

Pediculosis in *Macaca sylvanus* of Gibraltar

Douglas L. Cohn^{a,*}, Vincent Smith^b, Mark Pizarro^c, Lisa Jones-Engel^d,
Gregory Engel^{d,e}, Agustin Fuentes^f, Eric Shaw^g, John Cortes^g

^aAnimal Resources Faculty, Albany Medical College, Albany, NY, USA

^bThe Natural History Museum, Cromwell Road, London SW7 5BD, UK

^cGibraltar Veterinary Clinic, Gibraltar

^dNational Primate Research Center, University of Washington, Seattle, WA, USA

^eSwedish/Providence Family Medicine Residency, Seattle, WA, USA

^fUniversity of Notre Dame, Detroit, MI, USA

^gGibraltar Ornithological and Natural History Society (GONHS), Gibraltar

Received 14 June 2006; received in revised form 24 November 2006; accepted 5 December 2006

Abstract

Pedicinus spp. parasitize several species of nonhuman primates. This is the first published report confirming the presence of *Pedicinus albidus* (Rudow) infestation in the free-ranging macaques (*Macaca sylvanus*) of Gibraltar. The diagnosis of pediculosis was based upon finding adult lice on host animals.

© 2006 Elsevier B.V. All rights reserved.

Keywords: *Pedicinus albidus*; *Macaca sylvanus*; Gibraltar; Lice

1. Introduction

The Rock of Gibraltar, a peninsula attached to southern Spain, is home to the only free-ranging nonhuman primates in Europe: *Macaca sylvanus*, the “Barbary Ape”. *M. sylvanus* is also found in Morocco and Algeria. The exact origin of the Gibraltar macaques is unknown, but records dating to the 17th century allude to their presence. When the macaque population dwindled precipitously in the early 20th century, additional animals were imported from North Africa. Phylogenetic analysis suggests that the current population is composed of long-term residents as well as individuals whose origins can be traced to recent

importation from North Africa (Modolo et al., 2005). The most recent census of Gibraltar’s macaques (2005) estimated the population at 219, divided among 5–7 groups (Perez and Bensusan, 2005). The Gibraltar Ornithological and Natural History Society (GONHS) is responsible for the daily management of Gibraltar’s macaque population. GONHS traps macaques randomly throughout the year in order to screen for disease, administer antiparasitic medication using 1% ivermectin (IVOMEC[®], Merial) and insert identifying microchips. GONHS also has attempted to limit the growth of the macaque population by implanting subcutaneous hormonal contraceptives in females that have successfully reared offspring.

Gibraltar’s macaques reside in the Upper Rock Nature Reserve and have, over the years, become a major tourist attraction, with an estimated 800,000 tourists visiting the Reserve annually from around the globe (Perez and Bensusan, 2005). Though the local

* Corresponding author. Tel.: +1 518 2625389;
fax: +1 518 2625063.

E-mail address: cohnd@mail.amc.edu (D.L. Cohn).

Tourist Board, through GONHS and the Gibraltar Veterinary Clinic, has erected signs that explicitly prohibit visitors from feeding macaques many visitors do offer food to the macaques, and some visitors use food to lure macaques onto their head or shoulders (Fuentes, 2006).

Previous work on disease transmission between humans and macaques in Asia suggested that transmission of infectious agents both from human-to-macaque and from macaque-to-human occurred in contexts when humans and free-ranging macaques came into contact (Engel et al., 2002; Jones-Engel et al., 2001, 2004, 2005a,b). It is hypothesized that macaque bites and scratches as well as mucosal contact with body fluids can lead to cross-species transmission. Additionally, vector-mediated transmission of *Plasmodium knowlesi* from macaques to humans has been documented (Sing et al., 2004; Jongwutiwes et al., 2004) where humans are commensal. Contact between macaques and humans in Gibraltar raises the possibility that cross-species transmission, including vector-mediated transmission, can occur in this setting.

Parasitic lice belong to the insect order Phthiraptera, which includes the monophyletic suborder Anoplura known as the sucking lice. Sucking lice are common parasites of nonhuman primates (Fiennes, 1967) and are usually passed from host to host through a hair bridge (Georgi and Georgi, 1990) which they grip using distinctive pretarsal claws. The size of these claws may be related to the diameter of the host's hair shaft, and is a factor in maintaining host-specificity of some species of sucking lice. *Pediculus* spp. infests humans and New World nonhuman primates, but is only known from chimpanzees (*Pan* spp.) among the Old World primates. There are 14 species of *Pedicinus* that parasitize Old World monkeys, amongst which *P. albidus* was first characterized by Rudow in 1869 as a parasite of *M. sylvanus* in Morocco (Rudow, 1869) and was later reported by other parasitologists collecting samples from captive *M. sylvanus* in European zoological and museum collections and in free-ranging populations in Northern Africa (Durden and Musser, 1994; Ferris, 1951; Kuhn and Ludwig, 1967).

Pediculosis in domestic animals may be asymptomatic. More severe infestations can cause significant pruritus and produce alopecia and dermal irritation. A generally unthrifty appearance, rough coat and lowered production in farm animals are common. Extreme cases of anopluran infestations can cause anemia (Aiello, 1998). There are no reported symptoms of pediculosis in the cases among nonhuman primates in the literature.

This may be due to the fact that affected animals were treated before symptoms developed.

The treatment of lice infestations in laboratory colonies of nonhuman primates has previously been described. Pyrethroid shampoo or ivermectin at 0.2 mg/kg SC, repeated at a 14-day interval have been equally effective in the treatment of rhesus macaques infested with *P. eurygaster* (Mader et al., 1989).

2. Methods and materials

Over a 4-day period in June of 2004, as part of ongoing research into cross species transmission of infectious agents between nonhuman primates and humans, 40 *M. sylvanus* were trapped, sedated, examined and then recovered and released back into their natural groups. Study and data protocols were reviewed and approved by the University of Washington's Institutional Animal Care and Use Committee (3143-03).

On day 3 of data gathering a louse was found in a fecal sample as an incidental finding, and subsequent physical examinations of trapped and sampled macaques (less than 20) included a specific search for lice using a lice comb.

Lice were preserved in 100% ethanol and examined microscopically by a trained parasitologist (Smith). Selected specimens were prepared for non-destructive DNA extraction and the exoskeletons were slide-mounted as vouchers using the protocol outlined in Cruickshank et al. (2001). Identification was confirmed morphologically by reference to specimens loaned from the collections of the Natural History Museum, London, and by reference to the original taxonomic descriptions of *Pedicinus* species in Ferris (1934).

3. Results

On the 3rd day of the study, during a fecal examination of an adult female macaque, a virtually complete adult louse was identified (Fig. 1). Subsequently, adult lice were detected on the fur of several additional animals. No pathologic sequelae, including anemia or secondary infection, were noted in the infested animals. Three of the live lice were removed from the macaques and preserved in 100% ethanol. Morphological examination of the lice in comparison to reference specimens held at the Natural History Museum, London, revealed that they were *Pedicinus albidus* (Rudow), a species almost identical to *P. longiceps* (Piaget), and *P. hamadryas* (Mjöberg), except for the female sub-genital plate, which is considerably

Download English Version:

<https://daneshyari.com/en/article/2472064>

Download Persian Version:

<https://daneshyari.com/article/2472064>

[Daneshyari.com](https://daneshyari.com)