

Invasive Amoebiasis in a Child: A Case Report in Aceh Provincial Referral Hospital

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Abstract: Amoebiasis is thought to occur intraveller, immigrant from endemic areas and among men who have sex with men. Amoebiasis, caused by parasite *Entamoeba histolytica*, has a worldwide distribution, with an estimated 50 million people being infected. We present case of amoebic anal in a boy, 4 years-old with diagnosed Enterocolitis until a punch biopsy disclosed a diagnosis Ameboetic. According to microscopic result, the findings were typical characteristic of amoebiasis. This technique can detect the presence of dots in the mucosa that contain many trophozoites and perform biopsy specimens for histopathological examination to establish a definitive diagnosis.

1 INTRODUCTION

Amoebiasis is a common infectious disease in the human digestive tract caused by a parasite infection, *Entamoeba histolytica*. These parasites are generally apathogenic microorganisms that live in the large intestine of humans and some animals, but in certain numbers can become pathogens by forming colonies in the intestinal wall and penetrating the intestinal wall causing ulceration.

Amoebiasis has a worldwide distribution with an estimated 50 million people being infected. With 40.000-100.000 deaths reported annually, it is the second leading cause of death from parasitic diseases worldwide. High-risk areas include South Asia, Southeast Asia, the Middle East, and South America. According to (Shahrul Anuar *et al.*, 2012), amoebiasis prevalence in ethnic group in Malaysia, as a developing country, is 18.6%. North Eastern states of India has amoebiasis prevalence of 23.2% (Nath *et al.*, 2015). Indonesia as a fellow developing country has a high incidence of amoebiasis, which is 10-18% (Andayasari, Lelly, 2011). The death rate due to infectious diseases caused by amoebiasis was ranked second after malaria. Diarrhea prevalence is 13% higher in rural areas compared to urban areas (Balitbang Kesehatan Kemenkes RI, 2007).

In this report, the reviewed case is a 4-year-old child diagnosed with enterocolitis, yet due to further examination, it was found that the cause was amoebiasis, infection of *Entamoeba histolytica*.

2 CASE REPORT

A boy, 4 years old, with fever, right upper quadrant pain and has been diagnosed with enterocolitis. He got medical treatment but the clinical manifestation not better and he referred to pediatric surgery. In physical examination there was a fistula near anal and biopsy taken to confirm the diagnosis.

The macroscopic result, a gray white soft tissue fragmented volume $\pm 0,5$ cc, was received. Formalin fixed paraffin embedded and Hematoxylin and Eosin stained.

According to microscopic result, amoeba burrow in lamina propria and cause tissue necrosis with inflammation with scattered neutrophils. Ulceration and the trophozoites of *E. histolytica* are resemble macrophages sections revealed areas underlying granulation tissue and focal collections of histiocytes. Other findings were the subepithelium clustered of spherical organisms showing a single nucleus with prominent karyosome and cytoplasm containing ingested red blood cells.

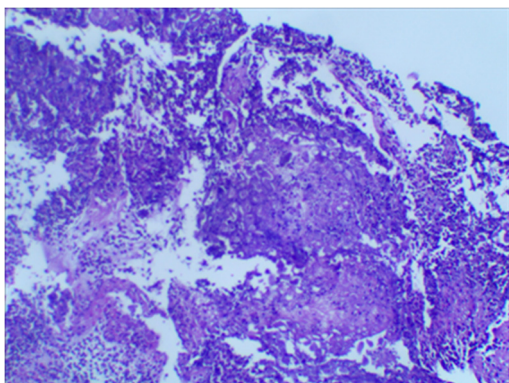


Figure 1. Tissue necrosis with inflammation with scattered neutrophils, ulceration and the trophozoites of *Entamoeba histolytica* are resemble macrophages sections revealed areas underlying granulation tissue and focal collections of histiocytes (100x magnification).

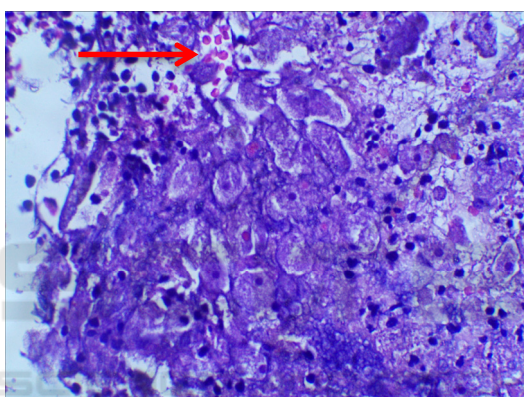


Figure 2. Single nucleus with prominent karyosome containing ingested red blood cells (400x magnification).

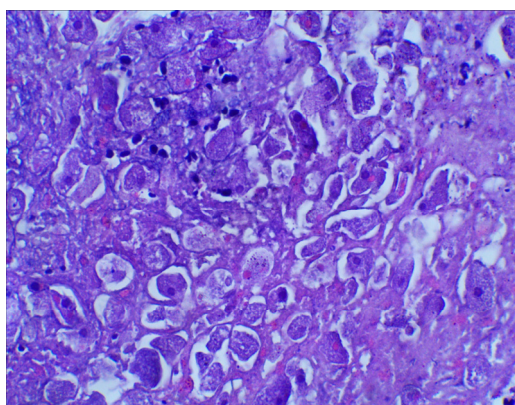


Figure 3. Single nucleus with cytoplasm containing ingested red blood cells (400x magnification).

3 DISCUSSION

Amoebiasis is an infection caused by protozoa *Entamoeba histolytica*. Predominant spectrum of the disease constitutes amoebic colitis and liver abscess. This disease is strongly associated with poor personal hygiene and environmental sanitation. The socio-economic level of the community is one of the factors that influence the sanitary conditions. Research conducted by Shahrul Anuar et al. (2012) in developing country, Malaysia, also stated that housing conditions is a risk factor because it indicates environmental sanitation in the area. The risk of children infected by *E. Histolytica* will be higher if the parents are carriers. This is in line with the high prevalence of amoebiasis in children under 15 years old (Shahrul Anuar et al., 2012). *E. histolytica* is second only to malaria as a protozoal cause of death.

Worldwide the prevalence of amoebic infections is estimated at 40-50 million with 40,000-110,000 deaths occurring annually. Most parts of Asia and Africa are endemic for amoebic infection. In developed countries infection occurs primarily among travellers and immigrants to endemic regions, homosexual males, immunosuppressed and institutionalized individuals. Transmission is predominantly by oro-faecal route (Dhingra et al., 2007).

Some cases of *Entamoeba histolytica* infection is asymptomatic, but there are also some cases that show symptoms such as diarrhoea, dysentery, fulminant colitis to extra intestinal amoebiasis which can infect other organs such as liver, cardiac, lung, cerebral, kidneys and other organs. According to Pritt & Clark (2008), the life cycle of *Entamoeba histolytica* begins with the entry of active cysts that originate from feces into the human intestine, either through contaminated food or drink or oral sexual behaviour. In the large intestine, the cyst develops and multiplies itself asexually into an active trophozoite form and enters the mucosa of the large intestine. Some active trophozoites are out with feces and can survive in humid conditions for several weeks or months. Active cysts that are outside the human body are susceptible to contamination with food, drinks or even other humans so that the chain of infection continues to repeat itself. Trophozoites that are still in the intestinal mucosa are carried along with the blood circulation system to the organs outside the large intestine. This is what causes extraintestinal amoebiasis. Extraintestinal amoebiasis often occurs

in the liver causing damage to the liver because liver parenchymal cells are eaten by active trophozoites.

Mostly, people who infected with *E. histolytica* is asymptomatic, the disease may occur within days, months, or years after the infection, but the condition will be worsen and can lead to colitis, swelling and resembling a tumor in the large intestine. Symptoms caused by *E. histolytica* infection will be more progressive, begin from abdominal pain, diarrhoea, bloody diarrhoea to colitis. *E. histolytica* infection also occurs outside the large intestine. The most common infected organ is liver. Parasites are carried along with the bloodstream. This causes pain in the right upper quadrant pain and fever.

E. histolytica transmitted primarily through ingestion of food or water contaminated with faecal cysts. Transmission through faecal-oral can be directly by person to person or indirectly by consuming food or drink that contaminated by faecal. *Entamoeba histolytica* can also communicate through contamination of food or drinks through vectors such as flies, cockroaches, and rodents. Beside faecal-oral transmission, *Entamoeba histolytica* has been recently recognised as an emerging sexually transmissible pathogen in homosexual (Escolà-Vergé *et al.*, 2017). It often found in the stool of homosexual men (Shelton). Sexual transmission has also been reported, particularly via contact with commercial sex workers or in men who have sex with men (Gilroy *et al.*, 2018). This caused sporadic outbreaks in countries where it is not endemic (Escolà-Vergé *et al.*, 2017). According to Shahrul Anuar *et al.*, (2012) the possibility of family members being infected by *Entamoeba histolytica* is higher if the family members themselves are the one who carried the cyst and the transmission occurs between the family members, because the cyst is more likely to become infective.

Diagnosis can be done in several ways, including faecal examination, culture, biopsy and sigmoidoscopy, radiology and serology (Maryatun, 2008). Diagnosis with faecal examination is done to find eggs, larvae and protozoa cysts using concentration techniques. Culture is also one of the techniques for diagnosing amoebiasis by making a layer of liquid that is located on top of the basic nutrient in a partial anaerobic state. Another technique to diagnose amoebiasis is biopsy. This technique can detect the presence of dots in the mucosa that contain many trophozoites and perform biopsy specimens for histopathological examination to establish a definitive diagnosis. Radiology

techniques performed with the use of barium. However, this technique cannot be used to examine eggs and parasites. Another technique is serology, which is primarily aimed for extraintestinal amoebiasis diagnosis when stool examination shows negative results.

Gross description discrete ulcers with normal intervening mucosa may show areas of colitis or inflammatory polyps. Histopathological examination result of the fistulous tract and the curetted granulation tissue shown the presence of multiple trophozoites of *E. histolytica* exhibit erythrophagocytosis in the background of mixed inflammatory infiltrate.

Necrotic material admixed with mucin, proteinaceous exudate and blood clot lining ulcers, significant surface epithelial changes such as shortening and tufting adjacent to sites of ulceration. Mild chronic inflammation extending into the deep mucosa and mild architectural alteration were features of amoebiasis. Trophozoite forms of amoeba were seen in the necrotic material lining sites of ulceration or lying separately, as well as over intact mucosa.

Necrotic material lining ulcers was less common in inflammatory bowel disease. The chronic inflammation crypt abscess formation and architectural alteration were more severe (Singh *et al.*, 2015). Typically, the parasites are surrounded by an artifactually clear space. They are round or ovoid, measure 6-40 nm in diameter, and contain abundant cytoplasm with a distinctive vacuolated appearance and relatively small. They also perfectly round nuclei with prominent nuclear borders and central karyosome. Erythrocytosis by trophozoites is usually present (Rosai, 2004). The cytoplasm is vacuolated which leads to confusion with macrophages (Dhingra *et al.*, 2007). The presence of trophozoites containing red blood cells is indicative of tissue invasion Adequate sampling and step sections are very important to get true diagnosis.

4 CONCLUSION

A boy, 4 years old, with fever, right upper quadrant pain confined as a case of amoebiasis. Diagnosis can be done in several ways, including biopsy. According to microscopic result, amoeba burrow in lamina propria and cause tissue necrosis with inflammation with scattered neutrophils. Ulceration and the trophozoites of *E. histolytica* are resemble macrophages sections revealed areas underlying granulation tissue and focal collections of

histiocytes. Other findings were the subepithelium clustered of spherical organisms showing a single nucleus with prominent karyosome and cytoplasm containing ingested red blood cells. This technique can detect the presence of dots in the mucosa that contain many trophozoites and perform biopsy specimens for histopathological examination to establish a definitive diagnosis.

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REFERENCES

- Andayasari, Lelly, A., 2011. Epidemiological studies of gastrointestinal infections caused by amoeba in Indonesia. *Media Litbang Kesehatan*, 21(1), pp. 1–9.
- Balitbang Kesehatan Kemenkes RI, 2007. Basic health research 2007, *Laporan Nasional 2007*.
- Dhingra, K. *et al.*, 2007. Amoebic cervicitis mimicking cervical carcinoma: a rare presentation. *Iranian Journal Of Pathology* 3(1).
- Escola-Vergé, L. *et al.*, 2017. Outbreak of intestinal amoebiasis among men who have sex with men, Barcelona (Spain), October 2016 and January 2017. *Eurosurveillance*, 22(30), pp. 1–4.
- Gilroy, N. *et al.*, 2018. A 12-year retrospective study of invasive amoebiasis in western Sydney: evidence of local acquisition. *Tropical Medicine and Infectious Disease*, 3(3), p. 73.
- Maryatun, 2008. *Entamoeba histolytica*: parasit causes intestinal and liver amoebiasis. *Kedokteran Syiah Kuala*, 8(1), pp. 39–46.
- Nath, J. *et al.*, 2015. Molecular epidemiology of amoebiasis: a cross-sectional study among north east Indian population. *PLoS Neglected Tropical Diseases*, 9(12), pp. 1–19.
- Pritt, Bobbi S. and Clark, C. G., 2008. Amebiasis. *Mayo Clinic Proceedings*, 83(10), pp. 1154–1160.
- Rosai, J., 2004. *Rosai and Ackerman's surgical pathology*. Mosby, USA, 9th edition.
- Shahrul Anuar, T. *et al.*, 2012. Prevalence and risk factors associated with *Entamoeba histolytica/dispar/moshkovskii* infection among three original ethnic groups in Malaysia. *PLoS ONE*, 7(10).
- Singh, R. *et al.*, 2015. The differentiation of amoebic colitis from inflammatory bowel disease on endoscopic mucosal biopsies. *Indian Journal of Pathology and Microbiology*, 58(4), pp. 427–432.