Am. J. Trop. Med. Hyg., 97(1), 2017, pp. 245–247
doi:10.4269/ajtmh.17-0004

Case Report: Endemic Amebiasis in Australia: Implications for Residents, Travelers, and Clinicians

Simon Smith,[1,2]* Gael E. Phillips,[3] William J. H. McBride,[2] and Josh Hanson[1,4,5]

[1]*Department of Medicine, Cairns Hospital, Cairns, Australia;* [2]*James Cook University, Cairns, Australia;* [3]*Pathology Queensland, Health Support Queensland, Department of Health, Queensland Government, Australia;* [4]*Menzies School of Health Research, Darwin, Australia;* [5]*The Kirby Institute, Sydney, Australia*

Abstract. *Entamoeba histolytica* is considered endemic in Australia; however, cases are rare, occurring almost exclusively in high-risk individuals. We describe a series of locally acquired, complicated cases in low-risk individuals from Far North Queensland in whom the diagnosis was delayed. Amebiasis may pose a greater local threat than is currently recognized.

INTRODUCTION

Amebiasis is uncommon in Australia.[1,2] The disease is seen almost exclusively in returning travelers, men who have sex with men,[3,4] immigrants, and Indigenous Australians.[5,6] Australian clinicians may not consider the diagnosis in the absence of these risk factors. We report five cases of complicated amebiasis acquired in Far North Queensland, Australia; four of these cases occurred in patients without traditional risk factors (Table 1).

CASES

Case 1. A 57-year-old Caucasian, heterosexual man living on the Cape York Peninsula, presented with a 4-week history of malaise, weight loss, and abdominal pain. He worked as a builder and had previously worked at a sewage treatment facility. He had traveled to Indonesia 3 years previously. On presentation, he was afebrile but had right upper quadrant tenderness on abdominal examination. Computerized tomography (CT) revealed a large mass in the right lobe of the liver (Figure 1A). The abscess was drained under radiological guidance; the aspirated material appeared purulent but cultures were sterile. An indirect hemagglutination (IHA) assay for *Entamoeba histolytica* had a positive titer of 1: 16,384. He was treated with oral metronidazole and paromomycin and recovered. One year before this presentation, he had been admitted to hospital with a small bowel obstruction that was managed conservatively. A colonoscopy at that time had demonstrated erythematous, ulcerated mucosa in the cecum (Figure 2A). A biopsy showed chronic, active inflammation, but amebic organisms had not been identified.

Case 2. A 64-year-old Caucasian, heterosexual, male restaurateur living on the Cape York Peninsula presented with a 3-day history of right iliac fossa pain. He had traveled to New Zealand 1 year previously and to North America 6 years earlier. A CT scan revealed extensive inflammatory stranding around the appendix and two small collections. Laparoscopically, a cecal mass was identified, which was thought to be a neoplasm and so a right hemicolectomy was performed. Histologically, the cecal mucosa was ulcerated with an abscess extending into the serosa. There was chronic inflammation with prominent eosinophils (Figure 2B) and numerous amebic organisms with ingested erythrocytes (Figure 2C). An ameboma was diagnosed and the patient received oral metronidazole, followed by oral paromomycin. He recovered well.

Case 3. A 25-year-old Aboriginal, heterosexual man from Cairns presented with a 1-day history of right iliac fossa pain. He was unemployed and had never traveled overseas. He was afebrile, but had a tender abdomen, and a CT scan revealed a large inflammatory mass (Figure 1B). The provisional diagnosis was acute appendicitis with a periappendiceal abscess. Broad-spectrum antibiotics were commenced. On day 4, an attempted ultrasound-guided aspiration obtained no fluid, whereas a core biopsy revealed only chronic inflammation. The patient was discharged on day 5 on oral amoxicillin/clavulanate and outpatient follow-up was organized. On day 6, he represented with continuing pain; a second biopsy again revealed only chronic inflammatory changes. On day 8, he had a laparotomy and right hemicolectomy. The appendix was normal but there was a mass within the colonic wall with numerous amebae present on histological examination. The patient was treated with metronidazole and paromomycin and recovered well.

Case 4. A previously well 24-year-old Caucasian, female, child-care worker presented with right upper quadrant pain in the third trimester of her first pregnancy. She had moved to Far North Queensland 2 weeks previously after living in the Northern Territory of Australia for 6 months. Her only overseas travel had been to the United Kingdom 8 years earlier. She was febrile and abdominal examination revealed tenderness in the right upper quadrant. Ultrasonography revealed a large mass in the right lobe of the liver which was confirmed by a CT scan. A pyogenic liver abscess was suspected and empirical intravenous antibiotics were commenced. An aspirate obtained percutaneously revealed brown, purulent material; however, cultures were negative. *Entamoeba histolytica* IHA assay was positive with a titer of 1: 4,096. She was treated with metronidazole. Stool microscopy revealed no parasites on three occasions; diloxanide was administered postpartum.

Case 5. A 30-year-old male, married, Caucasian, house painter presented with 1 week of fever and right upper

* Address correspondence to Simon Smith, Department of Medicine, Cairns Hospital, The Esplanade, Cairns, Australia. E-mail: simon.smith2@health.qld.gov.au.

TABLE 1
Summary of amebiasis cases in Far North Queensland

Case	Age (years)/Sex	Prior travel to a high prevalence country	Occupation	Clinical manifestation	Method of diagnosis	Treatment
1	57/Male	Yes	Builder	Liver abscess	Serological	Drainage, metronidazole/paromomycin
2	64/Male	No	Restaurateur	Intestinal ameboma	Histological	Excision, metronidazole/paromomycin
3	25/Male	No	Unemployed	Intestinal ameboma	Histological	Excision, metronidazole/paromomycin
4	24/Female	No	Child care worker	Liver abscess	Serological	Drainage, metronidazole/diloxanide
5	30/Male	No	House painter	Liver abscess	Serological	Drainage, metronidazole/diloxanide

quadrant pain. He had never traveled overseas; however, his wife (case 4) had been diagnosed with amebiasis 15 months previously. At the time of his wife's diagnosis, he had not been screened and did not receive empirical therapy. Ultrasonography revealed a large collection in the right lobe of the liver. Empirical intravenous ampicillin, gentamicin, and metronidazole were commenced and a pigtail drain inserted. Cultures were sterile, but *E. histolytica* IHA assay was positive with a titer of 1:4,096. Stool microscopy was negative for *E. histolytica.* He was prescribed metronidazole, followed by diloxanide. He recovered well and a CT scan performed 3 months subsequently revealed resolution of the abscess. Ten years later, he represented with fever and right upper quadrant pain. A CT scan showed a hepatic abscess and inflammatory changes around the cecum. The *E. histolytica* IHA of 1:256 was thought to represent past infection. He received intravenous ticarcillin/clavulanate and metronidazole and then prolonged oral amoxicillin/clavulanate. A subsequent ultrasound scan showed almost complete resolution of the abscess. Three years later, 13 years after his initial presentation, he represented with a large liver abscess. His *E. histolytica* IHA assay titer was now 1:2,048 and a stool polymerase chain reaction (PCR) test for *E. histolytica* was positive. He was treated with metronidazole and paromomycin and recovered well.

DISCUSSION

These five cases provide further evidence of endemic amebiasis in northern Australia and indicate local transmission in Far North Queensland. Amebiasis is reported in Australia, but cases are almost universally in patients who have identifiable risk factors.[5] This case series from the tropical north of Australia includes individuals without usual risk factors who could only have acquired the infection locally.

Case 1 may have acquired the disease through occupational exposure or travel to Indonesia, however this travel was 2 years before the onset of symptoms. The majority of amebic liver abscesses present within 6 months of exposure,[7] although prolonged latency periods have been described.[8,9] Case 4 may have resulted from occupational exposure and she may have then passed the infection to her husband (Case 5), although it is possible that both were exposed to a common source. However, cases 2 and 3 had never traveled overseas and neither had occupational or other behavioral risk factors, supporting the hypothesis that *E. histolytica* is endemic in Far North Queensland. Case 5 is notable as recurrent amebic liver abscesses are uncommon; it is possible the representation was the result of poor adherence to prescribed eradication therapy or reexposure to *E. histolytica*.

The diagnosis of *E. histolytica* requires an appropriate index of suspicion and this case series demonstrates that a delay in considering the diagnosis can lead to unnecessary surgery and disease relapse. Knowing that amebiasis is endemic in this area will encourage appropriate investigations; serology is useful in diagnosing amebiasis in a nonendemic setting; however, in endemic areas, antigen detection or PCR should be performed. A recognition that *E. histolytica* may cause infection in even low-risk individuals in northern Australia may expedite diagnostic testing, facilitating prompt, definitive therapy. This would be expected to improve patient outcomes by preventing unnecessary surgical procedures and reducing the risk of adverse sequelae from exposure to long courses of ineffective antimicrobial therapy.

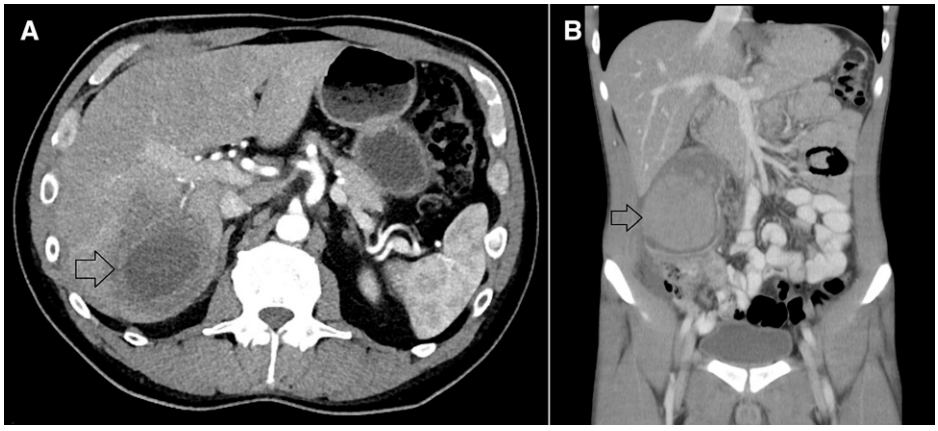

FIGURE 1. (**A**) Axial computerized tomography (CT) images show a large amebic liver abscess. (**B**) Coronal CT images reveal a large inflammatory mass adjacent to the appendix.

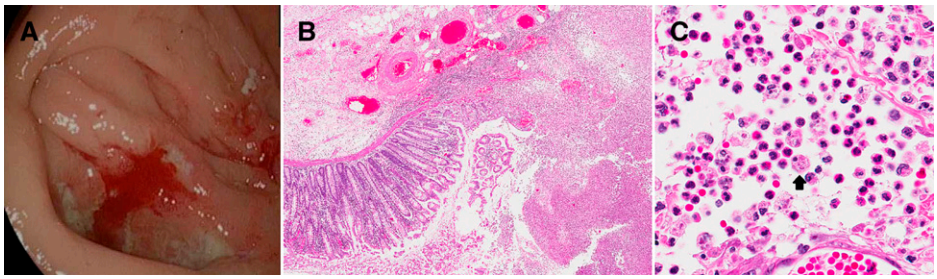

FIGURE 2. (**A**) Images taken at colonoscopy showing a large cecal ulcer. (**B**) Low magnification image: hematoxylin and eosin–stained sections reveal complete destruction of the colonic mucosa within the area of ulceration. (**C**) High magnification image: multiple pathogenic amebae are present in the inflammatory exudate. These have small nuclei and have phagocytosed red blood cells in their cytoplasm (arrow). This figure appears in color at www.ajtmh.org.

Although the five cases in this series represented complicated disease, the majority of patients infected with *E. histolytica* are asymptomatic or only have colitis.[10] This suggests that the disease may be even more common locally than this series suggests; the apparently low incidence simply reflecting the fact that the diagnosis is rarely sought. The prevalence of the infection may also be masked by the frequent local practice of prescribing empirical metronidazole therapy for patients with chronic intestinal symptoms in an effort to target more commonly suspected organisms, such as *Giardia lamblia*. Our series suggests that amebiasis may pose a greater local threat than is currently recognized.

Received January 3, 2017. Accepted for publication March 8, 2017.

Published online April 24, 2017.

Acknowledgment: We thank Merwe Hartslief, Heng-chin Chiam, and Enzo Binotto for their care of these patients.

Authors' addresses: Simon Smith, Department of Medicine, Cairns Hospital, Cairns, Australia, and College of Medicine and Dentistry, James Cook University Cairns Campus, Cairns, Australia, E-mail: simon.smith2@health.qld.gov.au. Gael E. Phillips, Cairns Hospital, Pathology Queensland, Cairns, Australia, E-mail: gael.phillips@health.qld.gov.au. William J. H. McBride, College of Medicine and Dentistry, James Cook University Cairns Campus, Cairns, Australia, E-mail: john.mcbride@theiddoctor.com. Josh Hanson, Department of Medicine, Cairns Hospital, Cairns, Australia, Department of Global Health, Menzies School of Health Research, Casuarina, Australia, and Director's Unit, The Kirby Institute, Sydney, Australia, E-mail: jhanson@kirby.unsw.edu.au.

REFERENCES

1. McCarthy JS, Peacock D, Trown KP, Bade P, Petri WA Jr, Currie BJ, 2002. Endemic invasive amebiasis in northern Australia. *Med J Aust 177:* 570.
2. Zurauskas JP, McBride WJ, 2001. Case of amoebic liver abscess: prolonged latency or acquired in Australia? *Intern Med J 31:* 565–566.
3. Stark DJ, Fotedar R, Ellis JT, Harkness JL, 2006. Locally acquired infection with *Entamoeba histolytica* in men who have sex with men in Australia. *Med J Aust 185:* 417.
4. Fotedar R, Stark D, Beebe N, Marriott D, Ellis J, Harkness J, 2007. PCR detection of *Entamoeba histolytica*, *Entamoeba dispar*, and *Entamoeba moshkovskii* in stool samples from Sydney, Australia. *J Clin Microbiol 45:* 1035–1037.
5. van Hal SJ, Stark DJ, Fotedar R, Marriott D, Ellis JT, Harkness JL, 2007. Amoebiasis: current status in Australia. *Med J Aust 186:* 412–416.
6. Zardawi IM, Kattampallil JS, Rode JW, 2003. Amoebic appendicitis. *Med J Aust 178:* 523–524.
7. Cordel H, Prendki V, Madec Y, Houze S, Paris L, Bourée P, Caumes E, Matheron S, Bouchaud OALA Study Group, 2013. Imported amoebic liver abscess in France. *PLoS Negl Trop Dis 7:* e2333.
8. Vallois D, Epelboin L, Touafek F, Magne D, Thellier M, Bricaire F, Caumes EALA-PCR Working Group, 2012. Amebic liver abscess diagnosed by polymerase chain reaction in 14 returning travelers. *Am J Trop Med Hyg 87:* 1041–1045.
9. Shandera WX, Bollam P, Hashmey RH, Athey PA, Greenberg SB, White AC Jr, 1998. Hepatic amebiasis among patients in a public teaching hospital. *South Med J 91:* 829–837.
10. Stanley SL Jr, 2003. Amoebiasis. *Lancet 361:* 1025–1034.