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DERMATITIS IN HORSES AND HUMANS ASSOCIATED
WITH STRAW ITCH MITES (PYEMOTES TRITICI)
(ACARINA: PYEMOTIDAE)

by I. YERUHAM¹, S. ROSEN² and Y. BRAVERMAN³

SUMMARY: Three instances of dermatitis in horses and humans associated with straw itch mite, Pyemotes tritici, are described. Multiple erythematous papules accompanied by severe pruritis were observed in both the horses and humans. All cases occurred during the summer months (August–October). After exposure of the infested hay bales to solar radiation for several days, they were used without any annoyance to horses or humans.

The straw itch mite, Pyemotes tritici (Lagreze-Fossat & Montane, 1851) is an arthropod, most commonly found in straw, hay, grain or other stored food (Moser, 1975; Kunkle & Greiner, 1982).

P. tritici has a worldwide distribution and is a white to yellow, predaceous mite (Scott & Fine, 1967). The biology of P. tritici has been described by a number of authors (Bruce, 1984; Oh et al., 1985; Anon., 1985; Bruce & Wrensch, 1990).

P. tritici is a predator of larvae or nymphs of many species of Lepidoptera, Coleoptera and Hymenoptera (Scott & Fine, 1967; Cross & Moser, 1971; Hewitt et al., 1976).

P. tritici produces a complex of neurotoxins, utilized in capturing its insect prey, causing muscle-contractions and paralysis (Tomalski et al., 1989; Tomalski & Miller, 1991). When prolonged storage or other factors deplete its natural food supply, P. tritici may emerge from the infested foodstuff onto the skin of various mammals such as horses, cattle and humans, causing pruritic dermatitis (Scott & Fine, 1967; Kunkle & Greiner, 1982). Our observations indicate that the straw itch dermatitis is probably more common than published reports indicate.

In this paper, we describe three incidences of dermatitis in humans and horses caused by P. tritici.

MATERIALS AND METHODS

Samples of the hay suspected to be infested were collected from barns of three stables and placed in

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Fig. 1: Multiple erythematous papules on the belt area. — Fig. 2: Multiple erythematous papules on the back. — Fig. 3: Multiple papules and weals on the neck and withers of an infested horse. — Fig. 4: *Pyemotes tritici* mite, female (× 40).
Berlese funnels under a 60 W light for a minimum of three days to extract the arthropods.

Mites could not be found during clinical examination, therefore microscopical examination was made of skin scrapings from the infested horses and humans.

RESULTS

Skin lesions were observed on the horses, attendants and the veterinarian, including multiple erythematous papules. A few vesicles appeared, mostly on the back, thorax and abdomen, belt area and arms (Figs 1 and 2), accompanied by severe pruritis which could persist for several days. On the horses, multiple papules and weals occurred on the neck and withers (Fig. 3). The three events occurred during August to October.

Table 1: Incidences of infestation of horses and humans by the straw itch mite, *Pyemotes tritici*.

<table>
<thead>
<tr>
<th>Stable</th>
<th>Date</th>
<th>No.</th>
<th>breed</th>
<th>sex</th>
<th>age</th>
<th>Human</th>
<th>Hay</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30 Oct.</td>
<td>1</td>
<td>cross</td>
<td>female</td>
<td>7</td>
<td>Owner &amp; vet.</td>
<td>Wheat</td>
</tr>
<tr>
<td>B</td>
<td>10 Aug.</td>
<td>1</td>
<td>cross</td>
<td>female</td>
<td>4</td>
<td>Owner &amp; vet.</td>
<td>Wheat</td>
</tr>
<tr>
<td>C</td>
<td>29 Oct.</td>
<td>2</td>
<td>cross</td>
<td>female</td>
<td>5 &amp; 8</td>
<td>Owner &amp; vet.</td>
<td>Vetch</td>
</tr>
</tbody>
</table>

The lesions on the horses and people disappeared without any specific therapy after a few days of avoiding any contact with the suspected hay. The mites which had been collected from the suspected hay were identified as *P. tritici* (Fig. 4). Following the exposure of hay bales to solar radiation for 3–4 days the annoyance to humans and horses disappeared.

DISCUSSION

The food selected by *Pyemotes* depends on its availability, and climatic conditions limit its natural prey. Overpopulation of *Pyemotes* may cause infestation of incidental hosts.

*P. tritici* has been associated with dermatitis, especially in humans (Mumcuoğlu, 1976; Betz et al., 1982; Tsyrkunov, 1992) and horses (Ormsby, 1948; Kunkle & Greiner, 1982). It is likely that during the process of feeding, the saliva of these mites provokes an irritating effect on humans and horses, with manifestation of pruritic dermatitis (erythematous and papulo-vesiculous eruptions) (Figs 1–3).

The mites do not burrow into the skin (Ormsby, 1948). Macroscopic and microscopic examination of the skin lesions and skin scrapings of humans and horses did not reveal mites or mite parts.

The three episodes described occurred during August to October. Apparently, the reason for this marked seasonality is that the population peak of the mites occurred during this period. A similar observation has been made by Ormsby (1948).

Control of the straw itch mite under the storage system used in Israel (open barns) is impracticable. The application of insecticides, as described elsewhere (Hanks et al., 1992), can only be useful in closed barns.

In the light of the fact that the survival of adult females is negatively related to increased temperature and decreased humidity (Bruce, 1984), and that UV radiation has been used to disinfect cultures of stored-product insects from *P. tritici* (Bruce & Lum, 1979), the infested hay bales were exposed to direct solar radiation.

Local application of insect repellents may prevent the cutaneous lesions in man.

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REFERENCES


