PYEMOTES HERFSI (OUDEMANS, 1936) AS CAUSATIVE AGENT OF ANOTHER MASS DERMATITIS IN EUROPE (ACARI, PYEMOTIDAE)

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Abstract. The authors describe new cases of human dermatitis caused by Pyemotes herfsi occurring in the food mixing shed for the farrowing house in the piggery at a farm in the district of Olomouc, where seven persons handling feedstuff were infected. The disease became manifest as a papular rash, appearing particularly on the back, and all over the body except on the hands and face. When the afflicted person discontinued work in the feed mixing shed, the rash disappeared quickly. The mites were found in the granular dust accumulated in the loft above the food mixing shed. The initial host (insects) could not be identified. After cleaning and disinsecting the contaminated premises with Metation E 50 the workers were free from any symptoms. The mites of the genus Pyemotes, particularly the species P. herfsi (Oudemans, 1936) are little known, but probably frequent causative agents of human dermatitides.

Species of the genus Pyemotes are often indicated as causative agents of serious dermatitides of man. However, reports about them in literature are very scarce. Up till now there has been only a single record in Czechoslovakia (Kramár 1957). Many cases were undoubtedly erroneously diagnosed due to the minute size of the causative agent, as evidenced by the case recorded by Huger (1971), when the causative agent of repeated dermatitides had been in vain sought after by complicated methods for many years until it was discovered by one of the authors in the material sent for study. We have advised the public health services upon these mites as the true cause of dermatitides. The information facilitates immediate liquidation of mites, sanitation of environment and decreases the possibilities for people to become unfit for work.

The cases described below occurred at a farm in the district of Olomouc, where the employees working in the farrowing house were repeatedly affected by dermatitis between May and August 1977.

MATERIAL AND METHODS

Investigations were carried out directly on the spot, i.e. in the room where feed for the farrowing house was prepared. Samples of some material (granular feedstuff, dust from the loft above the damaged ceiling of the food mixing shed) were taken and examined on the presence of mites.

RESULTS

Description of individual cases:

1. M.B., female, born 1927, attendant in the farrowing house. The disease became manifest on May 25, 1977 and reappeared during the summer until August. The rash, in the form of minute papules, was localized particularly in armpits, on fore-arms, in elbow depressions, on the back and to a lesser extent on the neck. On the back this skin eruption was more intensive, fused. It became less irritating on the days off. No family member was affected by a similar rash. In August the woman was hospitalized at the Faculty Hospital of Olomouc until 26. 8. 1977. Allergic tests with samples of material collected at the working place: granules negative, greats negative; tests with disinfectants:
Lysol, chloroamine, ajatin negative; microbiological tests: strepto 0(++)+, staphylo 8(++)+, trichophytin 0(0)0, candidin 0(++)+. Oversensitivity was detected to mercury and antioxidant 4010. No itching developed during the hospitalization and after treatment with Seabicide the condition was less irritating. The cause of the illness was not found, a parasitic disease (mange, mites) was suspected, tests with other disinfectants used in the working place were recommended.

2. M. S., female, born 1940, attendant in the farrowing house, was afflicted with an acute pruriginous dermatitis, first manifest on May 25, 1977 and repeatedly during the summer until end of August. The following sites were affected: skin on the head among hair, neck, fore-arms, back, loins, buttocks, chest, abdomen, pelvis, genital region; hands and face were not affected. Itching, and smarting were indicated in the anamnisis. The symptoms always disappeared within two days after work was discontinued. The patient was medically attended but not hospitalized.

3. J.S., male, born 1930, tractor operator, was always affected by the disease after work in the food mixing shed for the farrowing house where he helped his wife. The disease became manifest as pruriginous dermatitis first on June 15, then on July 10 and August 7, 1977, causing acute itching and smarting on neck, back, loins. The symptoms always disappeared within 2—4 days after work was discontinued in the food mixing shed. No medical treatment was administered.

4. R.S., female, born 1925, attendant in the farrowing house. The disease always became manifest after granules were loaded in the food mixing shed between the end of May and end of August 1977. The symptoms were similar to those described above; affected sites: neck, fore-arms, back, loins, chest, breasts, abdomen, pelvis, practically the whole body surface except hands and face. At the time, when she discontinued work in the food mixing shed, the symptoms disappeared. She underwent medical treatment.

5. J.D., male, born 1940, zootechnician. The disease manifested itself after work in the farrowing house about August 5, 1977 as acutely itching papular rash, localized on fore-arms, chest, breasts, back, abdomen, and disappeared within two days. He underwent no medical treatment.

6. M.M., female, born 1933, attendant in the farrowing house, was repeatedly afflicted with the rash after work in the food mixing shed between May 25 and August 31, 1977. The course of the disease and its symptoms were similar to those which affected the other attendants. Hands and face were not affected and she underwent no medical treatment.

7. E.T., female, born 1925, attendant in the farrowing house. The course and symptoms of rash similar to the case 6.

Pruriginous dermatitis of unknown etiology described in the seven cases above, was characterized by the fact that it always occurred after or during work in the food mixing shed attached to the farrowing house, that no family members of the afflicted person were affected. The disease never affected face and hands, was often localized in fore-arms, neck, chest and back. On the days off it was less irritating and its symptoms allegedly disappeared after work in the food mixing shed was discontinued. The occurrence of the disease in the warm season has indicated that it is caused by mites and allergy to the irritant substances present may be ruled out. We therefore collected samples of materials in which mites might have occurred. We examined the food mixing shed whose ceiling was made of laminated fibreboards and damaged in several spots. On the upper side of this ceiling, i.e. in the loft above, a dust layer from granules and other feedstuffs accumulated when these were loaded or otherwise handled.

First, the granulated feed and the accumulated dust were examined in the food mixing shed. The mites were separated from the samples under a binocular lense. The following species were found in granules: numerous Tyrophagus putrescentiae (Schrank, 1781), Acarus siro (Linné, 1758), single Gohieria fusca (Oudemans, 1902) and a deutonymph of the family Uropodidae.

The mites found in the granule dust collected in the loft above the farrowing house were more numerous. The dominant species was Acarus siro (Linné, 1758) and the predator Acaropsis sollers (Rodendorf, 1940). The next species were Gohieria fusca (Oudemans, 1902), Glycyphagus domesticus (De Geer, 1778), Androlaelaps fahrenholzi (Berlese, 1911), Blattisocius dentriticus (Berlese, 1918), Androlaelaps casalis (Berlese 1887), Cunaxa setirostris (Hermann, 1804) and Tydeus sp. occurred sporadically. A few young females of the species Pyemotes herbsi (Oudemans, 1936), known as causative agent of dermatitides, were also found. Besides, the samples contained a number of
larvae and cocoons of various insects. Abundant were adult beetles *Ptinus fur* Linné, 1758, and *Chelifer cancrivorous* (Linné, 1761). However no engorged females of *Pyemotes herfisi* were encountered on any of these arthropods. The host consequently remained unknown.

As soon as *P. herfisi* was found, the premises were cleaned and sprayed with 4% Metation E 50 (effective substance fenitrothion). The decontamination was carried out in the food mixing shed where ceiling and loft were primarily sprayed. In order to prevent further occurrence of dermatitides it was recommended to repeat the spraying before the warm season 1978 or during the summer again, if necessary. After the control measures taken in October 1977 we collected several samples of fresh granules and of the dust accumulated in the loft for quantitative analysis. The following mites were found in a one-gram sample by flotation method:

The sample shows a marked decrease in the number of species due to spraying and cleaning on one hand and to cooling and accumulation of new dust from granules on the other.

<table>
<thead>
<tr>
<th>Species</th>
<th>Fresh granules</th>
<th>Dust and granules from the loft above the food mixing shed</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acarus siro</em></td>
<td>158</td>
<td>18</td>
</tr>
<tr>
<td><em>Glycyphagus domesticus</em></td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td><em>Glycyphagus destructor</em></td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><em>Gohieria fusca</em></td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td><em>Dermatophagoides</em></td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><em>pteronyssinus</em></td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td><em>Tarsenemus</em> sp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>174</td>
<td>21</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The clinical picture of the dermatitis revealed that its causative agent was the *Pyemotes* mite. Our findings agree with the descriptions published by Voukassovitch and Dojmi (1937), Voukassovitch (1939), Vukasović (1947) or Huger (1971) and are also confirmed by epidemiological investigation (occurrence only in attendants in the farrowing house, disappearance of symptoms after disinsection of premises, localization on the body etc.). Huger (l.c.) recorded that the dermatitis always occurred after a longer period and that it was associated with the dying off of *Tenebrio molitor* colonies. This periodicity is typical of *P. herfisi*. It cannot be permanently maintained in laboratory cultures as a stagnation sets in after the initial multiplication and finally the cultures die off. Our experience was confirmed by Chmielewski (in lit.) who also cultured this species. *P. herfisi*, similarly as *P. boylei* Krčzal, 1959 (? = tritici) (Lagrèse-Fosson et Montagné, 1851), after Cross and Moser 1975), unlike e.g. *P. zwoelferi* Krčzal, 1963 requires little oxygen and survives a number of days in a well stopped test tube, while the test tubes containing *P. zwoelferi* must be closed with cotton wool only, because the mites will otherwise die within a few hours.

In addition we had the opportunity to revise the species which had caused the case of dermatitis recorded by Kramář (1957), who determined the mite *Pyemotes (Pediculoides) ventricosus* and *Stegobium panicenum* Linné, 1761 was its host. However, even in this case the species *Pyemotes herfisi* was envolved, because both pairs of setae hu-
merals in males were short, and epimeres IV in females were well developed. Unlike the description by Krczal (1959) and unlike our material and that from Darmstadt (Igt. Huger) and Poznań (Igt. Chmielewski), the females in the Kramár’s material were characterized by longer setae lumbales internae overlapping the end of opisthosoma by about half of the length.

Taxonomy of the genus Pyemotes, although revised (Krczal 1959, Cross and Moser 1975), is still not clear, resulting from the small morphological difference in particular species and from the impossibility to determine them exactly according to old descriptions. A typical species Pyemotes eocoptogasterpruni Amerling, 1891, insufficiently described from the territory of Prague, has not been found again. Moser (1975) considers the species Pediculoides ventricosus (Newport, 1850), frequently cited in medical literature, to be Pyemotes sch werdl/egeri Krczal, 1959, on the basis of new comparative material obtained from England, this country being terra typica for this species. Hughes (1976) synonymizes P. ventricosus with P. herfsi which might be rather a synonym of P. tritici (Lagrèse-Fosso et Montagné, 1851). A detailed list of dermatitides ascribed to this species is given by Krczal (1959).

PYEMOTES HERFSI (Oudemans, 1936) КАК ВОЗБУДИТЕЛЬ НОВОГО МАССОВОГО ДЕРМАТИТА В ЕВРОПЕ (ACARI, PYEMOTIDAE)

К. Самишкин, Й. Хмела и Э. Вобразкова

Резюме. Авторами описан новый случай дерматита у человека, возбудителем которого является Pyemotes herfsi, встречающийся на кормовой кухне при родильном отделении свиноводчика в одном земельском хозяйстве в районе г. Оломоуц, где было заражено 7 лиц, имеющих дело с кормом. Заболевание проявилось в виде пузырьков на спине, но также по всему телу, кроме лица и рук. Сыпь быстро исчезла после того когда заболевший прекратил работу на кормовой кухне. Клещей находили в гранулирующей пыли, осевшей на чехлаке над кормовой кухней. Первоначального хозяина (растениеводчика) не удалось установить. После чистки и дезинфекции пораженных помещений препаратом Metation E 50 признаки заболевания у работников исчезли. Клещи рода Pyemotes, особенно вид P. herfsi (Oudemans, 1936) мало известны, но вероятно частые возбудители дерматитов у человека.

REFERENCES


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