

Detection of Fowl Mites inside Two Hospital Rooms

Kouichi NAGAKURA, Fumio OSAKA* and
Seiki TAZUME**

*Departments of Infectious Diseases and *Community Health,
Tokai University School of Medicine,
**Tokai University School of Health Sciences*

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Many mites were found on bookshelves near the windows in 2 rooms of the Department of Pediatrics on the 4th floor in the Tokai University Hospital. Fortunately, nobody reported being bitten by, or experiencing itching due to, the mites. The arthropods were tentatively identified as adults of the northern fowl mite, *Ornithonyssus sylviarum* (Canestrini et Frazago, 1877), commonly called "Torisashi-dani" in Japanese. It appears the mites came from an empty wagtail nest which was outside the windows. Since migrating birds like the wagtail may carry *O. sylviarum* and other pests and pathogens, and their possible transfer to domestic birds, more attention should be paid to the danger posed by bird mites.

Key words : *Ornithonyssus sylviarum*, Northern fowl mite, Outbreak

INTRODUCTION

Mites often cause health problems; in closed, air-conditioned rooms, the mite and its secretions act as allergens, and are responsible for various allergic reactions such as atopy and asthma. Therefore, recently, it has become common for families to spray or fumigate with insecticides, and to vacuum with fine filters in an attempt to be rid of household mites.

On the other hand, animals and birds are also plagued by various mites; chicken mites on poultry, avian mites on birds, cattle ear mites on cattle, and mouse and rat mites on rodents. Animal and avian mites will also attack humans as well as their natural hosts [1, 2]. When mites are introduced into a household by rodents [7] or birds, humans frequently are bitten and suffer itching. Because the exponential increase of animal mites, an outbreak of dermatitis in a university hospital by biting of *Dermanyssus gallinae*, known as "Wakumo" in Japan, was reported [9].

We report here an outbreak of mites which occurred in 2 rooms of the Tokai University Hospital in June 1998. We discuss the probable etiology of the mite out-

break and the health risks posed by the acarid.

A CASE REPORT

In 22 June 1998, we were alerted to the presence of mites in the Tokai University Hospital. Many mites were found in 2 rooms of the Department of Pediatrics, on the 4th floor; one is a classroom, the other a stockroom. The 2 rooms are located in an L-shaped corner of the building (Fig.1). Mites in the classroom were found on bookshelves and on a television and video deck along windows separated from the outside by an aluminum sash. Mites in the stockroom were found at the corners of the windows. However, neither complaints of mite bites nor a discomfoting itch were obtained from patients, nurses, or workers.

The two rooms were closed, and then fumigated with two insecticides (Dani-earth^R and Valsan^R). One day later, both rooms were thoroughly vacuumed with a vacuum cleaner outfitted with a fine filter.

An outside compressor for an air-conditioner is located at the corner of the building, and an empty bird's nest was found under the compressor (A in Fig. 1). A pair of wagtails occupied the nest in April 1998.

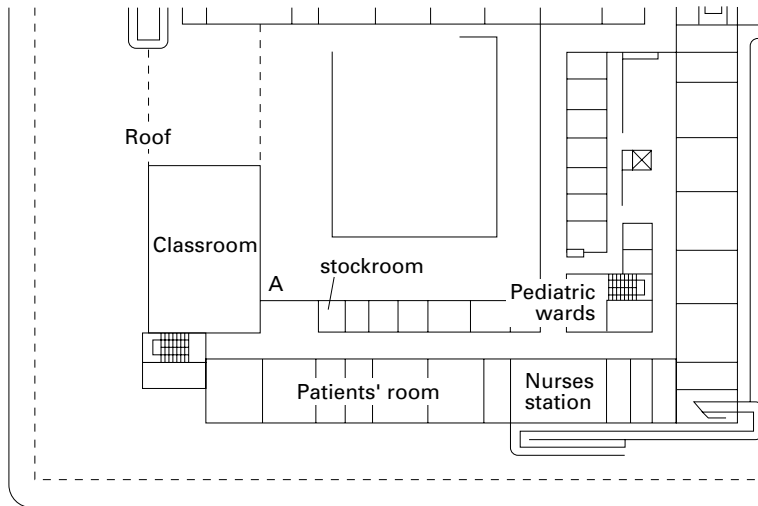


Fig. 1 Location of the 2 rooms (classroom and stockroom) in which *Ornithonyssus sylviarum* was found. There is an outside compressor for an air-conditioner at the L-shaped corner of the building (A). An empty wagtail nest was found under the compressor.



Fig. 2 *Ornithonyssus sylviarum* females, the northern fowl mite. (x 63)

When the mites were found in the Pediatric wards in mid June, the nest was empty. After fumigating the two rooms, the bird's nest was removed. Since then, no mites have been found.

Description of the mites

More than 98% of the mites recovered were adult females. The mites were embedded in Gam-Chloral gels and fixed by heating [10]. Morphological details were obtained

microscopically (Fig. 2). The average length and width of the females ($n=52$) were 0.575 ± 0.021 mm by 0.300 ± 0.016 mm, respectively. The dimensions of the male mite ($n=1$) were 0.45 mm by 0.24 mm. The ratio of length/width of the dorsal scutum in the females was 2.53 ± 0.13 . The mites had a wide sternal plate with 2 pairs of species-specific single-hairs. The morphology of the genitoventral plate (slender) and the chelicera (ladder-like), and the type of pattern

in the dorsal scutum (straight line), were significantly different from that of *D. gallinae*. From the size and the morphological features [4, 10], the mites were tentatively identified as adults of the northern fowl mite, *Ornithonyssus sylviarum* (Canestrini et Frazago, 1877).

DISCUSSION

O. sylviarum is widespread in northern temperate regions of the world, and is an economically important ectoparasite of breeding and egg-producing chickens and free-living avian hosts [3]. Although the house mouse and the Norway rat have been found to carry the mite between poultry houses [7], the dissemination and spread of this mite are usually via close association between infected domestic avian hosts. Since the mite is a vicious bloodsucker, it can cause injury to chickens and pet birds. Nagahori [8] reported a case of a pet paddy-bird in an aviary which sustained a prolonged infestation by *O. sylviarum*, considerably weakening the bird. In the field, the mite is found inside nests, where it bites nestlings, fledglings, and parents. The rainy season, which lasts from spring to early summer, overlaps with the breeding of birds in Japan and the abundance of mites increases exponentially. Because of severe biting by the mites, the birds often abandon their nests. In the present case, there was a wagtail nest under the outside compressor of an air-conditioner. Although nurses had found the nest in May, they kept it so students could observe wagtail breeding. After departure of the wagtails from the nest in mid June, the nearby rooms were invaded by the mites.

When their normal avian hosts are gone, the acarids are forced to forage for food and will even attack humans. Their bites are especially bothersome and can cause dermatitis and chronic pruritus [1, 2]. Inhalation of mite-laden dust frequently results in allergic respiratory disease. The presence of the northern fowl mite in poultry houses together with the clinical history, positive skin test, specific IgE assays, and positive bronchial provocation, have established *O. sylviarum* as an important cause of allergic respiratory disease in poultry workers [6].

It is well known that ticks and mites transmit a broad array of viruses, rickettsiae, pro-

tozoa, and spirochetes. The acarids are responsible in maintaining various infections in animal reservoirs and can transmit the organism to humans, as exemplified by *O. sylviarum* transmitting the virus of St. Louis encephalitis in the United States [10]. In addition, birds migrating from north to south not only carry *O. sylviarum* but the blacklegged tick as well [5]. The wagtail in Japan is one of the migrating birds; wagtails come from the north in the autumn and return there in the spring. However, some wagtails stay in the southern coastal regions of Japan all year round. This suggests the possibility that the migrating birds may be carrying *O. sylviarum* and possibly unknown pathogens, and may transfer both to domestic birds. Although the incidence of the acarids in poultry in 1995 was only 116.5/10 million birds [11], more attention should be paid to the disease-causing potential of mites in hospital inpatients and visitors.

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