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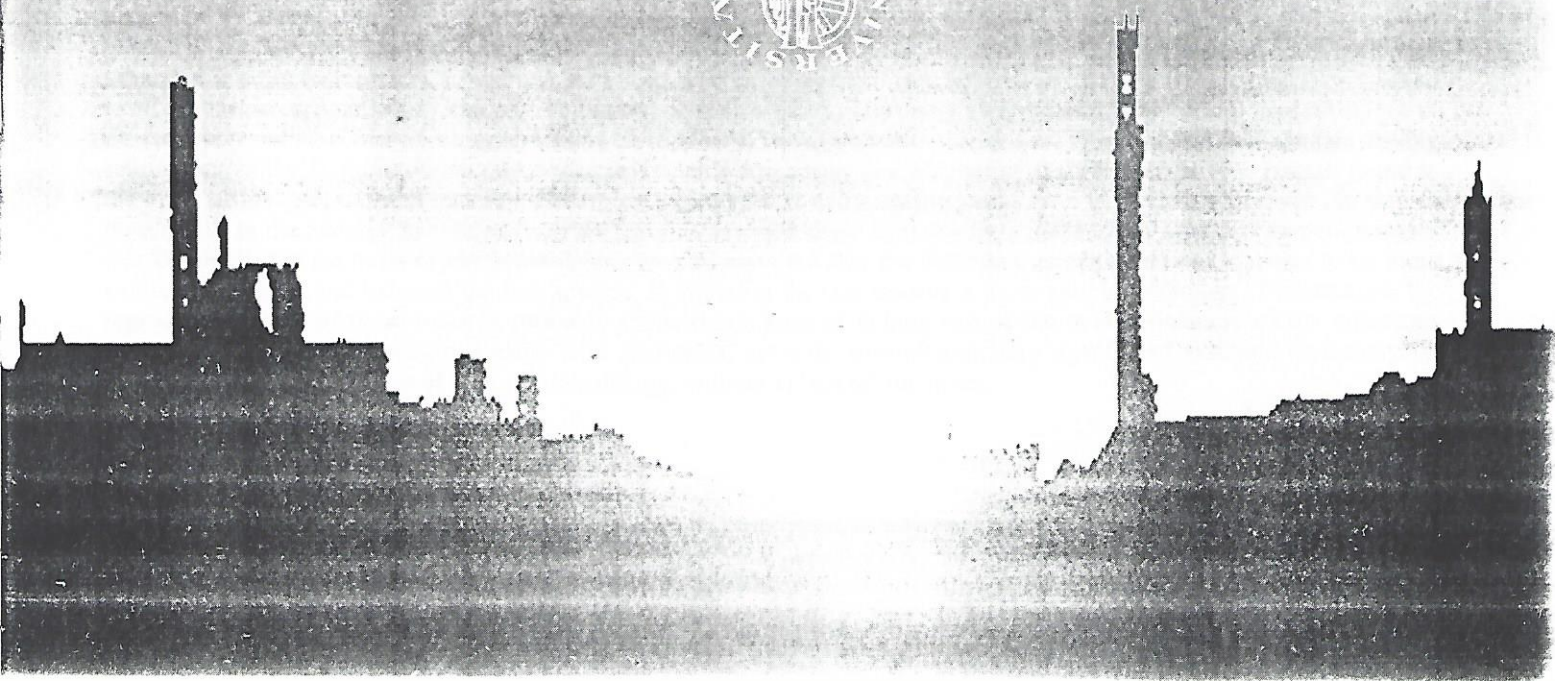

DEMODEX FOLLICULORUM AND *DEMODEX BREVIS* (ACARI: DEMODICIDAE) IN MAN'S EAR CANAL

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The mites of Demodecidae family are well-known in human medicine for their presence is often associated to the onset of rosacea, of perioral dermatitis and of seborrhoeic alopecia. Their pathogenic action is still much-discussed, but certainly, their presence inside the hair follicle and in the sebaceous glands causes the exfoliation of the inside wall and stimulates the sebaceous hypersecretion. The species that are found in man, *Demodex folliculorum* and *Demodex brevis*, harboured mainly on the face skin, above all on the nose and they are found, often associated, the former in the hair follicles and the latter in the sebaceous glands. Both species can colonize different anatomic areas of all the body, from the head up to the vulva and the scrotum, almost never determining visible pathologies. Reported herein is the isolation of these mites in the ears of n. 8 people, five females and three males, aged between 30 and 40 years. A parasitological examination was requested by the patients complaining periodically of an intense itch, and four of them, all women, suffered from seborrhoeic otitis with plenty of cerumen. The search for mites was effected by melting the seborrhoeic material removed from the inside ear wall, in xylene. At the bottom of such a liquid, after only five minutes, adult and immature stages of *Demodicidae* mites could be observed. Only *D. brevis* in its reproductive stage was found in the four women having seborrhoeic otitis. *D. folliculorum* on its own or associated to a very low number of *D. brevis* adults was instead found in the other people. All of them had oily seborrhoea on their faces and parasitic association of the two species in the skin of their noses. In the material examined from the patients having a more intense itch, a presence of eggs and immature stages was observed. On the basis of our observations we can point out that the demodicosis of the ear canal seems to be more evident in females and between the two species, *D. brevis* is the one causing a more serious pathology. Furthermore, the reproductive stage of these mites is probably at the origin both of itching and of the evident increase of the sebaceous secretion. The patients were not treated with acaricides, but with anti-inflammatory agents and systemic erythromycin, which induced the remission of the symptomatology, without killing off the mites.

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Abstract: In this survey, the parasitological examination of sebaceous material removed from the external auditory meatus of n.9 people affected by seborrhoeic otitis revealed the presence of *Demodex folliculorum* and *Demodex brevis*. The latter species, in its reproductive instar, appeared to be responsible for itching and for the most serious cases.

Introduction

The mites of *Demodicidae* family are arthropods frequently found in humans and animals, in many anatomical areas, from the skin pilosebaceous complex to the legs (1,2,3,4,5,6,7). They are specific parasites, having a pathogenic role still today much-discussed (8,9). In fact they are present both in healthy individuals and in sick ones, though with remarkable variations in their reproductive activity and capacity of infestation (10). They are mites still in morphobiological adaptation, since they can colonize not only the hair follicles and the sebaceous glands, but also the meibomian glands (11), the eyelids (12), the tongue (13) or other internal organs, such as liver and kidneys; they can harbour even in the Sea Lion's flippers, as it happens to *Demodex zalophi* (14). A very little known and studied body site of infestation in humans is the external auditory meatus, where mites probably have an important pathogenic role in the onset of some kinds of seborrhoeic otitis (15). In this paper our notes on demodicosis of the ear canal are reported in some patients with inflammatious forms of different grades of seriousness, pointing out some differences in the state of colonies of these mites observed from the parasitological aspect .

Materials and Methods

Sebaceous material and cerumen were removed by a tiny spoon from the ear canal of n.9 patients, 5 females and 4 males, aged between 30 and 40 years, pushing and scraping the small instrument on the internal ear wall and then melting the material in xylene. Soon afterwards a direct examen was carried out, by collecting the sebaceous material through pressure, and by softening it by two drops of almond oil. The first method of collection had the aim of allowing to count and identify the mites in all their life instars, whereas the second method enabled us to observe them still alive and to study their movements.

Results

Two species of *Demodicidae* were identified: *Demodex folliculorum* and *Demodex brevis*. Their developmental instar were isolated and counted. In the table 1 are reported the results of the parasitological examination effected on 4 women having evident seborrhoeic otitis and itch. In all of them, only *Demodex brevis* was isolated. The average number of immature instars turned out to be rather high, being the 79,3% of the total number of mites isolated.

Tab.1. - Isolation of *Demodex brevis* from the external auditory meatus of 4 women affected by seborrhoeic otitis and itch.

D. brevis	1 number of mites isolated	2 number of mites isolated	3 number of mites isolated	4 number of mites isolated	Average number
Eggs	40	19	36	32	**31,75**
Larvae	22	26	12	18	**19,5**
Protonymphs	8	11	7	14	**10**
Deutonymphs	27	19	15	20	**20,25**
Males	6	2	4	7	**4,75**
Females	24	16	27	19	**21,5**
TOTAL	**127**	**93**	**101**	**110**	

In the table 2 the number of mites isolated from 5 patients having a very slight seborrhoeic otitis, without nagging itch. The species isolated was mainly *Demodex folliculorum* on its own or in association to small quantities of *Demodex brevis*. In this case, the number of immature instars resulted to be lower, being, as for *Demodex folliculorum,* the 54,3% of the total number of mites isolated of the same species.

Tab.2. – Isolation of *Demodex brevis* and *Demodex folliculorum* from external auditory meatus of 5 individuals (1 female and 4 males) affected by a slight seborrhoeic otitis

D.brevis	1 F. number of mites isolated	2 M. number of mites isolated	3 M. number of mites isolated	4 M. number of mites isolated	5 M. number of mites isolated	Average number
Eggs	2	0	0	0	0	0,4
Larvae	3	1	0	0	0	0,8
Protonymphs	0	0	0	0	0	0
Deutonymphs	3	3	0	0	0	1,2
Males	0	0	0	0	0	0
Females	4	4	0	0	0	1,6
TOTAL	**12**	**8**	**0**	**0**	**0**	
D.folliculorum						
Eggs	6	8	7	4	3	5,6
Larvae	5	4	3	6	0	3,6
Protonymphs	2	4	5	3	1	3
Deutonymphs	6	9	11	7	7	8
Males	2	2	4	6	2	3,2
Females	11	15	18	16	9	13,8
TOTAL	**32**	**42**	**48**	**42**	**22**	

The direct parasitological examination allowed to note a good mobility of adult females of *D.brevis* in the individuals having a more serious seborrhoeic otitis and a lower mobility, nearly a state of quiescence in individuals with a slight otitis.
Samples collected from nose skin of the individuals examined, all with evident oily seborrhoea, showed the presence of both species of *Demodex*, but their counting was not possible.

Conclusion

Our observations revealed a clear relation between the seriousness of the otitis and the presence of immature instars of *Demodex brevis,* appearing the most pathogenic species. The total number of mites was never very high, but their mobility probably caused the annoying itch complained by the patients. The ratio between the immature instars and the adult mites was the sign of an evident reproductive state of the population of these mites, among which males were constantly less numerous. The total absence of *D. folliculorum* in the ear canal of the four women having the more evident seborrhoeic otitis, denoted an imbalance between the two species, since in the face skin of the same individuals both species were present. It seemed that the prevalence of a species determined the disappearance of the other one and, in the case of *Demodex brevis*, also the onset of itch and sebaceous hypersecretion. We assume that since *D. folliculorum* colonizes the hair follicles and it is more superficial than *Demodex brevis*, harbouring inside the sebaceous glands, we assume that the easy elimination of this first species, even by using non specific medicines, may cause an imbalance between the two species and the prevalence of *Demodex brevis*, with the onset of more serious seborrhoeic otitis. Infestation by *Demodex brevis* can be controlled by medicines, but do not really recover. In fact, up to now, no attempt of ours to eliminate *Demodex brevis* totally from the pilosebaceous complex has given satisfactory definitive results.

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