Lice buried under the ashes of Herculaneum

Sir—On Aug 24, 79 AD, during the festival of the Divine Augustus, a dramatic eruption of Mount Vesuvius overwhelmed Pompeii, Herculaneum, and several other nearby small towns and villages, burying unique archeological treasures and many inhabitants under a hail of ashes and pumice or steaming mud lava. The eruption is vividly described by Pliny the Younger, in a letter to Tacitus.

Recent paleopathological investigations of the skeletons of the so-called fugitives discovered in the boat sheds on the ancient beach of Herculaneum provide insight into common diseases of classical antiquity. In particular, the skull of individual E52 presents a thick brownish encrustation around the vertex.

The individual was a woman, about 25 years old, who was 3 months pregnant when she died; the tiny bones of her uterus are perfectly preserved. The encrustation on her skull is strongly radio-opaque, and consists mainly of iron oxide and carbon, which is what remains of an iron hairpin. The acidity of the hot volcanic mud that buried the woman rapidly rusted the pin; the iron salts that were released impregnated the immediate area, including her hair, which is remarkably well preserved, showing the elaborate hairstyle typical of wealthy, high-ranking young Roman women. Chemical analysis showed that the hairs were almost entirely made up of iron oxide, with a carbon content of less than 2%, and there are no traces of sulphur typical of keratin. This finding indicates that here was complete diagenesis, with destruction of the original proteins and their replacement mainly by iron salts. Each hair was examined microscopically, and one was found to have an egg attached, whose dimensions and position with respect to the hair shaft showed it to be a loose egg. The egg was identical to those of both current forms and ancient specimens (figure). Indeed, the egg from Herculaneum showed no appreciable differences in form or size with even the oldest eggs known (found in the Nahal Herman Cave, Judean Desert, 6900–6300 BC),1 or with those found on South American Pre-Columbian mummies, prehistoric north American remains, or Egyptian or Chinese mummies; this similarity confirms that the morphological evolution of lice (and their eggs) has occurred gradually, following the gradual biological evolution of their human hosts.

Above the unio skull E52 displays a flattened area with an oval outline whose maximum transverse diameter is about 20 mm, in which the external tabula is rough and porous. This supra-union depression is an area of suprachondral bone remodelling produced by irritation of the local periosteum. Anthropologists have correlated this depression with the presence of impetigo, tinea, or pediculosis, which are pathological changes that can produce periosotal reaction either directly or through the inflammatory processes that begin as a result of scratching. About 22% of the skulls from Herculaneum show this super-union depression, with no difference between the sexes or with age. This finding is hardly surprising, and contemporary writers note that lice were quite common in Ancient Rome: both Scilla the Dictator and the Greek poet Alcamon died as a result of their infestation.2

*Luigi Capasso, Gabriella Di Tota
Department of Anthropology, National Archeological Museum, 66100 Chieti, Italy


**Nancy L Sloan
Population Council, New York, New York 10017, USA
email: nsl Sloan@pccouncil.org