

## Feces of *Pediculus capitis humanus* as sign of viability of the louse.

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### Summary

When viable lice are not visible on the hair, to find on the hair species specific feces can indirectly confirm their existence. The feces can be barely visible to the naked eye as blackish dots. On the other hand, they can be more easily put in evidence by the dermoscope used with dry technique. The most typical appearance of the louse feces discharged from a short time is that of dark clustered globules, fixed to the hair or free on the surface of the scalp.

### Key words

*Pediculus capitis*, feces, coproscopy.

In a previous report (6) we underlined the difficulty, when self-moving lice visible to the naked eye lack, of really establishing not only the viability of a colony of lice on the scalp and therefore the need for a treatment, but also the contagiousness of a possibly affected subject.

In that report we maintained that, when self-moving lice lack, independently on the gross criterion of nits far a few millimeters from the scalp, the presence by dermoscopic observation of nits with operculum "in situ", brown light in color and translucent, with amorphous contents or containing an embryo supplied with limbs and an eye macula and with convex and uniformly tense walls, really confirms the existence of a viable colony of lice and thus the need for a treatment. These morphological findings can be well appreciated with the dermoscope, a device also used for the study of other ectoparasitoses (1, 2, 3, 4, 5).

In this study we investigated the presence of feces of *Pediculus capitis humanus* as another

possible sign of viability of a louse colony on the head.

### Material and methods

During the school year 2005-2006 one of us (SG) visited 387 students attending kindergarten or primary school with suspected pediculosis capitis. At the moment of the visit most of them had already started a home treatment with drugs such as malathion, permethrin, synergized pyrethrins and natural oils. The clinical findings were observed by the naked eye in all the cases. In the cooperating subjects the study of the scalp was also carried out with a dermoscope by a dry technique (Heine Delta 20, 10x) with alternated circular -at six diodes lighted- or lateral -three diodes lighted- illumination. The dermoscope was connected to an ordinary Digit-camera Minolta G350 -5Mp-. Thanks to its optical zoom a further 3x magnification was obtained, leading to the final magnification of 30x.

## Results

During the observation by the naked eye of a head infested by lice, besides rare self-moving lice and nits of different morphology, more or less numerous and far from the scalp, it is possible to see barely visible blackish dots. By the dermoscope at 10x magnification the blackish dots, which were barely visible to the naked eye, acquire a different shape, roundish or linear (Fig. 1, 2).

Thanks to the further magnification allowed by the optical zoom of the Digit-camera used to photograph the clinical findings, it is possible to put in evidence further characteristics of the louse feces. The latter characteristically consisted of clustered black globules. These clustered globules were found stuck to the hair or laying on the scalp surface. In the latter case the globules seemed to lay on a liquid veil.

Besides the clustered blackish globules, also laminar black structures, in which globules progressively lost their spherical shape and their clustering tendency, were observed on the scalp (Fig. 3).

Finally, it was possible to detect clustered black globules level with the caudal extremity of the louse (Fig. 4).

## Discussion

The heads, where the infestation was active, independently of the presence of lice or their nits, showed indirect signs of their existence due to their feces left on the hair or on the scalp. The latter can be easily differentiated from dust particles or drifts of other nature thanks to the characteristic clustered black globules, stuck to the hair or laying on the scalp. In the latter case on the epidermal interface a liquid veil can be seen, probably due to the fusion of the spheres. With time the clustered globules, probably due to their progressive drying, turn into black laminar structures with irregular borders. The black globules are really feces of the louse, as incontrovertibly shown by the demonstration “in vivo” of the same structures stuck to the caudal extremity of the louse (Fig. 4).

The black color of the globules is probably due to the coagulated blood of the host, given the strictly monothematic meal of the louse: this hypothesis could be easily supported by chemical reactions or identifying the blood group of the host.

As other ectoparasites of the skin of the genus dermatophagoides, the feces can be responsible for irritant and allergic phenomena and thus for



Fig. 1: Feces of *Pediculus capitis*, dermoscope, 10x.



Fig. 2: Feces of *Pediculus capitis*, dermoscope, 10x.



Fig. 3: Feces of *Pediculus capitis* with their characteristic clustered shape, 30x.



Fig. 4: *Pediculus capitis* with clustered feces at its caudal extremity, 30x.

pruritus and other complications due to the infestation with *Pediculus capitis humanus*. Their irritant capacity could be due to proteases present in the feces, whereas their sensitizing capacity could be associated with the enzymatic changes induced on the host blood by symbiotic bacteria living in the intestine of the louse and allowing the utilization of the blood meal. This hypothesis should be tested in future studies.

Anyway, finding blackish clustered globules, stuck to the hair or laying on the scalp surface and close areas represents a new sign of the existence of viable elements of *Pediculus capitis humanus* and thus means that the infestation is active, can be responsible for contagion and needs a treatment. On the other hand, the lack of dark globules stuck to the hair or laying on the scalp could be a further sign, together with the lack of self-moving lice and viable nits and with the presence of empty or abortive nits (6), of the therapeutical efficacy of a pediculicide, the lack of contagiousness and thus of the unusefulness of a further treatment.

In conclusion, in this study we showed that the dermoscopic observation of a head probably infested by *Pediculus capitis humanus* allows the identification of a new sign of viable ele-

ments through the demonstration of humid, black clustered globules stuck to the hair or free on the scalp surface. This additional new sign can be useful in establishing the viability of a colony of lice of the head, its possible contagiousness and the need for a specific treatment.

**Acknowledgement:** We are deeply in debt with the sanitary assistant Marcella Pastore, who significantly contributed to the realization of the OPS project.

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