Ophionyssus saurarum (Acari, Mesostigmata) infecting Lacerta agilis (Reptilia, Lacertidae)

Article *in* Wiadomości parazytologiczne · February 2009

Source: PubMed

2 authors, including:

Dariusz J Gwiazdowicz
Poznań University of Life Sciences
178 PUBLICATIONS **1,129** CITATIONS

SEE PROFILE

Material: one female

Free-living species, rare in Poland. It was found in moss, under bark and in nests of rodents. First record from mammals in Poland.

Family Hirstionyssidae Evans et Till, 1966

4. *Echinonyssus isabellinus* (Oudemans, 1913)

Material: two females

In Poland, this species is widely distributed and was collected from a many rodents and insectivorous [8]. It never was found on Carnivora. In USA it was collected from *P. lotor* [9].

Family Ixodidae Murray, 1877

5. *Ixodes hexagonus* Leach, 1815

Material: 7 larvae

In Poland, this species mainly was found in southern part of the country. It is the first record from the Lubuskie province. Among hosts are mentioned: *Erinaceus* sp., *Mustela putorius* (Linnaeus, 1758), *M. nivalis* (Linnaeus, 1758), *Meles meles* (Linnaeus, 1758), *Castor fiber* (Linnaeus, 1758), *Clethrionomys glareolus* (Schreber, 1780), *Mus musculus* (Linnaeus, 1758) *C. familiaris* and *Ovis aries* (Linnaeus, 1758) [10].

Psocoptera

Undetermined species

Material: one specimen

Undetermined species was collected from *P. lotor*. All Psocoptera are free-living species. In Poland from mammals only undetermined Psocoptera was found on *Nyctalus noctula* (Schreber, 1774) [11].

Acknowledgments

We would like our sincere thanks to Dr. E. Mey (Naturhistorisches Museum im Thuringen Landesmuseum, Germany) for determination of *Trichodectes octomaculatus*. We gratefully thank Justyna Szczęsna (Department of Zoology and Ecology, Wrocław University of Environmental and Life Sciences) for collecting raccoons.

References

[1] Bogdanowicz W., Ruprecht A.L. 1987. Przypadki stwierdzeń szopa pracza, *Procyon lotor* (Linnaeus, 1758) w Polsce. *Przegląd Zoologiczny* 31: 375–383.

[2] Bartoszewicz M., Okarma H. 2007. Szopy nad Wartą. *Łowiec Polski* 3 (1930): 27–29.

[3] Bartoszewicz M., Okarma H., Zalewski A., Szczęsna J. 2008. Ecology of the raccoon (*Procyon lotor*) from western Poland. *Annales Zoologici Fennici* 45: 291–298.

[4] Skuratowicz W. 1967. Pchły – Siphonaptera. Klucze do oznaczania owadów Polski. Warszawa, 29: 1–141.

[5] Pung O.J., Durden L.A., Banks C.W., Jones D.N. 1994. Ectoparasites of opossums and raccoons in southeastern Georgia. *Journal of Medical Entomology* 31: 915–919.

[6] Nelder M.P., Reeves W.K. 2005. Ectoparasites of road-killed vertebrates in northwestern South Carolina, USA. *Veterinary Parasitology* 129: 313–322.

7] Hellenthal R.A., Preice R.D., Palma R.L. 2004. Chewing lice of Belgium. *http://bchcbd.naturalsciences.be/belgium/biodiversity/faunaflorahabitats/belchewinglice.pdf.*

[8] Haitlinger R. 1989. Arthropods (Acari, Anoplura, Siphonaptera, Coleoptera) of small mammals of the Babia Góra Mts. *Acta Zoologica Cracoviensis* 32: 15–56.

[9] Whitaker J.O., Walters B.E., Castor L.A., Ritzi C.M., Wilson W. 2007. Host and distribution lists of mites (Acari), parasitic and phoretic, in the hair or on the skin of North America wild mammals north of Mexico records since 1974. Faculty Publications from the Harold W. Manter Laboratory of Parasitology, University of Nebrasca Lincoln: 1–173.

[10] Siuda K. 1993. Kleszcze Polski (Acari: Ixodida). II. Systematyka i rozmieszczenie. PTP, Warszawa.

[11] Haitlinger R., Łupicki D. 2008. Arthropods (Acari, Siphonaptera, Heteroptera, Psocoptera) associated with *Nyctalus noctula* (Schreber, 1774) (Chiroptera: Vespertilionidae) in southern Poland. Wiadomości Parazytologiczne 54: 123–130.

Wpłynęło 2 luty 2009

*Zaakceptowano 20 luty 2009*Wiadomości Parazytologiczne

Wiadomości Parazytologiczne 2009, 51(1), 61–62

Ophionyssus saurarum (Acari, Mesostigmata) infecting *Lacerta agilis* (Reptilia, Lacertidae)

Dariusz J. Gwiazdowicz, Kamil P. Filip

University of Life Sciences, Department of Forest Protection, Wojska Polskiego 71c, 60-625 Poznań;
E-mail: dagwiazd@up.poznan.pl

ABSTRACT. Thirty specimens of sand lizard, *Lacerta agilis*, were analyzed and *Ophionyssus saurarum* was found on three of them. These parasitic mites were located in the ear opening of the host. The only lizard specimens which were infested were those that inhabit areas degraded by human activity.

Key words: mites, *Acari*, Mesostigmata, Ophionyssus, *Lacerta*.

Introduction

Given the difficulties in conducting direct observations of lizards and specific difficulties concerning their capture, the information on external parasites found on these reptiles is sporadic. Thus far, species such as *Dermacentor* (*Dermacentor*) *reticulatus* (Fabricius, 1794), *Haemaphysalis* (*Haemaphysalis*) *concinna* Koch, 1844, *Ixodes* (*Exopalpiger*) *trianguliceps* Birula, 895, *Ixodes* (*Ixodes*) *ricinus* (L., 1758) and *Ophionyssus saurarum* (Oudemans, 1901) were most frequently reported [1–7].

Most parasitic mites found on lizards belong to the order Ixodida and only *Ophionyssus saurarum* belongs to the order Mesostigmata in terms of taxonomy. Due to its small size, as females reach aproximately the length of 650 mm and the fact that it parasitizes in ear and nose openings this species is relatively rarely reported.

Ophionyssus saurarum is one of the mites which are connected with a host in the way that can be defined as strictly absolute. This means that they parasitize on the group of hosts which are taxonomically related, in this case only on lizards [6]. *Ophionyssus saurarum* is the vector of diseases of the lizards' alimentary canal epithelium and blood cells, which is caused, among others, by coccidia *Schellackia bolivari* Reichennow, 1919 [5]. Owing to this each investigation of this species is also practical, as *Lacerta agilis* is the species protected by law in the majority of European countries.

Material and methods

The aim of this study was to determine the degree to which the *Lacerta agilis* lizard is infected with the parasitic mite *Ophionyssus saurarum*, depending on the host's habitat. Moreover, attention was drawn to the place where the parasite was located on the host (nose and ear openings, eyes and the cloaca).

The material was collected between 2 May and 10 September 2007. Mites were collected by means of small cotton pads and then they were kept in 70% ethyl alcohol. The next stage of the laboratory investigation was to make microscopic preparations in the Hoyer fluid.

The investigation works were conducted in four research areas located in the vicinity of Poznań (52°26'N 16°51'E), in the vicinity of Chełmiec (50°47'N 16°13'E), in Stare Bogaczowice (50°50'N 16°11'E) and in Izery Mountain (50°53'N 15°18'E). The areas were selected in such a way as to represent habitats of the natural character and habitats largely transformed due to the anthropogenic pressure.

Results

Thirty specimens of the sand lizard *Lacerta agilis* were captured and analyzed and *Ophionyssus saurarum* was found on three of them. The mites were found in ear openings of two males and one female of *Lacerta agilis*. One mite was reported in two sand lizards in each ear and in one sand lizard there was one specimen in one ear. All *Ophionyssus saurarum* specimens were females and they were reported on sand lizards captured on degraded areas, which were greatly influenced by human activity.

According to Bregatova [2] adults of *Ophionyssus saurarum* are found in ear openings of Lacertidae, whereas protonymphs and deutonymphs are found in the area around the eye or the cloaca. Regrettably, it was impossible to confirm it definitely as the nymph forms were not reported, despite the analysis of both the eye and cloaca areas.

The low percentage of the *Ophionyssus saurarum* parasites in sand lizards, which was 10% in the present study, may indicate that this parasite poses little threat to these lizards.

References

[1] Bauwens D., Strijbosch H., Stumpel A. H.P. 1983. The lizards *Lacerta agilis* and *Lacerta vivipara* as hosts to larvae and nymphs of the tick *Ixodes ricinus*. *Holarctic Ecology* 6: 32–40.

[2] Bregetova I.G. 1956. Gamazovyje kleshchi. Akademia Nauk SSSR, Leningrad-Moskwa.

[3] Haitlinger R. 1987. Roztocze (Acari) występujące w Polsce na *Lacertida* Bonaparte, 1838 (Reptilia). *Wiadomości Parazytologiczne* 33: 229–230.

[4] Kurczewski R. 2000. Jaszczurka zwinka (*Lacerta agilis*) jako żywiciel kleszcza psiego (*Ixodes ricinus*). Materiały V Ogólnopolskiej Konferencji Herpetologicznej: „Biologia płazów i gadów". Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków: 67–69.

[5] Micherdziński W. 1980. Eine Taxonomische Analyse der Familie Macronyssidae (Oudemans, 1936). I. Subfamilie Ornithonyssinae (Lange, 1958) (Acarina, Mesostigmata).PWN, Warszawa.

[6] Siuda K. 1991. Kleszcze (Acari: Ixodida) Polski. I. Wiadomości ogólne. PWN, Warszawa.

[7] Siuda K. 1993. Kleszcze Polski (Acari: Ixodida). II. Systematyka i rozmieszczenie.Polskie Towarzystwo Parazytologiczne, Warszawa.

Wpłynęło 6 luty 2009
Zaakceptowano 25 luty 2009

Wiadomości Parazytologiczne 2009, 51(1), 63–65

Doktoraty

Zwierzęce rezerwuary inwazyjnych dla człowieka gatunków mikrosporydiów[1]

Animal reservoirs of human virulent microsporidian species

Anna Słodkowicz-Kowalska

Praca doktorska wykonana w Katedrze i Zakładzie Biologii i Parazytologii Lekarskiej Uniwersytetu Medycznego im. Karola Marcinkowskiego w Poznaniu i obroniona 3.06.2008 r.

Promotor: Prof. dr hab. Anna C. Majewska
Recenzenci: Prof. dr hab. Wanda Kocięcka
Prof. dr hab. Edward Siński

ABSTRACT. The main objective of the present study was to determined the occurrence of *Encephalitozoon intestinalis*, *E. hellem*, *E. cuniculi*, and *Enterocytozoon bieneusi* in Poland in animal faecal using the FISH (Fluorescent *In Situ* Hybridization) and multiplex FISH techniques. Additional objectives included: (1) identification of animal hosts of microsporidia that are infectious to humans amongst free-ranging, captive, livestock and domestic animals; (2) a molecular analysis of randomly selected parasite isolates and determination of their zoonotic potential; (3) evaluation of the role of animals in the dissemination of microsporidia spores in the environment, and an estimation of the potential risk of infection for other animals and humans. A total of 1340 faecal samples collected from 178 species of animals were examined using conventional staining (chromotrope-2R and calcofluor white M2R staining) and molecular techniques (FISH and multiplex FISH techniques). Microsporidian spores were detected in 33 faecal samples (2.5%) obtained from 17 animal species. Microsporidia were demonstrated more often in birds (6.1%) than in mammals (0.7%); the difference was statistically significant ($p<0.00001$). In addition, the prevalence of microsporidian infections in waterfowl was significantly higher than the prevalence of microsporidian infections in other animals ($p<0.03$). Animal reservoirs of human infectious microsporidia were disclosed in six of 38 sites where faecal samples were taken from animals. Three species of human virulent microsporidia were identified in animals. Spores of *E. hellem* were found in 25 faecal samples (1.9%) taken from 12 bird species (6 zoo bird species, 4 free-ranging bird species, 2 livestock bird species). Spores of *E. intestinalis* were identified in five faecal samples (0.4%) taken from two livestock bird species and two zoo mammal species. In turn, *E. bieneusi* spores were detected only in three faecal samples (0.2%) taken from three zoo mammal species. It was demonstrated that the new hosts of *E. hellem* are the following bird species: mallard duck (*Anas platyrhynchos*), greyleg goose (*Anser anser*), mute swan (*Cygnus olor*), black-necked swan (*Cygnus melancoryphus*), black swan (*Cygnus atratus*), coscoroba swan (*Coscoroba coscoroba*), black-crowned crane (*Balearica pavonina*), nicobar pigeon (*Caloenas nicobarica*) and carrion crow (*Corvus cornix*). In addition, *E. hellem* was found for the first time in birds from the Anseriformes and Gruiformes orders. Whereas *E. intestinalis* was disclosed for the first time in the domestic goose (*Anser anser* f. *domestica*), red ruffed lemur (*Varecia variegata rubra*) and the ring-tailed lemur (*Lemur catta*), while the black lemur (*Eulemur macaco flavifrons*), mongoose lemur (*Eulemur mongoz*) and the Visayan warty pig (*Sus cebifrons negrinus*) were first found to carry *E. bieneusi*. The mammal species that were found to carry *E. bieneusi* and *E. intestinalis* are included in The IUCN Red List of Threatened Species. The results of the present study are significant from an epidemiological point of view. The wild, livestock and zoo animals that were found to carry microsporidia live in different conditions, and thus their role as animal reservoirs for these dangerous pathogens varies. Waterfowl birds may be the main source of contamination of surface waters with *E. hellem* spores and the protection of surface waters is virtually impossible. Moreover, isolates of *E. hellem* from mute swans have SSU rRNA sequences identical to *E. hellem* genotype reported 10 years ago in HIV-positive patient in USA (GenBank Accession no. L19070). This result indicate that *E. hellem* from mute swans can be a potential source of

[1] Badania wykonano w ramach międzynarodowego projektu badawczego finansowanego przez NATO Collaborative Linkage Grant nr 979765; badań własnych nr 501-01-1123180-03496 oraz badań statutowych nr 502-01-01123180-0349