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CASE REPORT

Case Report: A case of dipylidiasis in a first-trimester pregnant woman attending a routine antenatal clinic at Elmina health centre, Ghana [version 1; peer review: 2 approved with reservations]

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Abstract

Dipylidiasis is a zoonotic parasitosis caused by a canine and feline tapeworm, *Dipylidium caninum* which rarely infects humans, usually infants and young children. The accidental ingestion of cysticercoid infected flea *Ctenocephalides felis* is the cause of this cestode infection in humans. Here we report the first and a rare case of adult dipylidiasis in a first-trimester pregnant woman in Ghana. She reported at the health facility for a routine antenatal check-up with apparently no symptoms or signs of the infection at the time of the visit. Her routine stool examination revealed a single egg packet of *Dipylidium caninum* and was treated with a single dose of praziquantel. It is important for pathologists and laboratory technicians to be aware of the emergence of human dipylidiasis in Ghana. A conscious effort should be aimed at the creation of awareness among pet owners and the general population of the public health importance of zoonotic parasites that infect pets and domestic animals.

Keywords

Human dipylidiasis, canine & feline tapeworm, pregnancy, egg packets, praziquantel, Elmina, Ghana

Open Peer Review

Approval Status ? ?

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1. **Alessandro Crimi** , African Institute for Mathematical Sciences, Western Cape, South Africa
2. **Matthew T Brewer** , Iowa State University, Iowa, USA

Any reports and responses or comments on the article can be found at the end of the article.

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Abbreviations

HB: Haemoglobin concentration; MCH: Mean corpuscular haemoglobin; MCHC: Mean corpuscular haemoglobin concentration; MCV: Mean corpuscular volume; WBC: White blood cell count.

Introduction

Human dipylidiasis is a rare zoonotic parasitosis caused by cosmopolitan dog tapeworm *Dipylidium caninum* (flea tapeworm or double-pore tapeworm)¹. Previous reports of this accidental cestode infection had been from Asia, South American, Europe and North American countries^{2,3}. At present, only 349 human cases of dipylidiasis have been reported worldwide after its first identification and description in 1758⁴. Accidental infection of cysticercoid of *Dipylidium caninum* from ingestion of infected dog or cat fleas is the cause of this infection⁵. Most of the cases of this infection has been reported in children below five years likely kissed or licked by infected pets^{6,7}. Rarely has an adult infection of dipylidiasis been reported in literature^{8,9}.

The adult *Dipylidium caninum* of the order Cyclophyllidea and subclass Eucestoda produces gravid proglottids in the small intestine of dogs and cats which are the definitive hosts¹⁰. The proglottids rupture and expel packets of eggs after it has detached and migrated to the perianal region or is passed with faeces¹¹. The larval stage of the intermediate host; *Ctenocephalides felis*, *Ctenocephalides canis*, *Pulex irritans* and *Trichodectes canis* ingest the hexacanth embryonic eggs of *Dipylidium caninum* which then develops into infective cysticercoid in the adult stage of the flea¹². Cats and dogs which are definitive hosts or humans the accidental host become infected by ingesting a flea with cysticercoid^{13,14}.

Human dipylidiasis is usually asymptomatic with occasional non-specific symptoms such as diarrhoea, nocturnal pruritus, anorexia, pruritus ani, urticaria, weight loss, epigastric pain, constipation and loss of appetite^{2,15}. Heavily infected cats which are definitive host sometimes exhibit severe symptoms such as intestinal obstruction, epileptiform seizures and convulsion^{16,17}. However, such severe forms of dipylidiasis have not been reported in human cases.

A typical clinical diagnosis of *Dipylidium caninum* is by the identification of characteristic proglottids or egg packets and the cucumber seed-like body segments of the adult worm in stool^{18,19}. However, egg packets rapidly disintegrated in the stools and can occasionally be found in fresh samples^{11,19}. However, the uncommon nature, poor description by an immediate observer and little or no experience by laboratory professionals with *Dipylidium caninum* may render it undiagnosed²⁰.

Although human dipylidiasis has occasionally been reported in young children it has rarely been reported in adults, with exception of a 26-year-old kidney transplanted patient and a 57-year old woman^{8,9,21}. Until now, there has not been any case of dipylidiasis associated with pregnancy reported in literature. In this article, we present the first case of dipylidiasis in a 27-year-old woman in her first trimester of pregnancy attending a routine antenatal care at Elmina healthcare centre, Ghana.

Case presentation

A 27-year-old first-trimester pregnant woman, a petty trader and an Akan from Komenda in Komenda-Edina-Eguafo-Abrem district in Central region of Ghana who visited the antenatal clinic in April 2013 for a routine antenatal check-up at Elimina healthcare centre in the Central Region of Ghana with no symptoms or signs of infection or abnormalities. She had experienced intermittent vomiting, slight headache and bloated stomach in the previous three weeks before visiting the antenatal clinic. Physical examination revealed she had a normal pregnancy with no clinical manifestation or any signs of threat to her health. A routine laboratory examination of full blood count (FBC), stool, urine, blood film for malaria parasites together with a serological test for syphilis and HIV were requested. She had no history of close contact with cats and dogs.

Laboratory results

Her laboratory test results were as follows (normal ranges are indicated in parentheses): HB, 10.2g/dL (10–14 g/dL); WBC, $5.3 \times 10^9/L$ ($2.2\text{--}8 \times 10^9/L$); MCV, 80.1fL (78–90 fL); MCH, 24.0pg (21–32 pg); MCHC, 31.7g/dL (30–34 g/dL); PLT, $247 \times 10^9/L$ ($150\text{--}450 \times 10^9/L$); neutrophils, 58.9% (40–60%); lymphocytes, 26.7% (20–40%); monocytes, 1.2% (2–8%); basophils, 0.8% (0.5–1%) and eosinophils of 12.4% (1–4%). Her urine, blood film analysis and the serological tests were all normal. Microscopic examination of direct stool samples revealed a single egg with packets of *Dipylidium caninum* which measured about $45 \times 90 \mu\text{m}$ without any white blood cells in the stool sample. She was diagnosed with dipylidiasis and treated with a single dose of praziquantel orally (600 mg). The patient was followed until successful delivery without any complications.

Discussion

There are sporadic reports of human dipylidiasis in recent times, although humans are not the natural host^{22,23}. The majority of these reports have been in infants and young children making them a high-risk group for *Dipylidium caninum* infection^{24–28}. In this report, we present the first and rare case of dipylidiasis in a pregnant woman in her first trimester with no clinical symptoms at the time of antenatal examination in Elmina, Ghana. Despite the fact that the patient does not own a cat or dog as a pet, and had no history of contact with these animals which are the sources of accidental infection, she however stays in an area where dogs and cats stray freely without being confined by their owners.

Dipylidium caninum is a worldwide neglected helminth infection of dogs and cats, its natural hosts^{23,29}. A study conducted in the Greater Accra region of Ghana reported a high prevalence of *Dipylidium caninum* as one of three zoonotic helminths of dogs that are kept for hunting and security purposes without confinement³⁰. The free-range breeding of dogs and cats in Ghana without any control creates room for the contamination of the vicinity with their stool. These animals are usually not subjected to veterinary check-up and treatment; coupled with the fact that they feed in unhygienic places results in them posing a great environmental challenge further facilitating the transmission of infective fleas³¹. This rare case of dipylidiasis in pregnancy is a typical case of environmental transmission of *Dipylidium*

caninum and unconscious ingestion of an infected flea. Despite the public health risk posed by *Dipylidium caninum*, many pet owners are ignorant to this parasitic infection^{30,32}. Accurate diagnosis of dipylidiasis in humans is challenged by several factors which include the experience of the pathologist or laboratory technologist with *Dipylidium caninum* and the asymptomatic nature of the infection leading to many undiagnosed carriers. Further challenges arise due to the similar presentation of *Dipylidium caninum* with *Enterobius vermicularis*, and the lack of clear differential symptoms for *Dipylidium caninum*^{32,33}. Clinical diagnosis is based on detection of proglottids or occasionally egg packets which usually rapidly disintegrate in stool^{34,35}. Therefore, multiple stool examinations are sometimes required to detect proglottids or eggs in stool specimen^{35,36}. Characteristically, *Dipylidium caninum* egg packets contain double genital pores which can be seen in unstained samples under a light microscope³⁷. The adult worm possesses an ovigerous capsulated uterus with simple genitalia, armed rostellum with unarmed suckers and two-pore gravid proglottids^{6,37}. These characteristics are important for differentiating *Dipylidium caninum* from other Cestodes such as *Taenia solium*, *T. saginata* and *Hymenolepis nana*³⁸.

Current anti-helminthic drugs such as praziquantel or niclosamide are highly efficient in the complete elimination of *Dipylidium caninum* in humans, dogs or cats^{37,38}. Other treatment options for *Dipylidium caninum* include albendazole, mebendazole, thiabendazole, paromomycin, pyrantel pamoate and paromomycin^{19,39}.

A conscious effort should be aimed at the creation of awareness among pet owners and the general population of the

public health importance of zoonotic parasites that infect pets and domestic animals.

Conclusion

We report the first and a rare human dipylidiasis in pregnancy from Ghana. To our understanding, this is the first case of human and adult infection of *Dipylidium caninum* from Ghana which makes it a case of public health concern. Therefore, the high prevalence of *Dipylidium caninum* infection among unconfined pets in communities inhabited by quite a number of young children in Ghana should be a public health concern.

Consent

A written consent was obtained from the patient for publication of this case report and its accompanying images.

Data availability

Underlying data

All data underlying the results are available as part of the article and no additional source data are required.

Grant information

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Acknowledgement

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References

- Mani I, Maguire JH: **Small animal zoonoses and immunocompromised pet owners.** *Top Companion Anim Med.* 2009; **24**(4): 164–74.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Craig P, Ito A: **Intestinal cestodes.** *Curr Opin Infect Dis.* 2007; **20**(5): 524–32.
[PubMed Abstract](#) | [Publisher Full Text](#)
- McCall JW, Genchi C, Kramer LH, et al.: **Heartworm disease in animals and humans.** *Adv Parasitol.* 2008; **66**: 193–285.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Dantas-Torres F: **Canine vector-borne diseases in Brazil.** *Parasit Vectors.* 2008; **1**(1): 25.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Molina CP, Ogburn J, Adegboyega P: **Infection by *Dipylidium caninum* in an infant.** *Arch Pathol Lab Med.* 2003; **127**(3): e157–9.
[PubMed Abstract](#)
- Cabello RR, Ruiz AC, Feregrino RR, et al.: ***Dipylidium caninum* infection.** *BMJ Case Rep.* 2011; **2011**: pii: bcr0720114510.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Turner JA: **Human dipylidiasis (dog tapeworm infection) in the United States.** *J Pediatr.* 1962; **61**(5): 763–8.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Jackson D, Crozier WJ, Andersen SE, et al.: **Dipylidiasis in a 57-year-old woman.** *Med J Aust.* 1977; **2**(22): 740–1.
[PubMed Abstract](#)
- Sahin I, Kz S, Atambay M, et al.: **A Rare Cause of Diarrhea in a Kidney Transplant Recipient: *Dipylidium caninum*.** *Transplant Proc.* Elsevier. 2015; **47**(7): 2243–2244.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Mehlhorn H: **Worms (Helminths).** In *Animal Parasites*. Springer, Cham. 2016; 251–498.
[Publisher Full Text](#)
- Jiang P, Zhang X, Liu RD, et al.: **A Human Case of Zoonotic Dog Tapeworm, *Dipylidium caninum* (Eucestoda: Dipylidiidae), in China.** *Korean J Parasitol.* 2017; **55**(1): 61–64.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Conboy G: **Cestodes of dogs and cats in North America.** *Vet Clin North Am Small Anim Pract.* 2009; **39**(6): 1075–90, vi.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Robertson ID, Thompson RC: **Enteric parasitic zoonoses of domesticated dogs and cats.** *Microbes Infect.* 2002; **4**(8): 867–73.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Guzman RF: **A survey of cats and dogs for fleas: with particular reference to their role as intermediate hosts of *Dipylidium caninum*.** *N Z Vet J.* 1984; **32**(5): 71–3.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Rabinowitz PM, Gordon Z, Odofin L: **Pet-related infections.** *Am Fam Physician.* 2007; **76**(9): 1314–22.
[PubMed Abstract](#)
- Nappi AJ: **Parasites of medical importance.** CRC Press; 2002.
[Publisher Full Text](#)
- Min DY: **Cestode infections in Korea.** *Kisaengchunghak Chapchi.* 1990; **28** Suppl: 123–44.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Samkari A, Kiska DL, Riddell SW, et al.: ***Dipylidium caninum* mimicking recurrent *Enterobius vermicularis* (pinworm) infection.** *Clin Pediatr (Phila).* 2008; **47**(4): 397–9.
[PubMed Abstract](#) | [Publisher Full Text](#)

19. Szwaja B, Romański L, Zabczyk M: **A case of *Dipylidium caninum* infection in a child from the southeastern Poland.** *Wiad Parazytol.* 2011; **57**(3): 175–8. [PubMed Abstract](#)
20. Hill P, Warman S, Shawcross G: **100 top consultations in small animal general practice.** John Wiley & Sons; 2011. [Reference Source](#)
21. Ramana KV, Rao SD, Rao R, *et al.*: **Human Dipylidiasis: A Case Report of *Dipylidium caninum* Infection from Karimnagar.** *Online J Health Allied Sci.* 2011; **10**(2). [Reference Source](#)
22. García-Agudo L, García-Martos P, Rodríguez-Iglesias M: ***Dipylidium caninum* infection in an infant: a rare case report and literature review.** *Asian Pac J Trop Biomed.* 2014; **4**(Supplement 2): S565–7. [Publisher Full Text](#)
23. McCarthy J, Moore TA: **Emerging helminth zoonoses.** *Int J Parasitol.* 2000; **30**(12–13): 1351–60. [PubMed Abstract](#) | [Publisher Full Text](#)
24. Hotez PJ, Brindley PJ, Bethony JM, *et al.*: **Helminth infections: the great neglected tropical diseases.** *J Clin Invest.* 2008; **118**(4): 1311–21. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
25. Bethony J, Brooker S, Albonico M, *et al.*: **Soil-transmitted helminth infections: ascariasis, trichuriasis, and hookworm.** *Lancet.* 2006; **367**(9521): 1521–32. [PubMed Abstract](#) | [Publisher Full Text](#)
26. Robertson ID, Irwin PJ, Lymbery AJ, *et al.*: **The role of companion animals in the emergence of parasitic zoonoses.** *Int J Parasitol.* 2000; **30**(12–13): 1369–77. [PubMed Abstract](#) | [Publisher Full Text](#)
27. Dobler G, Pfeffer M: **Fleas as parasites of the family Canidae.** *Parasit Vectors.* 2011; **4**(1): 139. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
28. Narasimham MV, Panda P, Mohanty I, *et al.*: ***Dipylidium caninum* infection in a child: a rare case report.** *Indian J Med Microbiol.* 2013; **31**(1): 82–4. [PubMed Abstract](#) | [Publisher Full Text](#)
29. Klimpel S, Heukelbach J, Pothmann D, *et al.*: **Gastrointestinal and ectoparasites from urban stray dogs in Fortaleza (Brazil): high infection risk for humans?** *Parasitol Res.* 2010; **107**(3): 713–9. [PubMed Abstract](#) | [Publisher Full Text](#)
30. Johnson SA, Gakuya DW, Mbuthia PG, *et al.*: **Prevalence of gastrointestinal helminths and management practices for dogs in the Greater Accra region of Ghana.** *Heliyon.* 2015; **1**(1): e00023. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
31. Amisah-Reynolds PK, Monney I, Adowah LM, *et al.*: **Prevalence of Helminths in Dogs and Owners' Awareness of Zoonotic Diseases in Mampong, Ashanti, Ghana.** *J Parasitol Res.* 2016; **2016**: 1715924. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
32. Mathison BA, Pritt BS: **A Systematic Overview of Zoonotic Helminth Infections in North America.** *Lab Med.* 2018; **49**(4): e61–e93. [PubMed Abstract](#) | [Publisher Full Text](#)
33. Hurrell JM, Genta RM, Melton SD: **Histopathologic diagnosis of eosinophilic conditions in the gastrointestinal tract.** *Adv Anat Pathol.* 2011; **18**(5): 335–48. [PubMed Abstract](#) | [Publisher Full Text](#)
34. Weese JS, Fulford M, editors: **Companion animal zoonoses.** John Wiley & Sons; 2010. [Publisher Full Text](#)
35. Kaufmann J: **Parasitic infections of domestic animals: a diagnostic manual.** Birkhäuser; 2013. [Publisher Full Text](#)
36. Weiss ME, Mullins JK, Moffett KS: **A neonate with worms.** *Clin Infect Dis.* 2008; **46**(11): 1745, 1786–8. [PubMed Abstract](#) | [Publisher Full Text](#)
37. Raether W, Hänel H: **Epidemiology, clinical manifestations and diagnosis of zoonotic cestode infections: an update.** *Parasitol Res.* 2003; **91**(5): 412–38. [PubMed Abstract](#) | [Publisher Full Text](#)
38. Schroeder I, Altreuther G, Schimmel A, *et al.*: **Efficacy of emodepside plus praziquantel tablets (Profender tablets for dogs) against mature and immature cestode infections in dogs.** *Parasitol Res.* 2009; **105** Suppl 1: 31–8. [PubMed Abstract](#) | [Publisher Full Text](#)
39. Charles SD, Altreuther G, Reinemeyer CR, *et al.*: **Evaluation of the efficacy of emodepside+praziquantel topical solution against cestode (*Dipylidium caninum*, *Taenia taeniaeformis*, and *Echinococcus multilocularis*) infections in cats.** *Parasitol Res.* 2005; **97** Suppl 1: S33–40. [PubMed Abstract](#) | [Publisher Full Text](#)

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Version 1

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Matthew T Brewer

Department of Veterinary Pathology, Iowa State University, Iowa, USA

This article describes a case of *D. caninum* in a pregnant woman. Although the report in a pregnant woman appears to be slightly novel, the finding of *D. caninum* in a human is not unusual. There is no direct evidence (images, DNA sequences, histology, etc) presented.

- "Most of the casesare likely kissed or licked by pets". This is an incorrect. The definitive host has to ingest the flea intermediate host, so licking/kissing doesn't lead to to transmission.
- The case was from 2013. It is odd that it took 7 years to be reported, which makes me somewhat skeptical of this report. Especially since there isn't even an image of the egg. In general, there should be some evidence for the case report - images, genetic sequences, etc.
- It is rare for cats to have obstruction, seizures, and convulsions. In animals, it is usually asymptomatic except for perhaps mild enteric signs and/or anal pruritis.
- "Diphylidiasis" should be dipylidiasis
- Since the authors suggest that the finding in a pregnant woman is novel, they should point out why it is especially important in this demographic.

Is the background of the case's history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Partly

Is sufficient discussion included of the importance of the findings and their relevance to

future understanding of disease processes, diagnosis or treatment?

Partly

Is the case presented with sufficient detail to be useful for other practitioners?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Parasitology

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 03 March 2020

<https://doi.org/10.5256/f1000research.20911.r59825>

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Alessandro Crimi

African Institute for Mathematical Sciences, Western Cape, South Africa

The article describes a case of *Dipylidium caninum* on a pregnant woman. The case is interesting as this is indeed a rare event.

There are however a few things which should be improved in the paper. Those have to be discussed.

1. The case report describes the inspection of a woman in 2013. Is this a typo? If it is not a typo. It is not clear why the case is reported now after 7 years. The situation of the parasites can have changed a lot. The tapeworm could have evolved, the environment can be different now, the cures could not be effective anymore.... This is a possible limitation that should be reported.
2. Given the description of the case it seems a very risky transmission with minimal contact ("the woman had no contact with dogs and cats but was just in areas where they were"). Can you compare the risk of transmission of *dipylidium* to the *toxoplasma gondii* or similar hazards in the same area? e.g. in Kowofie et al. 2016¹.
3. It is not clear what are your perspectives and the lessons learned by the case. Do you suggest future policies to avoid contacts with dogs and cats? Do you suggest to reinforce stool analysis in case of reported vomiting? Do you suggest those to be applied to pregnant women or to the population in general reporting symptoms? Or since the case was treated so simply it is not a big deal? Then why reporting it?

4. In previous studies, including one of the reviewer (Amoah et al. 2016²) women in rural areas avoid antenatal cares for series of reasons. Do you have updated statistics? Even just for the area of the reported case.

References

1. Kwofie KD, Ghansah A, Osei JH, Frempong KK, et al.: Indication of Risk of Mother-to-Child Toxoplasma gondii Transmission in the Greater Accra Region of Ghana. *Matern Child Health J.* **20** (12): 2581-2588 [PubMed Abstract](#) | [Publisher Full Text](#)
2. Amoah B, Anto E, Osei P, Pieterse K, et al.: Boosting antenatal care attendance and number of hospital deliveries among pregnant women in rural communities: a community initiative in Ghana based on mobile phones applications and portable ultrasound scans. *BMC Pregnancy and Childbirth* . 2016; **16** (1). [Publisher Full Text](#)

Is the background of the case's history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Partly

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

No

Is the case presented with sufficient detail to be useful for other practitioners?

Partly

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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