

LOUSE INFECTION IN SHRUNKEN HEADS

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Abstract.

*We are reporting the discovery of *Pediculus humanus* (Anoplura) eggs in shrunken heads from South America. The heads were shrunken by the Jivaros, headhunter Indians from tropical rainforest in the Amazon region. Six shrunken heads seem to be from American Indians. There is no information about their ethnic affiliation and all of them are probably from adults. One head has short curly red hairs and a moustache. This is from a Caucasian. The direct exam of the scalps revealed the presence of nits of *Pediculus humanus*.*

Introduction.

The origin of headhunting goes back to a remote past in the history of humankind. Many different cultures throughout the world preserved the heads of their victims as talismans, in rituals or religious practices or in demonstration of war victories (Acquaviva, 1976).

The Jivaros, from the Amazon region, South America, had this practice. The victim's head was carefully prepared as a war trophy to guarantee magic control over the victim's soul. The so called "tsantsa", though not bigger than a fist, preserve the original features of the dead. The final appearance of a combed and adorned "tsantsa" is still a strong

and impressive view.

The preparation of the head is a long and complex ritual. After overwhelming the enemy in a fight, the Jivaro warrior cut off his head. After cutting the skin at the scalp, he extracted the skull. The skin was peeled off with muscles and hairs attached to it. Natural retraction of the skin and muscles reduced the deboned head to about half of its original size. The resulting artifact was, at this stage, a skin and soft tissue bag. This bag was put in hot water, in a specially prepared clay pot. Heating, in association with tannin and several other herb extracts produced more shrinking, until the whole piece was reduced

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to the size of an orange. The skin acquired the consistency of rubber.

The natural openings of the mouth and the eyes were sewn with vegetal fibers and fixed with wood sticks to seal the soul's power inside the shrunk head. Hot sand was poured inside the head through the neck's aperture, to burn away the excess of connective tissue. The whole process took at least 48 hours (De Graff, 1934). Due to exposure to smoke, herbal extracts, and charcoal, the head acquired a dark coloration.

This paper presents the results of the analysis of lice found in seven shrunken heads prepared by the Jivaro, from the ethnographic collections from Rio de Janeiro, Brazil. All heads have been kept in the museums for decades. It was not possible to determine their ages, but they are supposed to be at least 113 years old.

Material and Methods.

Seven shrunken heads from the ethnographic collection of the Museu Nacional and the Museu do Índio, Rio de Janeiro, Brazil, were examined for the presence of *Pediculus humanus* nits and adults. Six shrunken heads seem to be from Amerindians. There is no information about their ethnic affiliation and all of them are probably from adults. One head, having short curly red hairs and a moustache, seems to be from a Caucasian.

The scalps were observed directly. Some hair threads collected during specimen cleaning activity were also examined by microscopy.

Results.

The direct examination of the scalps revealed the presence of white dots cemented to hair shaft, identified as nits of *Pediculus humanus*.

Six shrunken heads had eggs of *Pediculus humanus*. Almost all eggs were empty (nits) and were well preserved. Four eggs still have a cap covering the free end of the egg. A single shrunken head could contain translucent, gray, yellow and red eggs.

The infection of the supposed caucasian man was much more extensive than the Amerindian's heads.

Discussion.

The shrinking process seems not to change the original morphology of *Pediculus* eggs. Different pigmentation of the eggs could have been caused by the dyes used in decoction process.

The use of chemicals to preserve the heads in the museums can also explain the coloring effects on the eggs. Possibly a microchemical analysis can clarify the cause of the coloration. Although one of the heads could have been prepared more recently, and so it is a "Jivaro pseudoshrunken head" it was also positive for egg lice.

The absence of adult lice can be explained by the parasite behavior. Lice abandon their host soon after the host dies. But we have also to consider that adult lice could be lost during preparation and handling of the shrunken heads as they are not firmly attached to the hair.

The higher parasite load in the supposed caucasian man can be explained

by the poorer hygiene habits such as bathing, cleaning, combing, and grooming among historic Europeans as opposed to the more cleanly tropical American Indians.

Well preserved Anoplura eggs and adults have been found in mummies and in ancient human remains throughout the world. Lice infection seems to have been a common infection since ancient times (Cockburn et al, 1998).

The oldest louse finding was that from Brazilian Northeast dated of 10,640 years (Araujo et al. 2000). The infection is believed to have originated in African hominids, and introduced into the New World with the first human migrations.

The study of ectoparasites in different prehistoric and modern samples can help to understand the variability of this human parasite and its evolution in the past. The presence of intact opercula means that the eggs contained nymphs.

Therefore it should be possible to extract DNA for molecular analysis. Molecular analysis could disclose parasite variability during the evolutionary process.

Moreover, human DNA contained in the hair bulbs could also be analyzed.

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