

infections were indigenous. The occurrence of 10 VL cases in Kerala, a nonendemic state, during 2015–2019 suggests the need to adopt management strategies, including active surveillance, for leishmaniasis in the region. These actions would facilitate the successful implementation of guidelines from the ongoing National Kala-azar Elimination Programme in India.

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Authors hereby declared that no conflict of interest is involved in this study.

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***Cryptosporidium baileyi* Pulmonary Infection in Immunocompetent Woman with Benign Neoplasm**

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Cryptosporidium baileyi, a bird-specific parasite, infects gastrointestinal, pulmonary, and urinary tracts of its host. We report on a *C. baileyi* infection associated with pulmonary hamartoma in an immunocompetent patient in Poland. Further work is needed to investigate the association between *Cryptosporidium* infections and tumors.

Cryptosporidium is a global protozoan parasite infecting wild, agricultural, and domestic vertebrates, and humans. Most infections lead to a gastrointestinal illness characterized by diarrhea (1). In addition, in birds, *C. baileyi* and *C. avium* parasites cause pulmonary infection (2). In humans, respiratory cryptosporidiosis is mostly associated with immunodeficiency, but several cases in immunocompetent children with intestinal cryptosporidiosis also have been reported (3,4). We describe a *C. baileyi* infection associated with a lung hamartoma in an immunocompetent patient.

The Human Research Ethics Committee of Wrocław Medical University (Wrocław, Poland) approved the use of diagnostic samples and corresponding patient data for this study (permit no. KB648/2014). The patient provided written informed consent for conduct of the studies and publication of the results.

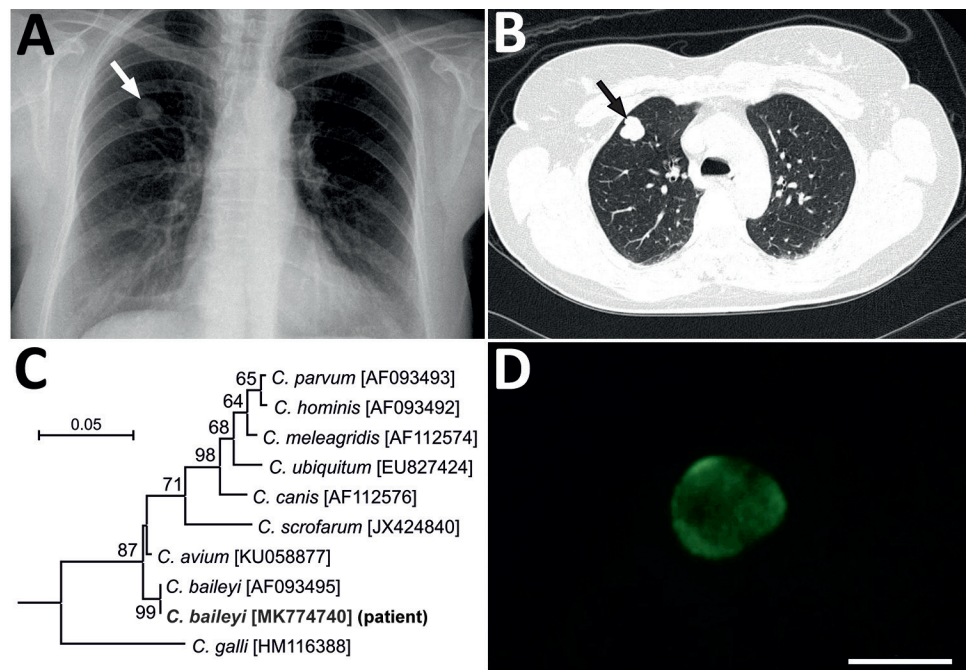
In June 2015, a 51-year-old immunocompetent woman living in a rural area of Poland was admitted to a hospital with a suspected spinal injury. In addition to confirming the spinal injury, a solitary pulmonary nodule (SPN), 1.3–1.8 cm, in the third segment of the right lung upper lobe was detected by chest radiography and computed tomography (Figure, panels A, B). The lesion was of high density and had well-defined borders. The patient was referred to the Department of Pulmonology and Lung Cancers of Wrocław Medical University for a nodule differential

diagnosis. A bronchoscopy performed in July 2015 included biopsy samples for histology and cytology and a bronchial washings (BW) sample for acid-fast bacilli examination. We did not detect any changes in the bronchial trees, vocal cords, or trachea. Histologic and cytologic examination showed low cell count material, and the cells of the nodule lacked features of malignant process. The BW was negative for acid-fast bacilli. A second chest radiograph and bronchoscopy performed before surgery in September 2015 to remove the SPN showed a normal bronchial tree without anatomic changes and a slight increase in size of the SPN (1.5–2.0 cm). The SPN was removed by wedge resection in video-assisted thoracoscopic surgery after stabilization of the spine.

Before and during hospitalization, the patient was in good physical condition, afebrile, and without signs or symptoms of pulmonary and gastrointestinal infection. She reported no chronic diarrhea or cough in recent years. Blood count data, acid-base balance, gasometry, and spirometry did not deviate from mean values. She had no palpable lymphadenopathy. Except for the SPN, medical history was unremarkable. The patient was not undergoing immunosuppressive treatment and did not have an autoimmune disease. She was discharged 1 week after surgery in good general condition.

A paraffin-embedded tissue sample from the removed mass was diagnosed as a bronchial

Figure. Findings from a 51-year-old immunocompetent woman with a benign neoplasm and *Cryptosporidium baileyi* pulmonary infection, Poland, 2015. A) Chest radiography in posterior-anterior position. A tumor, 13 × 18 mm with well-defined boundaries, is visible in the third segment of the upper right lung (arrow). B) Patient's lung tomogram. Tumor is visible in the right lung (arrow). C) Maximum log likelihood tree based on partial sequences of gene coding small subunit rRNA of *Cryptosporidium*, including sequences obtained in this study (bold). Scale bar indicates nucleotide substitutions per site. D) *Cryptosporidium* oocyst detected in patient's bronchial washings after immunofluorescent labeling with excitation and emission spectrum peak wave lengths of 495 nm/519 nm. Scale bar indicates 5 μm.



hamartoma. The BW was tested for pulmonary pathogens using individual conventional PCR (*Chlamydia pneumoniae*, *Mycoplasma pneumoniae*, *Legionella pneumophila*, *Cryptosporidium*, *Encephalitozoon*, and *Enterocytozoon*) and real-time PCR (*Pneumocystis jirovecii*). To identify *Cryptosporidium*, we extracted DNA from the BW and amplified a partial sequence of the small-subunit rRNA of *Cryptosporidium* (5) and sequenced it in triplicate. We inferred relationships to sequences from known species/genotypes from maximum-likelihood phylogenies (MEGA X, <https://www.megasoftware.net>). Bootstrap support for branching was based on 1,000 replications. A BW smear was labeled with genus-specific fluorescein isothiocyanate-conjugated antibodies (indirect fluorescent antibody Crypto cel; Cellabs Pty Ltd., <https://www.cellabs.com.au>).

The small-subunit sequence (GenBank accession no. MK774740) for the patient isolate was identical to that of a *C. baileyi* isolate from chickens (GenBank accession no. AF093495) (Figure, panel C). Microscopic examination of the BW smear showed oocysts measuring 5.2–5.5 µm with typical green fluorescence after labeling with FITC-conjugated anti-*Cryptosporidium* oocyst wall antibody (Figure, panel D).

We report an unusual case of human respiratory *C. baileyi* infection in an immunocompetent woman with hamartoma. Previously, a presumptive *C. baileyi* infection had been reported in the lungs, trachea, larynx, esophagus, whole intestine, gallbladder, and urinary tract of an immunodeficient man with HIV (6). Although not confirmed by sequence analysis, the finding that oocysts were infective for chickens supports the identification.

Immunocompetence is a critical determinant of the clinical course of *Cryptosporidium* infection. Intestinal cryptosporidiosis can be devastating to immunodeficient persons (7) and can involve extraintestinal sites (6). Pulmonary cryptosporidiosis in immunocompetent humans typically manifests as a cough and dyspnea, and concurrent intestinal infection is frequently reported (3,4). Consistent with this, the overwhelming majority of respiratory cases in humans have been caused by *C. parvum* and *C. hominis*, the major causes of intestinal cryptosporidiosis (3,4,8). Respiratory *Cryptosporidium* infection in birds is mostly asymptomatic but can result in high rates of death in association with other etiologic agents (2). The patient in this study did not report direct contact with birds but might have been exposed to wild bird excretions occupationally through work in an orchard. The hamartoma could have created an environment that supported the *C. baileyi* infection. *C. meleagridis* parasites were recently detected around

a colon adenocarcinoma in an immunocompetent patient who, similarly, did not have symptoms typically associated with cryptosporidiosis (9). Alternatively, experimental evidence suggests that *Cryptosporidium* parasites can cause neoplastic changes in immunocompromised animals and in cells cultured in vitro, consistent with a role in carcinogenesis (10).

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COMMENT LETTERS

Intact *Mycobacterium leprae* Isolated from Placenta of a Pregnant Woman, China

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To the Editor: Chen et al. (1) reported intact *Mycobacterium leprae* in homogenate of placenta of a pregnant woman with untreated histoid leproma, highlighting the effectiveness of the placental barrier in stopping vertical transmission of leprosy (Hansen disease). However, reports in the published literature indicate that this claim is not absolutely correct.

Several early studies provided evidence of transplacental transmission of *M. leprae*; these studies revealed *M. leprae* in umbilical cords (25/104) (2) and cord blood (10/12) (3) of neonates born to mothers with leprosy, as well as in the placentae (57/104 and 9/12) (2,3) of those mothers (2,3). Furthermore, transplacental infection with *M. leprae* has been supported by an increased concentration of IgA in cord blood (4) and *M. leprae* IgA and IgM in cord serum (5) of babies of mothers with leprosy. These observations indicate that in some mothers with leprosy, whole *M. leprae*, its antigens, or both can cross the placenta, possibly inducing the fetal immune system to produce antibodies against *M. leprae* antigens. Therefore, we believe that vertical transmission of *M. leprae* is a complex, uncommon, and multifactorial event that might depend on the

presence of *M. leprae* in maternal blood, maternal and fetal immune responses, fetal gestational age at infection, and other placental factors.

Consequently, the claim of Chen et al. (1) needs to be read with attention to the limitations of the underlying data and might not be generalizable to all mothers with leprosy. Further studies are needed to clarify the mechanisms of transplacental transmission of leprosy. The follow-up care of newborns of mothers with leprosy is necessary for early detection of the disease and to ensure appropriate general healthcare, especially considering that babies of mothers with leprosy have lower fetoplacental weights, slower growth, more fatal infections, and higher rates of infant mortality than those of mothers without leprosy.

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