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CHEYLETIELLA PARASITIVORAX DERMATITIS IN MAN

Torsten Bjarke, Lars Hellgren and Kerstin Orstadius

From the Practice of Dr Bjarke, Helsingborg, the Department of Dermatology, Sahlgrenska sjukhuset, Gothenburg, and The Animal Hospital, Helsingborg, Sweden

Abstract. During a two-year period (October 1969 to September 1971) we have seen 37 cases of *Cheyletiella parasitivorax* dermatitis in our out-patient departments in two towns in the southern part of Sweden. The C.p. mite infests dogs and cats. On animal and human skin the mites can produce an itching dermatitis, which in man especially is found on body areas which have been in close contact with a pet. Such areas are flexor aspects of the forearms, breast, especially around areolae mammae, and abdomen. The primary lesions, which are small papules or papulovesicles or sometimes urticarial wheals, are grouped on the sites of predilection and appear in groups. The typical clinical course of C.p. dermatitis in man as well as the tendency to familial aggregation of the disease among owners of infested cats or dogs are illustrated in this paper by characteristic case reports.

In an experimental study, where unsensitized human skin was exposed to the C.p. mite, it was demonstrated how the papules developed and faded off over a rather short period of time, some hours. After iterated exposure to the mite for some months the experimentee seems to have been sensitized to the C.p. mite and the lesions were more long-lasting—several days.

In none of our cases were mites found on the human skin. To arrive at a correct diagnosis it is therefore necessary to demonstrate the mite on the patient's pet, which thus underlines the necessity of a close collaboration between the veterinarian and the dermatologist. The C.p. dermatitis runs a very chronic course if the infested pets are not treated with antiparasitic shampoos. As soon as the animals are free from the C.p. mites the dermatitis in their owners rapidly begins to heal.

From the Scandinavian countries only a few cases of *Cheyletiella parasitivorax* (C.p.) dermatitis in man have been reported. In our opinion the disease is not so rare. In a 2-year period (October 1969 to September 1971) we have seen 37 cases of dermatitis in man caused by C.p. living on domestic dogs and cats in the southern part of Sweden. The aim of this report is to account for the clinical manifestations of the disease and illustrate it with some typical case reports and simple experimental studies.

LITERATURE

The parasite C.p. was first described by Mégnin (1878). In 1917 Lomholt reported on the occurrence of a dermatitis in man caused by C.p. (7). Members of two families, each of whom had a cat infested with C.p., suffered from a severe itching, papulous dermatitis, and were treated with many remedies, without success. After removal of the cats, all the affected persons healed. In 1947, in another report by Lomholt, three members of a family suffered for a whole year from C.p. dermatitis originating from their domestic cat (8). Another Copenhagen family suffering from C.p. was reported by Olsen & Roth in 1947 (11). The infestation originated from an angora cat.

In 1957 a case of C.p. dermatitis was reported from Finland (13) and in 1960 one case from Sweden (2). In both these cases the C.p. infestation emanated from cats. In the case described from Sweden the mite was found in a histologic preparation of one of the patient's papules (2).

While as late as in 1946 it was stated in one report (1) that there was no evidence which could be held to demonstrate that C.p. attacks its mammalian host, or that it can cause lesions in man, the contrary was proved by other authors (2, 7, 8, 11, 13).

THE MITE

C.p. is a small grey-white mite with rounded, ovale bodyform. It is hardly visible with the

Fig. 1. Egg of *Cheyletiella parasitivorax.*

naked eye. All stages of the life cycle can take place on the same host. The eggs are very minute, look like the eggs of a louse but smaller (size about 120 × 80 micron) and are fixed to the hair-shafts (Fig. 1). The larvae have 3 pairs of setae (legs) and the nymphs and the adult animals 4 pairs of setae. The adult female is the largest, 450 × 200 micron (Figs. 2). The most striking morphologic characteristics are the large claw-like mouth parts or palpi which make it easy to determine the mite species (Fig. 3) (10).

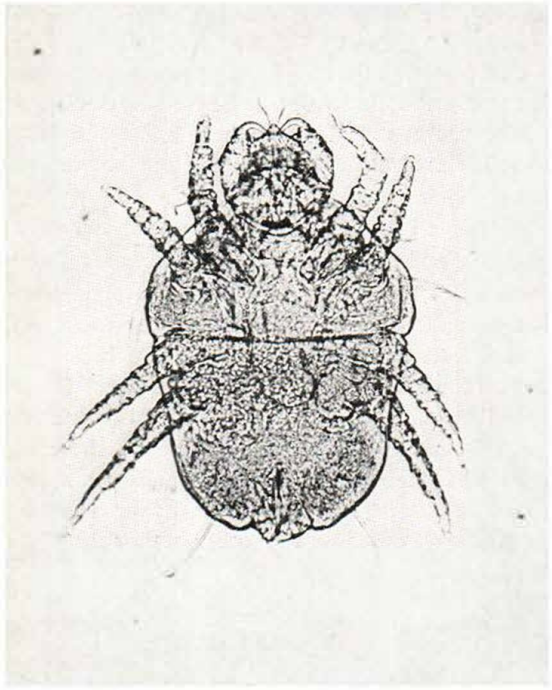


Fig. 2. Cheyletiella parasitivorax.

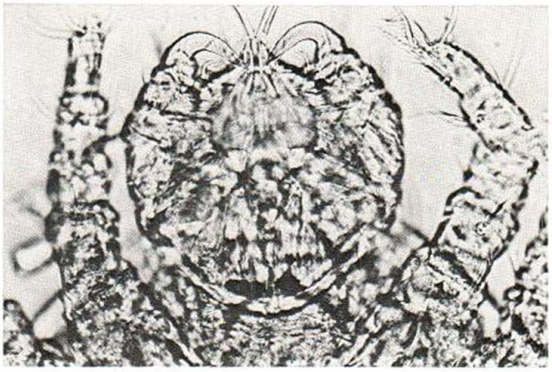


Fig. 3. Detail of Fig. 2. Head with the large claw-like mouth-parts.

Infestation with C.p. is seen in cats and dogs. Cats are generally free of symptoms and have neither skin lesions, nor pruritus, but the mite is sometimes visible in the fur of the cat or in the combings from it (5). In dogs, the mites may cause itching and formation of dandruff in the fur. In pups it often causes very intense itching and grey scaly crusts are seen on the skin over the body, especially over the back. In adult dogs, however, the symptoms may be minimal or even absent. In advanced cases, dry eczematous lesions can seldom be found (12, 14). Parasitologists report that the fur of rabbits is the normal host of C.p. and that the mite probably feeds on the minute pilicolous mites found on these rodents (6, 14, 15). The mites generally disappear from an infested animal after repeated treatment with insecticide shampoos at weekly intervals (16). In kennels, reinfections of dogs are common (3), especially as the adult C.p. mites are probably able to invade the surroundings and live free for some time (9).

CASE REPORTS

In the following, a few characteristic case reports will be recounted.

Cases 1, 2

A man, aged 40, had during the past 2 months had scattered red papules and urticarial wheals over the trunk

and extremities. The itching was troublesome, especially in the evenings. The man had a cocker spaniel dog which scratched itself, especially in the tail region. A veterinary examination revealed C.p. infestation. The dog was treated and the lesions disappeared. One month later the man got a new rash of the pruritic papular dermatitis. This time his wife, aged 38, also got a similar rash of a highly pruritic papular dermatitis. They brought the dog once more to the Animal Hospital in Gothenburg and a relapse of C.p. in the dog was found. The dog was treated and a few days later the man and his wife healed.

Cases 3, 4, 5

A woman, 26 years of age. The patient stated that for a month she had had a highly irritant papular and urticarial dermatitis on the trunk and flexor regions of her arms. The lesions had appeared some days after the patient had found and adopted a cat. Her husband, 38 years and son 8 years of age also got an eruption of densely scattered red, pruritic and excoriated maculopapules over the trunk and arms, some days after adopting the cat. The family consulted the Animal Hospital in Helsingborg. In scrapings from the fur of the cat large numbers of C.p. were found. The cat was treated with an antiparasitic shampoo and the family members rapidly recovered from their skin disease.

Cases 6, 7

A woman, aged 32, and her son, aged 12. They both suffered from a highly pruritic papular dermatitis since one week, appearing 3 days after they had got two terrier pups from a kennel. The two dogs had scratched themselves and their coats were full of dandruff. A veterinary examination revealed the presence of C.p. in the coats of the dogs. After the dogs were treated, the woman and her son recovered within a few days. The husband of the woman had no dermatitis.

Cases 8, 9

A man, aged 49, and his daughter, 10 years old. They had excoriated maculopapules scattered over the breast, the abdomen and the flexor regions of their arms. The family had got a terrier pup and 1 week later the man and his daughter both suffered from an intensely itching dermatitis. The girl's playfellows suffered from a transient itching dermatitis after visits to the girl's home, where they played with the dog. The pup scratched itself near the root of his tail and had plenty of dandruff. Examination of the pup at the Animal Hospital revealed an infestation with C.p. The man and his daughter were both healed a few day after the pup had been treated with antiparasitic shampoo.

EXPERIMENTAL

In order to find out if the mite of C.p. placed on human skin could cause papules, the mite was placed on the forearm of one of the authors, not previously exposed to C.p. The mite moved around relatively quickly for a few minutes, then stopped and seemed to bow its fore-end to the skin (Fig. 14). A redness and a slight swelling very soon surrounded the mite and at the same time a sensation of slight itching was noticeable (Fig. 13). After 2–3 minutes the mite again moved around, obviously to find a new suitable place (Fig. 15). No itching was felt during the mite's perambulation. In 1 hour the mite produced 4 maculopapules in an area of 6×4 cm (Fig. 12). The red spots, 3–4 mm in diameter, soon disappeared. After 2 hours no sign of the mite attack was left on the skin.

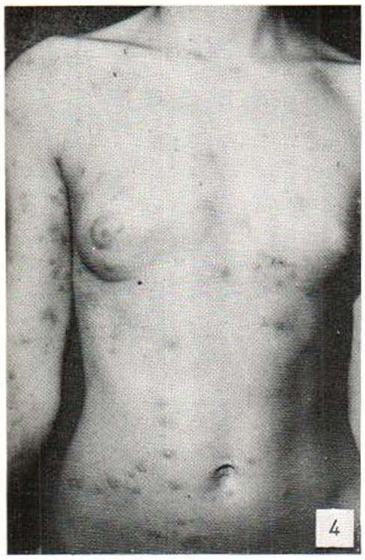
One month later the same experimentee was exposed to another C.p.-mite. The mite moved around for about 1 hour and then stopped and seemed to bore its head into the skin. It produced an itching red papule, 5 mm in diameter. The papule disappeared first after 24 hours.

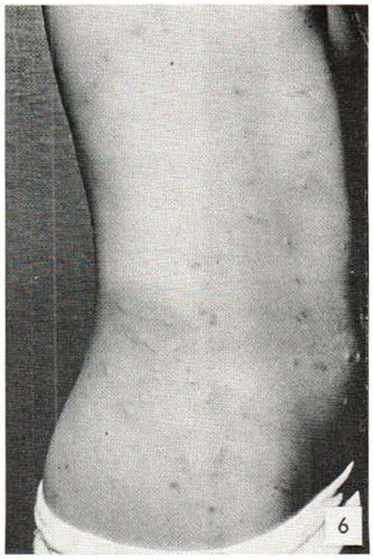
One month later the experimentee was exposed yet again to a C.p.-mite and this time the mite produced 3 papules, 5–8 mm in diameter. They disappeared 3–4 days later. The experimentee seems to have been sensitized to the mite (Fig. 16). During the experiment it was observed that the mite very easily fell off the skin. C.p. adult mites were very susceptible to a drop in temperature. At room temperature (22°C) they soon became lethargic and after 24 hours, dead.

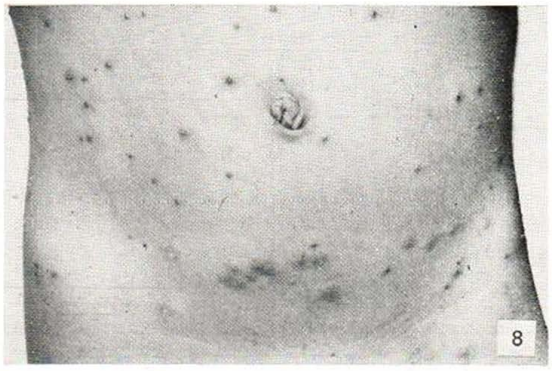
DISCUSSION

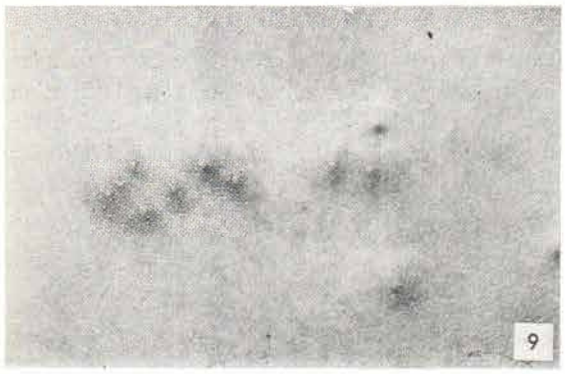
In a 2-year period 37 patients sought our advice because of C.p. dermatitis. The typical situation was mother and daughter (or son) consulting the doctor for a severe itching dermatitis bothering them for some time. Our patients came from 24 homes. Most often the patient or the family had got a pup or a kitten a week, a month or (in 3 homes) 4 to 6 months before the symptoms of itching and dermatitis appeared. The symptoms generally made their first appearance in autumn and winter and only 3 patients consulted a doctor in spring or summertime. Perhaps the contact with the family pet is more intimate indoors during winter-time. Children often play with a pet in their beds.

In all our cases the family pet was demonstrated to be infested with C.p. but only in two cases did the owners themselves suspect their dogs or cats as being an indirect cause of their itching derma-









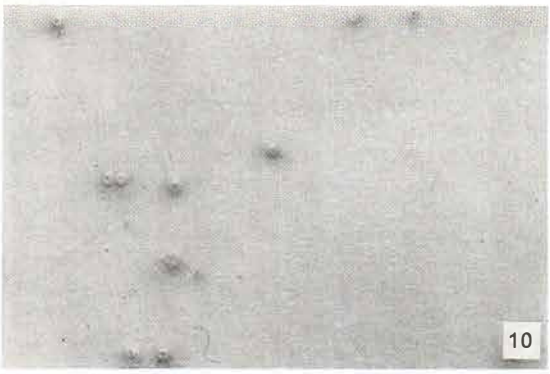


Fig. 4. Widespread lesions after playing with cat in bed.

Fig. 5. Detail of Fig. 4. Urticarial lesions.

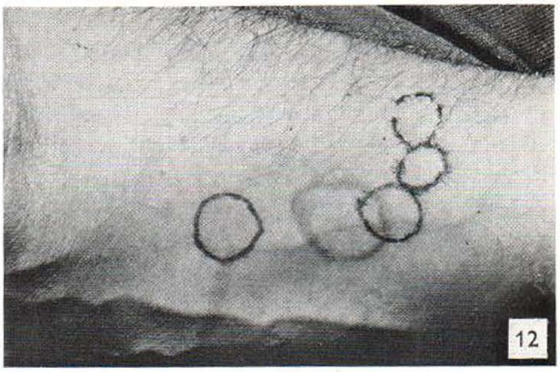
Fig. 6. Widespread lesions and a very fresh crop of urticarial lesions over the hip.

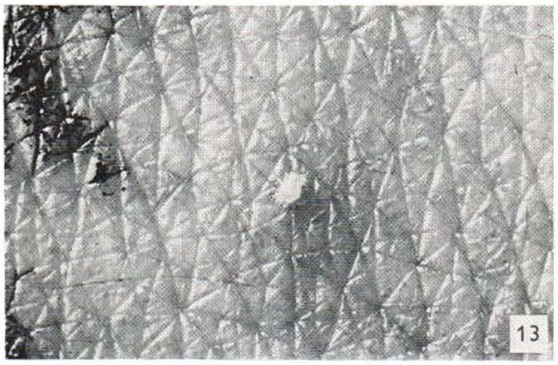
Fig. 7. Detail of Fig. 6. Intense itching urticarial lesions.

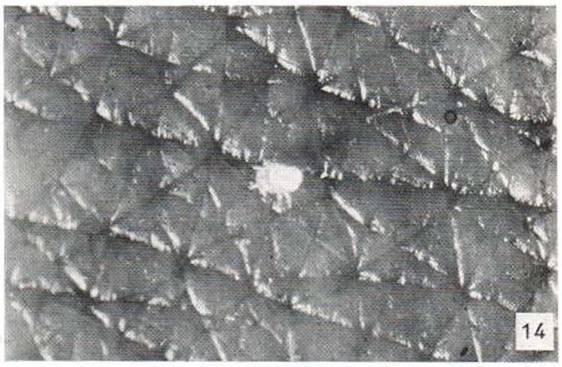
Fig. 8. Typical localization of lesions in a boy with cat.

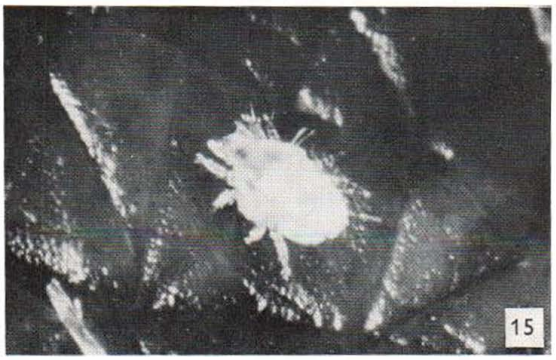
Fig. 9. Detail of Fig. 8. Papulo-vesicular lesions.

Fig. 10. Detail of Fig. 8. Older crop of vesiculo-pustular lesions, well demarcated.









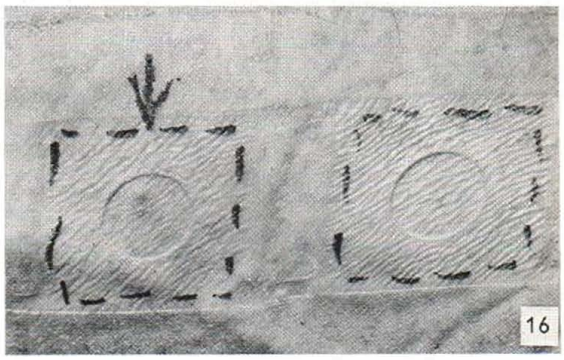


Fig. 11. Lesions in a circle around areola mammae.

Fig. 12. From the grey ring the mite moved around and in 1 hour produced a group of 4 maculo-papules marked out by the black rings.

Fig. 13. The mite producing a maculopapule.

Fig. 14. The mite bows its fore-end to the skin.

Fig. 15. The mite walks on the skin to find a new place to attack.

Fig. 16. Eight mites were placed on the fore-arm and covered with a patch as in patch testing. The test was read after 72 hours. The mites had produced red maculo-papules (*left*). A control patch test negative (*right*).

titis. In 15 of the 24 homes the family pet was a cat; in 9 homes, a dog. Ten pets were living in the countryside or in small villages and, of those, 2 cats lived on farms together with other animals. Fourteen pets were living in homes in the cities of Gothenburg and Helsingborg. The pets were most often bought from breeders in the countryside.

Infestation of 15 cats was the couse of the C.p. dermatitis in 14 adults (2 males, 12 females) and 9 children (4 boys, 5 girls). Infestation of 9 dogs was the cause of C.p. dermatitis in 10 adults, 2

males and 8 females, and 4 children, 2 boys and 2 girls. In 19 homes with both "master" and "mistress" only the mistress got the C.p. dermatitis in 15. In families with many children, often all the children and even their playmates had itching dermatitis.

The localization of the C.p. dermatitis was very characteristic. In the 20 affected women the lesions were distributed to the flexor sides of the arms, on the breast and the abdomen, especially around the umbilicus or just beneath it (Fig. 8). In 14 females small groups of papules were found on the mammae, often in a circle around the areola. This picture seemed to be of great diagnostic significance. One explanation may be that the women usually were clasping the animals to the bosom (Fig. 11). In the Animal Hospital in Helsingborg employees have, soon after handling animals infested by C.p., observed transient itching papules on their uncovered arms. Of four males, 2 presented groups of papules on the breast. Six children presented a widespread distribution of the papules on arms, breast, abdomen, back and even legs. In 5 of these cases the family pet was a cat. Two of the most severely affected girls had been in bed owing to a common cold and had been playing with their cats in bed (Figs. 4, 5). Only exceptionally were lesions observed on legs, hand and feet. No lesions were observed on the face or on the genitals.

The primary lesions were small papules, often with a small vesicle on the top (Figs. 9, 10). They were often excoriated because of the intensive itching. In other cases urticarial wheals dominated the clinical picture and in 3 patients the picture was that of a papular urticaria. The papules often appeared in typical crops (Figs. 5, 6, 7).

The papules were collected in groups, never confluent. The groups were diffusely scattered over the predilection sites of the body (Fig. 4).

The rash caused by C.p. has been called "Cheyletosis" (which seems to us to be a very suitable name for C.p. dermatitis in man) by Hewitt et al. (4). It can be differentiated from the lesions produced by *Sarcoptes scabiei* by the absence of burrows and also by the different distribution of the lesions. In C.p. the dermatitis is localized to the flexor sides of the arms, breast and abdomen but in scabies interdigitally, on the volar wrists, on genitals and buttocks preferentially. The lesions in C.p. appear in crops and the maculopapules are more homogeneous. In scabies the picture is more polymorphous. In pulicosis the papules often appear in groups as in C.p., but these groups are generally more irregularly distributed on the different body areas because of the considerable mobility of the flea. Central punctae are seen in the papules produced by fleas but not in those produced by C.p.

After treatment of the carrier animal with antiparasitic shampoo the patient often became free of symptoms very soon after. Most often the itching disappeared the day after the first shampooing of the animal. In a few cases symptoms disappeared first after the third or fourth shampooing, obviously owing to the owners' lack of experience in shampooing cats. In a few cases relapses were noted but the patients recovered after repeated treatment of the family pet.

In our cases of C.p. dermatitis the mite itself has not been observed on the patient's skin, not even in scrapings from the lesions. It is not stationary on the human skin and probably disappears after a short time (10). Our patients did not display new crops of papules after treatment of the infested animal. Owing to the mite's sensitivity to fall of temperature the rash is most pronounced in areas of the skin in close contact with the fur of the animal. Probably it is difficult for the mite to penetrate the clothes.

Some persons seem to be more susceptible to the toxins of the mite and some probably become sensitized. In young girls the inflammation was often intense. Lesions with a central area of necrosis have been reported (4).

The experimental observation confirms the report by Olsen & Roth (11) that the mite C.p., when placed on the human skin, causes maculopapules. It also can be the explanation for some typical clinical features in C.p. dermatitis such as the localization of the lesions to body areas in direct contact with the infestated cat or dog, the grouping of the lesions, their appearing in crops, and their rapid disappearance as soon as the pets are effectively treated.

For many years veterinarians in the southern part of Sweden admit that they have observed C.p.-infestations in domestic animals. It is possible that cases of C.p. dermatitis in human beings have been seen by doctors in this area before but have not been diagnosed. To achieve a correct diagnosis a collaboration with the owner of the

pet and an experienced veterinarian is necessary.

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L. Hellgren, M.D.
Department of Dermatology
Sahlgrenska sjukhuset
S-413 45 Gothenburg
Sweden