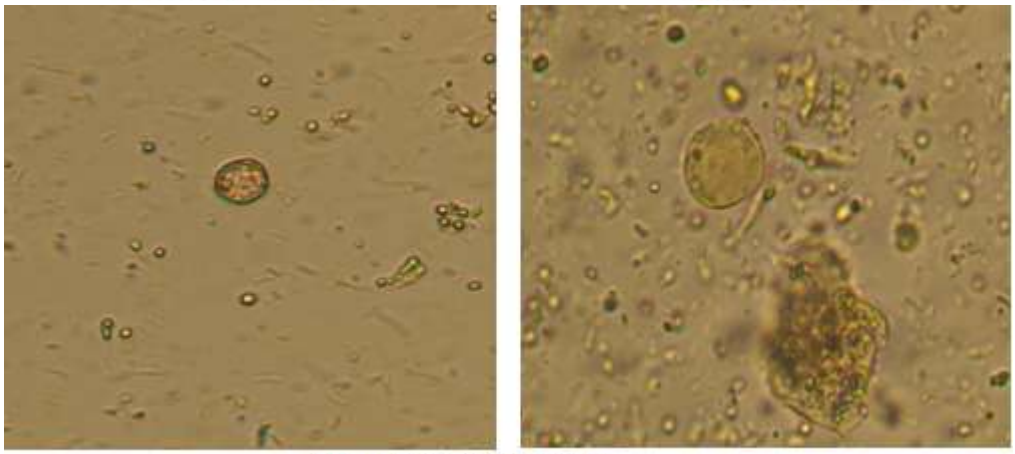

Figure 3: Granular (A & B)

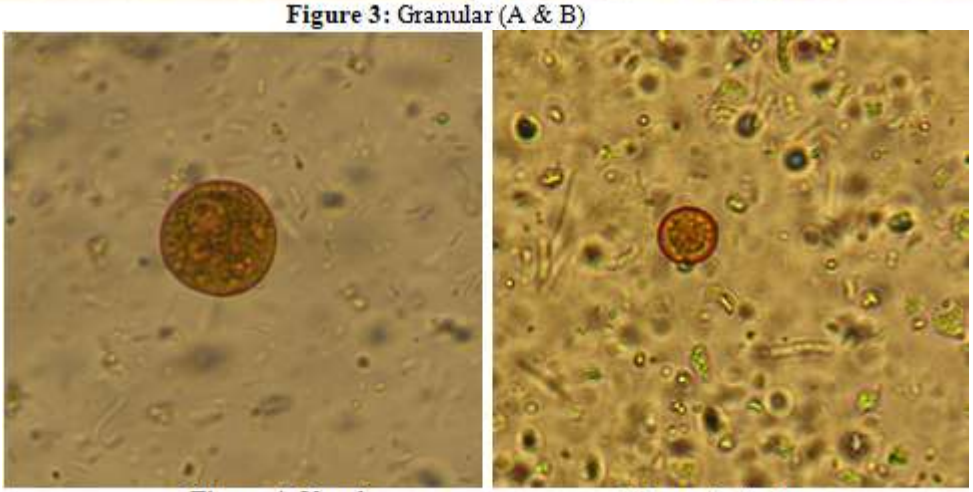

Figure 4: Vacular

Figure 5: Cystic

4. Discussion

Blastocystis is an unusual enteric protozoan parasite of humans and many animals [Stenzel, D. J., and P. F. Boreham. 1996, Tan, K. S. 2004]. It has a worldwide distribution and is often the most commonly isolated organism in parasitological [Aguiar et al., 2007, Aksoy et al., 2007, Baldo et al., 2004 , Basualdo et al., 2002–2003, O ¨zcakir et al., 2007, Rayan et al., 2007]. The parasite has been described since the early 1900s [Alexeieff, A. 1911 , Brumpt, E. 1912.] .but only in the last decade or so have there been significant advances in our understanding of Blastocystis biology. However, the pleomorphic nature of the parasite and the lack of standardization in techniques have led to confusion and, in some cases, misinterpretation of data.

Foreign workers, mainly Asians and Africans, come from areas where IPs are a major health problem. Consequently they may pose a potential public health (Norhayati et al.,2003).Parasitic infections that cause self-limited diarrhea in immunocompetent patients may induce profuse diarrhea in immunocompromised individuals, generally accompanied by loss of weight, anorexia, malabsorption syndrome and in some cases fever and abdominal pain [K/DOQI. (2002]. Blastocystis species [Noël et al.,2005, Stensvold et al., 2007], Cryptosporidium species, Entamoeba histolytica and Giardia lamblia are the most common protozoan parasites causing diarrhea in humans [Chieffi et al.,1998, Botero etal.,2003]. Among these protoozon parasites, Blastocystis species is often undiagnosed [Motta et al ., 2002].The distribution of Blastocystis subtypes in human faecal samples varies from country to country. However, ST3 has dominated as the most prevalent subtype in most studies although the figures differ depending on populations studied [Souppart L et al., 2009] .In KSA, Khan and Alkhalife (205) In a prospective study was carried out to see the prevalence of B. hominis in food handlers in Dammam, Eastern Province of Saudi Arabia. A total of 17073 food handlers were examined, 8.50% persons were positive for this organism in their stool. In 2.4% of the food handlers, B. hominis was the only parasite, whereas in 1.9% and 4.2% of the cases, this organism was found in association with pathogenic and nonpathogenic parasites respectively. We could find the correlation between the dietary habits and the presence of organism in stool. In19.9% of the positive food handlers in whom rice was the predominant food the organism was seen, when compared to 80.1% of the predominantly wheat eaters. But in the present study 7.5% of worker were positive. In Jeddah, Amin (1997) B. hominis was found in 20 positive cases (22.22%) with an overall rate of 8%.

5. Conclusion

The intestinal parasitic infections are still major public health problem in tropical and subtropical countries and KSA. Improving sanitation facilities, instilling health education and promoting ways of keeping personal hygiene can be good strategies to control the intestinal parasitic infections.

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