

CASE DESCRIPTION

Human pinworm infection may be an underestimated sexually transmitted problem

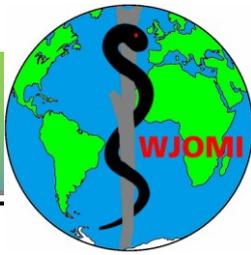
Piotr Kochan¹, Agata Pietrzyk², Małgorzata Bulanda³

Introduction

Human pinworm infections are among the most common intestinal parasitic infections in the world. It is often considered the most common parasitic disease of temperate zones [1]. It is the most common helminthic infection in the United States with approximately 40 million persons infected according to CDC [2]. Last estimates in Poland originate from 2008 when it was still obligatory to report these data and show 5666 persons infected, which seems largely underestimated [3]. In a smaller study from the north eastern region of Poland the prevalence of enterobiasis in a small group of children was 3.33% [4], comparable to the prevalence found in a small group of children in Tucumán province, Argentina [5]. On the other hand, Chinese data show infection rates of 10.2 to even 54.86%, with the average infection rates to be 7.99% in a large group of 17 068 children examined from 2006 to 2010 [6-8]. In fact, enterobiasis seems to be much less common in tropical than temperate climate, e.g. a Nigerian study found the prevalence to be 0.01%, although of note is the

fact that stool examination is not the best diagnostic tool for enterobiasis [2, 9]. The infection especially occurs in children with following transmission to all family members, but adults can get infected very easily from other sources, too. The infection may also easily spread in institutionalized persons. The infection is usually acquired by faecal-oral route, from parasite egg-contaminated dirty hands, contaminated objects or contaminated food, but it may also be acquired via sexual contact, specially oral sex with an infected person, including men having sex with men and women having sex with women. The infection is frequently asymptomatic with the most common symptom being perianal pruritus, especially occurring late at night or early in the morning. Sometimes the worms may migrate to the female genital organs and be responsible for inflammatory conditions in and around the vagina [1]. In children it may often present with abdominal pain, irritability and anorexia.

After observing many cases of enterobiasis in sexually active young adults, very often with



no obvious family association, especially in persons who are conscious of hand hygiene, many times we come under the impression the infection may in fact be sexually transmitted, especially if the sexual partner is also suffering from or tests positive for enterobiasis.

Patient description

Female Jagiellonian University Medical School student presented with symptoms of perianal pruritus for 3 days. A diagnostic sample of her stools and adhesive tape sample, taken in the morning were tested in our Parasitology Lab. Adhesive tape technique allows to catch the parasitic eggs passed by adult female worms on anal folds and sometimes even the worms themselves. All one needs to do is to press the adhesive tape to perianal skin for a few seconds, best early in the morning. The pinworm is relatively small but visible with a naked eye and reaches 5-13 mm. The student's direct stool samples showed single *Enterobius vermicularis* eggs. Furthermore, her unstained and unfixed adhesive tape sample placed on the microscopic slide and observed directly, revealed significant numbers of human pinworm eggs. The sample was tested soon after collection and upon closer inspection, one could observe moving *Enterobius vermicularis* larvae that we have managed to film (Figure 1, with link to the video). Usually, no movement may be seen in the sample, since these will be inactivated or analyzed late.

The student reported living with two female flatmates, being sexually active and dating a

boyfriend. She mentioned that her flatmates, also medical students, were fully aware of her condition and were really worried of the possibility of infection. She had no recollection of contact with children and was fully aware of hand hygiene.

Film



Figure 1. Still shot from the video showing a live human pinworm (*Enterobius vermicularis*) from the adhesive tape specimen (40× magnification with digital zoom). Please see the full film on WJOMI YouTube channel here: <https://youtu.be/2vjnEZcO710>

Treatment

The patient, as well as her sexual partner, was treated with standard mebendazole protocol for enterobiasis successfully. The standard protocol was based on a single dose of 100 mg mebendazole *per os*, repeated after 2 weeks [10]. Furthermore the patient was instructed to take precautions in her everyday living environment, besides of adequate hand



hygiene, avoid sharing hygienic products and towels, disinfect toilet and bathroom surfaces, wash beddings and clothes frequently and appropriately (best separately, hot water cycle, strong detergents). No contact with the flatmates was made, but we recommended for them to contact our Department.

Human pinworm infection, being one of the most bothersome and easily spread intestinal parasites across the globe, especially in the temperate climate, is really easy to diagnose. All is needed is a light microscope, adhesive tape (e.g. scotch tape) and a microscopic slide with only some experience. This equipment is usually widely available even in remote areas and together with public health measures, education and treatment, this infection can be easily controlled on population basis.

References

- [1] Reipen J, Becker C, William M, Hemmerlein B, Friedrich M, Salehin D. Peritoneal enterobiasis causing endometriosis-like symptoms. *Clin Exp Obstet Gynecol* 2012;39(3):379-81.
- [2] Enterobiasis. Geographic Distribution. DPDx - Laboratory Identification of Parasitic Diseases of Public Health Concern. Centers for Disease Control and Prevention. Access valid on December 23, 2015: <http://www.cdc.gov/dpdx/enterobiasis/>
- [3] Czarkowski MP, Cielebąk E, Kondej B, Staszewska E. Owsica (Enterobiasis). In: *Infectious diseases and poisonings in Poland in 2008*. National Institute of Public Health – National Institute of Hygiene – Department of Epidemiology, Chief Sanitary Inspectorate – Department of Communicable Diseases Control. Warsaw 2009, p. 101.
- [4] Zukiewicz M, Kaczmarek M, Topczewska M, Sidor K, Tomaszewska BM. Epidemiological and clinical picture of parasitic infections in the group of children and adolescents from north-east region of Poland. *Wiad Parazytol* 2011; 57:179-87.
- [5] Dib JR, Fernández-Zenoff MV, Oquilla J, Lazarte S, González SN. Prevalence of intestinal parasitic infection among children from a shanty town in Tucuman, Argentina. *Trop Biomed* 2015; 32:210-5.
- [6] Kuang CP, Wu XL, Chen WS, Wu FF, Zhuo F. Prevalence and risk factors of *Enterobius vermicularis* among preschool children in kindergartens in Luohu District, Shenzhen City. *Zhongguo Xue Xi Chong Bing Fang Zhi Za Zhi* 2015;27:76-8.
- [7] Li HM, Zhou CH, Li ZS, Deng ZH, Ruan CW, Zhang QM, Zhu TJ, Xu LQ, Chen YD. Risk factors for *Enterobius vermicularis* infection in children in Gaozhou, Guangdong, China. *Infect Dis Poverty* 2015;4:28.
- [8] Zhou CH, Zhu HH, Zang W, Zhang XQ, Chen YD. Monitoring of *Enterobius vermicularis* infection among children from 2006 to 2010 and SWOT analysis. *Zhongguo Xue Xi Chong Bing Fang Zhi Za Zhi* 2014;26:370-5, 386.
- [9] Abah AE, Arene FO. Status of Intestinal Parasitic Infections among Primary School Children in Rivers State, Nigeria. *J Parasitol Res* 2015; 2015:937096.
- [10] *Przewodnik Terapii Przeciwdrobnoustrojowej Sanforda* 2015. Gilbert DN, Chambers HF, Eliopoulos GM, Saag MS, Black D, Freedman DO, Pavia AT, Schwartz BS (Int. eds.) Bulanda M, Drzewiecki A, Heczko PB, Kochan P. (eds.), Kraków 2015.

Conflict of interest: none declared

Authors' affiliations:

¹ Chair of Microbiology, Department of Bacteriology, Microbial Ecology and Parasitology, Jagiellonian University Medical College in Cracow, Poland

² Head of the Parasitology Lab, Department of Bacteriology, Microbial Ecology and Parasitology, Jagiellonian University Medical College in Cracow, Poland

³ Head of Chair of Microbiology, Jagiellonian University Medical College in Cracow, Poland

Corresponding author:

Piotr Kochan, M.D., Ph.D.

Chair of Microbiology

Jagiellonian University Medical College

18 Czysa Str.

31-121 Cracow

Poland

Ph. +4812 633 25 67

e-mail: pkochan@cm-uj.krakow.pl

To cite this article: Kochan P, Pietrzyk A, Bulanda M. Human pinworm infection may be an underestimated sexually transmitted problem. *World J Med Images Videos Cases* 2015; 1:e4-6.

Submitted for publication: 4 December 2015

Accepted for publication: 18 December 2015

Published on: 23 December 2015

ISSN: 2450-5773

© World Journal of Medical Images, Videos and Cases